VALIDATION REPORT

for the CDM Project Activity

Construction of Sumgayit Combined Cycle Power Plant

in Azerbaijan

REPORT NR. 01 997 9105044581

VERSION NO. 05.2

Designated Operational Entity (DOE)

TÜV Rheinland (China) Ltd

Unit 707, AVIC Building, No. 10B, Central Road, East 3rd Ring Road,

Chaoyang District, Beijing 100022,

People's Republic of China.

Tel.: +86 10 65 66 66 60 (ext.169)

FAX: +86 1065 66 66 67

E-mail: doe@chn.tuv.com

I. Project description:

Project title:	Construction of Sumgayit Combined Cycle Power Plant		Report No.: 01 997 9105044581
Host Country:	Azerbaijan		Current revision No.: 5.2
Methodology:	AM0029, Version 03	☒ Large Scale ☐ Small Scale	Date of current revision: 2012-11-09
			Date of first issue: 2008-04-18
Annual average emission reductions (estimate):			774,430 tCO2e/yr
GHG reducing measure/technology:	The project activity is the construction and operation of a new natural gas fired grid-connected electricity generation plant. The generated power displaces electric power from a mazut-based power plant that would otherwise have been constructed.		

Party	Project Participants	Party considered a project participant	Contract party
Azerbaijan (Host)	JSC "Azerenerji"	No	☐
United Kingdom	BNP Paribas	No	☒

II. Validation Team:

Validation Team			Role									
Full name	Affiliation TÜV Rheinland	Appointed for Sectoral Scopes (Technical Areas)	Team leader	Acting Team Leader	Local Expert	Team Member (Auditor)	Technical Expert	Acting Tech. Expert	Trainee Auditor	Technical Reviewer	Expert to TR	Trainee TR
Prof. Dr. Günter Schock	Germany	1.1, 1.2, 3.1, 4.5, 5.1, 11.1, 12.1, 13.1	X									
Dr. Jürgen Wiesmann	Germany	1.2				X						
Mr. Ralf Kober	Germany	1.2, 7.1, 13.1					X					
Dr. Lixin Li	China	1.1, 1.2, 2.1, 2.2, 3.1, 4.5								X		
Mr. You CUI	Germany	1.2, 13.1								X		
Mr. Kurt Seidel	Germany	1.1, 1.2, 2.1, 2.2, 3.1, 4.5, 13.1				X						

Validation Phases and Validation Status:

☒ Desk Review ☒ Follow up interviews ☒ Resolution of outstanding issues
☐ Corrective Actions / Clarifications Requested ☒ Full Approval and Submission for Registration
☐ Rejected

III. Validation Report:

Final approval	Released	Distribution
☒	**By: Mr. Praveen Urs**	☒ No distribution without permission from the Client or responsible organizational unit
Date: 2012-11-16		☐ Unrestricted distribution

Executive Summary – Validation Opinion

The validation team assigned by the DOE (TÜV Rheinland (China) Ltd.), here after called TRC, is been assigned by "BNP Paribas" to perform the validation of their project "Construction of Sumgayit Combined Cycle Power Plant". The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism. The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against CDM Validation and Verification Manual (Version 01.2), Kyoto Protocol requirements, CDM Executive Board/UNFCCC rules.
The report is based on the assessment of the project design document undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, site visit, stakeholder interviews, review of the applicable methodology and its underlying formulae and calculations.
Validation methodology and process
The validation has been performed as described in the VVM version 01.2 and constitutes the following steps:
- Publication of the PDD on the UNFCCC website (2007-12-01 to 2007-12-30)
- Desk review of the PDD and the relevant documents
- On-site assessment (2008-01-21 to 2008-01-22)
- Issuance of Validation Report

Validation criteria
The following CDM requirements have been considered:
- Article 12 of the Kyoto Protocol,
- Modalities and procedures for CDM (Marrakech Accords)
- Subsequent decisions by the COP/MOP and CDM Executive Board
- Host country criteria
- Criteria given to provide for consistent project operations, monitoring and reporting.

The host part is Azerbaijan and the Annex I country is the United Kingdom. Both parties fulfil the participation criteria and have approved and authorized the project and the project participants. The DNA from Azerbaijan confirms that the project assists in achieving sustainable development.

The project correctly applies the baseline and monitoring methodology AM0029, version 03, "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas".
The project results in reductions of CO2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.
The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards "Azerbaijan".

The monitoring plan provides for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design, and it is TRC's opinion that the project participants are able to implement the monitoring plan.

By constructing a combined cycle gas-Fired power plant that displaces less energy-efficient power plants the project activity will result in the reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change. The total emission reductions from the project are estimated to be 7,744,300 t of CO2e over a ten-year crediting period, averaging 774,430 t of CO2e annually. The emission reduction forecast has been checked, and it is deemed likely that the stated amount is achieved given the underlying assumptions do not alter.

The validation protocol describes a total of 100 findings which include:
38 Corrective Action Requests (CARs);

62 Clarification Requests (CLs);
No Forward Action Requests (FARs); and all findings have been closed satisfactorily.

TRC concludes that the CDM Project Activity "Construction of Sumgayit Combined Cycle Power Plant" in Azerbaijan, as described in the PDD (version 11, date 2012-11-09), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board.
The selected baseline and monitoring methodology (AM0029, Version 03) is applicable to the project and correctly applied. The TRC therefore requests the registration of the project as a CDM project activity with UNFCCC.

Prof. Dr. Günter Schock (Team Leader)

TÜV Rheinland Energie und Umwelt
Cologne, 2012-11-09

Mr. Praveen Urs (DOE Manager)

TÜV Rheinland (China) Ltd.
Beijing, 2012-11-16

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification Request
CH_4	Methane
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
GHG	Greenhouse Gases
GWP	Global Warming Potential
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LFGTE	Landfill Gas to Energy
LoA	Letter of Approval
MoC	Statement on Modalities for Communication with the Executive Board and the UNFCCC Secretariat
MP	Monitoring Plan
N_2O	Nitrous Oxide
NGO	Non-Governmental Organization
ODA	Official Development Assistence
PDD	Project Design Document
PIN	Project Idea Note
UNFCCC	United Nations Framework Convention on Climate Change

TABLE OF CONTENTS

1 INTRODUCTION:

The organization “BNP Paribas” has commissioned the DOE TÜV Rheinland (China) Ltd. to perform a validation of the CDM Project Activity “Construction of Sumgayit Combined Cycle Power Plant” in Azerbaijan (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. The term “UNFCCC criteria” refers to Article 12 of the Kyoto Protocol, the CDM modalities and procedures or the simplified modalities and procedures for small-scale CDM project activities (as applicable) and the subsequent decisions by the CDM Executive Board.

1.1 Objective:

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project’s compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope:

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the relevant criteria (see above) and decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the Validation and Verification Manual, version 1.2 employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

2 METHODOLOGY:

The validation consists of the following three phases:

I A desk review of the project design documents
II On-site visit and follow-up interviews with project stakeholders
III The resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

2.1 Desk Review of the Project Design Documentation:

The following table outlines the documentation reviewed during the validation:

Ref no.	Reference Document
/1/	PDD "Azerenerji Sumgayit Combined Cycle Power Plant Project", Version 1, 2007-11-28
/2/	PDD "Construction of Sumgayit Combined Cycle Power Plant", Version 11, 2012-11-09
/3/	International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info
/4/	CDM Validation and Verification Manual (Version 1.2), EB 55
/5/	Approved Baseline & Monitoring Methodology: AM0029 "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas", Version 3
/6/	Self Declaration of President of JSC "Azerenerji" for no ODA funding, dated 19 November 2008
/7/	Provisional Project Implementation Schedule SUMGAYIT of SIEMENS
/8/	Diverse CDM Seminar Attendance Certificates of Mr. Heydarov, JSC "Azerenerji" from 07 March 2003 until 31 October 2005
/9/	Footnote 1: SOCAR Natural Gas Forecast 2006
/10/	Footnote 2: SOCAR Natural Gas Forecast 2007
/11/	Footnote 3: SOCAR Natural Gas Forecasr 2008
/12/	Overview of Interest Rates of Azerbaijan from 12/2003 to May 2005 and relevant links
/13/	Country Analysis Azerbaijan (EIA, November 2007)
/14/	Azerbaijan Issues and Options Associated with Energy Sector Reform (Worldbank, March 31, 2005)
/15/	CDM Handbook for Azerbaijan (Fichtner / Ministry of Ecology and Natural Resources, September 2006)
/16/	IEA: Projected Costs for Generating Electricity (2005 Update)
/17/	IEA: WEO Power Generation Cost Assumptions (2008)
/18/	Enprima Feasibility Study Report SUMQAYIT 400-500 MW CCGT PLANT (28 April 2004)
/19/	Initial National Communication of Republic Azerbaijan on Climate Change, Phase 2 (2001)
/20/	CDM Executive Board: "*Tool to calculate the emission factor for an electricity system*", version 01, Annex 12 of EB35 and version 02, Annex 14 of EB 50.
/21/	CDM Executive Board: "The tool for the demonstration and assessment of additionality", version 06.1.0
/22/	Monthly Monitoring Worksheets Sumgayit CCGT Plant

/23/	IPCC: "*Guidelines for National Green House Gas Inventories*", 2006 *(Volume 5 - Waste)*
/24/	Agreement between ICF Consulting Ltd. And BNP Paribas of 16/17. 3. 2007
/25/	CDM Executive Board: *"Tool to calculate project emissions from electricity consumption*" version 01 (EB32, annex 10) and version 02 (EB50, annex 14)
/26/	Host Country Letter of Approval: Azerbaijan, DNA: Ministry of Ecology and Natural Resources of Republic of Azerbaijan, Reference Number 4 / 746 – 01, Date: 2008-04-01
/27/	Annex I party Letter or Approval: United Kingdom of Great Britain and Northern Ireland, Department for Environment, Food and Rural Affairs, BNPP/01/2008, Date: 2008-09-03
/28/	Modalities of Communication (MoC): Statement on the Modalities for Communication with the Executive Board and the UNFCCC Secretariat, signed on 2008-10-23. The MoC was updated on 2010-01-13, 2010-03-11 and 2012-10-15. The currently valid version is the one signed on 2012-10-15.
/29/	CDM Executive Board: "*Tool to calculate project or leakage CO2 emissions from fossil fuel combustion",* version 01 (EB 32, annex 9) and version 02 (EB41, annex 11)
/30/	EIA Handbook Azerbaijan of April 27, 1996
/31/	CDM Executive Board: "Guidelines on the Assessment of Investment Analysis" (version 5) (EB 62)
/32/	CDM Executive Board: "Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM" (version 04) (EB 62)
/33/	Performance Guarantee Sheets Sumgayit SIEMENS of 26/07/2006
/34/	Letter of JSC "Azerenerji" to Minister of Ecology and Natural Resources of Republic Azerbaijan of May 2005, requesting the Sumgayit CCGT Power Plant to be approved and registered as CDM project
/35/	Letter of Endorsement of Ministry of Ecology and Natural Resources Azerbaijan Republic, dated 21/10/2005 for Sumgayit CCGT Power Plant as CDM project
/36/	No Objection Agreement of 19 Ministries regarding the Construction of the Sumgayit Power Plant's Technical Project (Conclusion #6649 dated 17th May, 2006)
/37/	Diverse specifications for gas meters and electricity meters
/38/	GHG Assessment Handbook (Worldbank, Paper No. 064 of September 1998)
/39/	ICF International Base Analysis Excel Worksheets Sumgayit: Ex-ante Emission Reductions Spreadsheet, IRR analysis spreadsheets, Levelised cost calculation spreadsheet
/40/	Summary Report Local Stakeholder Meeting of 28 November 2005
/41/	On Site Assessment Plan TÜV Rheinland of 11/01/2008
/42/	Approval letter of the EIA, revised at the State Expertise Department, dated 27 February 2006
/43/	Clarification of AM0029 v1.1 applicability conditions (AM_CLA_0091)
/44/	Power of Attorney to Mr. Heydarov, dated 17/05/2008
/45/	Presentation of Siemens at PowerGenEurope 2009 "Siemens Gas Turbine Modernization & Upgrades"
/46/	Plant Load Factor Azerbaijan Power Plants 2004-2006
/47/	GUIDELINES FOR THE REPORTING AND VALIDATION OF PLANT LOAD FACTORS,Version 01 (EB 48, Annex 10)
/48/	NERC "Annex F: Perfomance Indexes and Equations" (01/2009)
/49/	NERC "Top-Down Analyses for Predicting Electric Generating Unit Availability" (1991)
/50/	Siemens AG "Siemens Combined Cycle Power Plants" (Brochure 2008)

/51/	Thermoflow Europe GmbH "Program: GT Pro & GT Master"(Brochure 2009)
/52/	Letter of Vice-President of JSC "Azerenerji", Mr. M. Askerov to Dr. A. Sankovski, ICF International with regard to the status of Azerbaijan electricity grid, dated 07/10/2009
/53/	Information on Azerbaijan Grid State for 2006, 2007, 2008 of Mr. Abdulkhalik Heydarov, Deputy Head of Technical Department, JSC "Azerenerji", dated 14 September 2009
/54/	"TACKLING INVESTMENT CHALLENGES IN POWER GENERATION IN IEA COUNTRIES", pages 76, table 2.1 (Source: IEA, 2006b)
/55/	Clarification of Mr. Abdulkhalik Heydarov, Deputy Head of Technical Department, JSC "Azerenerji", dated 19 January 2010 with regard to DNA of Azerbaijan
/56/	Statement of the President of JSC "Azerenerji" on No-Subsidy Use and on Hydro Power Capacity, dated 19 January 2010
/57/	Statement of the Vice-President of "JSC Azerenerji" on Applicability of Open-Cycle Technology, dated 19 January 2010
/58/	Information of the running performance of Sumgayit CCGT for the fourth quarter of 2009, dated 22 January 2010
/59/	Procurement minutes for Sumgayit CCGT of November 8, 2004
/60/	Statement of the Mr. Abdulkhalik Heydarov, Deputy Head of Technical Department, JSC "Azerenerji", dated 19 January 2010 with regard to Project Finance Allocation
/61/	Siemens: Performance Test Evaluation CCPP Sumgayit, dated 03/12/2008
/62/	Overview of World's LNG plants and terminals as of December 2009
/63/	Excerpt from SOCAR 2004 Annual Report that relates to natural gas production forecasts (the original version is in Azeri, hence English translation of the text on page 25 of the Annual Report has also been provided).
/63a/	Natural Gas in Azerbaijan in 2008 (Source: IEA)
/63b/	ESTIMATES OF AZERBAIJAN'S PROVED GAS RESERVES INCREASE (Source: http://www.azembassy.com/new/nl/2010/n10.html)
/63c/	"In 2010 Forecasts on Oil and Gas Production Confirmed in Azerbaijan", Article of A. Korotkov, dated January 29, 2010
/63d/	"Azerbaijan's natural gas reserves will be sufficient for 100 years - Minister of Industry and Energy", Azerbaijan, Baku, July 19 / Article Trend A.Akhundov/ (Source: *http://en.trend.az/capital/energy/1722703.html*)
/64a/	Mazut – Official Notification on Price in Azerbaijan (2003)
/64b/	Natural Gas - Official Notification on Price in Azerbaijan (2004)
/64c/	Excerpt of information of the Tariff Council of Azerbaijan (Source: http://www.tariffcouncil.gov.az)
/65/	Relationship between Crude Oil and Gas Prices – George Washington University Publication
/66/	Central Bank of Azerbaijan, Statistic Bulletin 01/2005 (http://www.cbar.az/assets/732/bulleten_01_2005.pdf)
/67a/	Dec. 13, 2010- Final Investment Analysis – 100 % Natural Gas + 100 % Mazut
/67b/	Dec. 13, 2010- Final Investment Analysis – 100 % Natural Gas
/68/	Response of Validation Team with Input of Project Proponents to Issues Raised from UNFCCC Completeness Check
/69/	Frans van Aart (KEMA)"Energy Efficiency in IPPC installations"
/70/	dti-File 30703: BEST PRACTICE BROCHURE "Advanced Power Plant Using High Efficiency Boiler/Turbine" (2006)
/71/	Guidelines for Estimating Asian Development Bank (ADB) Investments in Renewable Energy and Energy Efficiency Projects
/72/	Quote to Azerenerji for rehabilitation of AzDRES power plant, replacement of dual fuel, gas and heavy fuel oil units of 300 MW each (confidential)
/73/	World Bank Publication on Corporate Taxes in Azerbaijan
/74/	2005 EIA projections table 12 for mazut using residual fuel oil for electricity
/75/	2005 EIA projections table 13 for natural gas for electricity

/76/	Final Investment Analysis Spreadsheet, 26/09/2012
/77/	CDM-PDD - Project Design Document form, Version 03 http://cdm.unfccc.int/Reference/PDDs_Forms/index.html GUIDELINES FOR COMPLETING THE PROJECT DESIGN DOCUMENT (CDM-PDD) AND THE PROPOSED NEW BASELINE AND MONITORING METHODOLOGIES (CDM-NM), Version 07 http://cdm.unfccc.int/Reference/Guidclarif/index.html
/78/	Guidelines on Common Practice, version 2.0

2.2 Follow-up Interviews with Project Stakeholders

TÜV Rheinland validation team carried out an on-site visit from 2008-01-21 to 2008-01-22 and performed interviews with the project representatives and stakeholders. The site visit was conducted to validate the accuracy and completeness of the project description as specified under webhosted PDD. During the site visit, the validation team inspected the site and reviewed the available project activity designs, feasibility studies, environmental assessments and monitoring arrangements. The validation team conducted a documentation check to assess the history of the project activity, the stakeholder consultation process and the relevant legal, economic and political framework situation.

	Date	Name	Organization	Topic
/a/	2008-01-21	Mr. Abdulkhalik Heydarov	Deputy Head of Technical Department, JSC "Azerenerji"	Power Plant History, Project Background, Environmental Impacts Assessment, Stakeholder Consultation Process, Azerbaijan's clean development mechanism and criteria for sustainable development, Similar project activities, Permits Environmental impact assessment, Feasibility Study Report, CDM project approval status
/b/	2008-01-21	Oktay Abbasov	Azerbaijan Republic State Agency on Standardization Metrology and Patents Director of the National Metrological Centre	Monitoring equipment, calibration requirements
/c/	2008-01-21	Rafig B. Abdullayev	Azerbaijan Republic Industry and Energy Ministry State Energy Control The Deputy of Chief – The Deputy of Main State Inspector	Natural gas supply Energy policy, Regulatory framework for Power plants in Azerbaijan Laws and regulations in Azerbaijan, Monitoring equipment,

				calibration requirements
/d/	2008-01-22	Machir Cheirhabarov	JSC "Azerenerji" Chief Engineer Sumgayit Power Plant	Project technology, operation, Maintenance and monitoring plan, Monitoring devices and procedures, Natural Gas Supply Pipeline Net
/e/	2008-01-22	Elchin Mammadow	JSC "Azerenerji" Director Sumgayit Power Plant	Project implementation status, Project approval status (incl. EIA approval)
/f/	07/2008 until 12/2010	Kunal Sharma	ICF International	Common Practice Analysis, Investment Analysis, Applicability of selected Methodology, Baseline determination, Emission reductions, Project additionality, Project monitoring and management plan Further Issues for Clarification from PDD and List of CARs and CLs
/g/	2008-01-21 until 2008-01-23 02/2008	Natalia Gorina	ICF International	Feasibility Study Report, Project equipment technical specifications, Baseline calculations, Project emissions, Consideration of CDM in early steps of the project, Monitoring plan, Project's additionality as mandated in Article 12 of the Kyoto Protocol, Technological, institutional, legal/policy, investment, market, environmental and/or other barriers to investment in the project, Environmental and social effects by implementation of the project, Further Issues for Clarification from PDD and List of CARs and CLs

2.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need be clarified prior to TÜV Rheinland's positive conclusion on the project design. In order to ensure

transparency a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet CDM requirements;
- It ensures a transparent validation process where the validation team will document how a particular requirement has been validated and the result of the validation.
- It ensures that the issues are accurately identified, formulated, discussed and concluded in the validation report.
- It ensures the determination of achieving credible emission reductions from the project activity.

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for this project is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of CDM criteria or where a risk to the fulfilment of project objectives is identified. Corrective action requests (CAR) are issued, where:

- Mistakes have been made with a direct influence the ability of the project activity to achieve on project results like real, measurable, verifiable and additional emission reductions;
- CDM and/or methodology specific requirements have not been met; or
- There is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

Validation Protocol Table 1: Validation requirements				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various UNFCCC requirements as specified in the VVM are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the VVM.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)			
Draft report clarifications and corrective action requests	**Ref. to checklist question in table 2**	**Summary of project owner response**	**Validation conclusion**
If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Table 3: List of forward action requests (FARs)			
FAR number	**Reference**	**Summary of project owner response**	**Validation team conclusion**
Forward action request (FAR) to be raised during validation to highlight issues related To project implementation that requires review during the first verification of the project activity. FARs Shall not relate to the CDM requirements for registration.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1. Validation protocol tables

2.4 Internal Quality Control

The final validation report underwent a technical review by a qualified independent reviewer before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification that meets the criteria of EB guidelines for qualification.

2.5 Validation Team

Validation Team			Type of Involvement						
Full name	**Affiliation TÜV Rheinland**	**Appointed for Sectoral Scopes (Technical Areas)**	Supervising the work	Desk review	Site Visit + Interview	Report and protocol Writing	Technical Expert Input	Reporting Support	Technical Reviewer
Prof. Dr. Günter Schock	Germany	1.1, 1.2, 3.1, 4.5, 5.1, 11.1, 12.1, 13.1	X						
Dr. Jürgen Wiesmann	Germany	1.2				X			
Mr. Ralf Kober	Germany	1.2, 7.1, 13.1					X		
Dr. Lixin Li	China	1.1, 1.2, 2.1, 2.2, 3.1, 4.5							X
Mr. You CUI	Germany	1.2, 13.1							X
Mr. Kurt Seidel	Germany	1.1, 1.2, 2.1, 2.2, 3.1, 4.5, 13.1		X	X	X			

The Certificates of Competency of each individual validation team member are included in Appendix B to this report.

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Approval and Participation

3.1.1 Letter of Approval:

The host Party for this project is the Republic of Azerbaijan. Azerbaijan ratified the Kyoto protocol on 28th of September 2000 and has appointed a DNA. The host country Letter of Approval (LoA) with the reference number No. 4/746/01 was issued on 01/04/2008. The investor country LoA from Annex I Party the United Kingdom of Great Britain and Northern Ireland with the reference number No. BNPP/01/2008 was issued on 03/09/2008. The below table summarizes the issues with regard to the project participants and parties involved:

Project participants	JSC "Azerenerji"	BNP Paribas
Parties involved	Azerbaijan (Host country)	United Kingdom
APPROVAL		
LoA received	Yes	Yes
Date of LoA	2008-04-01	2008-09-03
Reference to document	Ref. No: 4/746/01 See also Section 3.1 of this report: /26/	Ref. No: BNPP/01/2008 See Section 3.1 of this report: /27/
LoA received from	PP	PP
Validation of authenticity	Contact with DNA during on-site assessment; LoA has been sent as pdf-file via mail from PP to the audit team.	LoA has been sent as pdf-file via mail from PP to the audit team. The authenticity check of the submitted LoA has been done by comparing with the reference project list published at the UK DNA (http://www.environment-agency.gov.uk/business/topics/pollution/129666.aspx)
Validity of LoA	Valid	Valid
PARTICIPATION		
Party is party to Kyoto Protocol	Yes Date of ratification: 28/09/2000	Yes Date of ratification: 31/05/2002
Voluntary participation	Yes	Yes

Diversion of official development aid towards host country	No	No
Project contribution to SD	Yes	n.a.

The validation team confirms that the information related to the letter of approval as mentioned in the above table is authentic. TÜV Rheinland's validation team received these letters from the project participants directly and considers the provided letters as authentic. The authenticity check of the submitted LoAs has been done by direct contact with the Azerbaijan DNA during the site visit and by checking the list of LoAs issued by the UK (http://www.environment-agency.gov.uk/business/topics/pollution/129666.aspx). Thus TÜV Rheinland concludes that the submitted LoAs are authentic.

Both LoAs have been issued by the respective Party's DNA, Ministry of Ecology and Natural Resources of Republic of Azerbaijan by the Minister Mr. Bagirov himself and the Head of International Climate Change Division, Mr. Chris Dodwell of the DNA of United Kingdom of Great Britain and Northern Ireland, which was meanwhile transferred from the Department of Environment Food and Rural Affairs (DEFRA) to the Department of Energy and Climate Change.

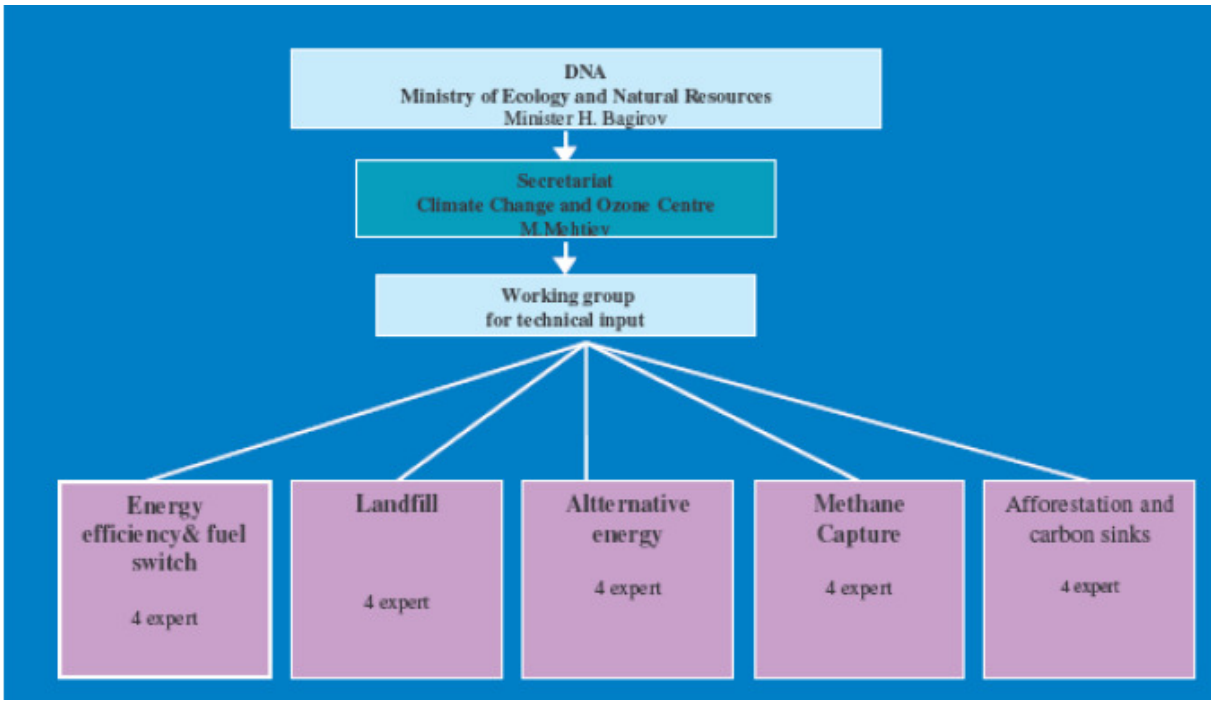

Figure: Structure of the DNA of Azerbaijan, established in 2005

Both letters also indicate that each participating Party is a Party to the Kyoto Protocol, and that the participation in the project is voluntary.

TÜV Rheinland confirms that the LoA of the DNA of UK, the LoA of the DNA of Azerbaijan as well as the MoC apply the precise proposed CDM project activity title in line with the title in the final "Construction of Sumgayit Combined Cycle Power Plant ", whereas the first version of PDD, which was published on UNFCCC website for global stakeholder consultation from 01 Dec 07 - 30 Dec 07 had the project title "Azerenerji Sumgayit Combined Cycle Power Plant Project", which was not consistent with the LoAs and MoC.

Anyhow, as there is no other power project of this scale in Sumgayit, it is obvious, that "Construction of Sumgayit Combined Cycle Power Plant" is 100 % identical with "Azerenerji Sumgayit Combined Cycle Power Plant Project".

The project proponent has issued a new MoC /28/, dated 15/10/2012 and the final PDD /2/, dated 09/11/2012 with the revised uniform project title.

The LoA of Azerbaijan authorizes the project participant JSC "Azerenerji" and confirms that the proposed CDM project activity contributes to the sustainable development in the host country Azerbaijan. The LoA of UK also authorizes the project participant BNP Paribas and confirms that the proposed CDM project activity contributes to the sustainable development in the host country Azerbaijan.

Based on the information given in these letters, TÜV Rheinland's validation team considers the approval of the DNA of UK and the approval of the DNA of Azerbaijan as unconditional.

Hence TÜV Rheinland considers the requirements of the VVM (§§ 45-48) to be complied with, as there is no doubt that both LoAs represent the same project activity, namely the Sumgayit Combined Cycle Power Plant, operated by JSC "Azerenerji".
The LoAs do not specify a version number of the PDD or validation report, but it is self-explanatory that they refer to documents which were submitted prior to the issuance of these LoAs.

The validation did not reveal any information indicating that the project can be seen as a diversion of official development assistance (ODA) funding towards Azerbaijan. PPs submitted to the validation team a self-declaration letter, addressed to UNFCCC CDM EB, certifying that the project is financed via debt funding and self-financing /6/. This was confirmed during the on-site visit and by additional statements of the project proponent /54/, /60/.

3.1.2 Modalities of Communications:

PPs have submitted an MoC form to the validation team. They have also completed Annex 1 of the MoC form. The title of the project activity is "Construction of Sumgayit Combined Cycle Power Plant", which consistent with section A.1 of the PDD. The names of the PPs are given as "JSC Azerenerji" and "BNP Paribas", which is consistent with section A.3 and Annex 1 of the PDD as well as the two LOAs. The document is clearly dated on 15/10/2012. PPs have used the latest form F-CDM-MOC (version 1.4). No modifications have been made to the form F-CDM-MOC or to Annex 1 of the PDD.

The focal point entity scope of authority is clearly and correctly indicated. JSC Azerenerji and BNP Paribas have been designated as joint focal points for all scopes. The contact details for the focal point entities are clearly stated. The Statement of Agreement has been signed by an authorized signatory for each PP. The signatures match those in Annex 1 of the MoC form. The contact details for two authorized signatories for each PP have been entered in Annex 1 of the MoC form.

3.2 Project Design Document

As result of an in-depth review of the submitted documents TÜV Rheinland's validation team (TÜV Rheinland) is able to confirm that the PDD is compliant with the relevant PDD-form and guidance by UNFCCC. The most recent version of the PDD form (version 3) /77/ was used. TÜV Rheinland considers that the guidelines for the completion of the PDD in their most recent version (version 7) /77/ have been correctly followed. Relevant information has provided by the participants in the applying PDD sections.

Completeness was assessed through an additional meeting on 23rd and 24th of October 2009. TÜV Rheinland confirms that the included information in the final PDD sufficiently covers all relevant items, is accurate and provides the reader with a clear understanding of the nature of the project activity.

The Project Design Document is based on the currently valid PDD template and is completed in accordance with the applicable guidance document /77/.

3.3 Project Description

The project is a high efficient base-load Natural Gas (NG) Combined-Cycle Gas Turbine (CCGT) power plant with an efficiency of 52.71%. The project will use natural gas resources from Azerbaijan, which are sufficiently available according to the obtained information. The project has a capacity of 525 MW with annual output of 3,543 GWh. Generated electricity is transmitted to Azerbaijan National Electricity Grid, consequently displacing power generation from fossil energy based power plants with lower efficiency, and mitigating the carbon emissions of the energy generation in Azerbaijan. The project is expected to bring social, environmental and economic benefits, thus contributing to the sustainable development objectives of the Azerbaijan Republic government.

The following description of the project as per the PDD could be verified during the on-site visit in January 2008:
The proposed project activity applies large-scale gas-steam combined cycle power generation technology provided by SIEMENS. The project involves two sets of gas-steam combined cycle power generation units with each unit including a gas turbine of type SIEMENS V 94.2 each 159.4MW capacity, heat recovery steam generator with a capacity of 187.6 MW, steam turbine and generator. The technology utilized in this project has been transferred to the project owner, and intensive training has been provided by the main equipment supplier and EPC contractor SIEMENS.

The project activity is expected to deliver 3,543 GWh of energy to the national power grid per annum at a plant load factor of 80% for the fixed crediting period of ten years, resulting in emission reductions of 774,430 t CO2e annually. It is confirmed that the proposed project activity fulfils Azerbaijan Republic's domestic regulations and policy of promoting sustainable development. The planned load factor could be further substantiated /46/, /52/,/53/ upon request of the validation team.

The project is in line with specific CDM requirements and the confirmation thereof by the DNA of Azerbaijan was issued on 21 October 2005 (Letter of Endorsement) and on 1 April 2008 (Letter of Approval).

The project has obtained the permits for construction and operation, after the technical specifications and the detailed planning documents have been submitted. This has been confirmed during the on-site assessment.

The project will lead to sustainable development through reduced greenhouse gas emissions and employment opportunities during construction and operation. The transfer of technology and specialized operations will be needed for the operation of the advanced multi-shaft CCGT technology of SIEMENS which is being imported from Germany. This will have a positive impact on employment and building capacity skills. The project starting date is 23rd of May 2005, i.e. the date of the engineering, procurement, construction (EPC) contract between AzerEnerji and Siemens. This is evidenced by the relevant documentation, which could be assessed and evaluated during the on-site assessment.

Starting date of project	Expected project operational lifetime	Crediting period

2005-05-23	25 years	2012-12-01 – 2022-11-30

The complete chronology of events was attached in Annex 5 of the PDD.

A fixed ten-year crediting period was selected for the CDM project activity. The crediting period will start on the date when the complete request for registration is submitted to UNFCCC. This is expected for 2012-12-01. The original planned operation starting date stated in the first draft PDD /1/ was in March 2008, which was corrected due to delay of the project realisation to December 2008. The performance test took place on 03/12/2008.

The technology constitutes current good practice and is not likely to be replaced during the crediting period. The estimated amount of emission reductions is 7,744,300 tonnes CO_{2e} over the fixed ten-years crediting period, which equals annual average emission reductions of 774,430 tCO_{2e}. This project is expected to have an operational lifetime of 25 years.

Herewith, the Validation Team summarizes major changes between webhosted PDD /1/ and the final version of PDD /2/ for submission as follows:

Subject	Webhosted PDD	Correction to webhosted PDD in the final PDD submission for registration with DOE assessment and reason of acceptance.
PDD (project title / participants involved/ project location /project technology etc)	Project title: Azerenerji Sumgayit Combined Cycle Power Plant Project Project Participants: • AzerEnerji JSC (Azerbaijan)	Project title: Construction of Sumgayit Combined Cycle Power Plant in accordance with LoA and MoC Project Participants: • JSC AzerEnerji (Azerbaijan) • BNP Paribas (United Kingdom) In accordance with LoA.
Methodologies and tools applied (scope and version numbers)	AM0029 (version 2)	AM0029 (version 3). This is the latest available version.
CER calculations (formula applied/ amount of emission reduction)	Annual Emission Reductions: 712,181 t CO2e / year Baseline Emission Factor Option 1, 0.6144 t CO2 / MWh	Annual Emission Reductions: 774,430 t CO2e / year The validation team has replicated the emission reduction calculation and found it correct. Baseline Emission Factor Option 1, 0.6022 t CO2 / MWh
Additionality: (Benchmark / input values/analysis type/project start date/IRR or NPV values etc.)	Project Start Date 09/09/2005 Project IRR on project cash flow	Project Start Date 23/05/2005 Project IRR on differential cash flow (project cash flow minus baseline cash flow). This is correct, since AzerEnerji as the national power generation company would be required to make an investment in the baseline technology.
Monitoring	N.A.	N.A.

(parameters / frequency)		
Crediting period (type / start date)	Start Date: 01/03/2008	Start Date: 01/12/2012. This is the earliest date when a complete Request for Registration can be expected.
Please refer to Appendix A of this report for details of each change between webhosted PDD and the final PDD for submission. The Validation Team has carried out the validation process based on the Webhosted PDD and raised CARs/CLs against the project by issuing the validation protocol. With the updated information and corrections done on final PDD, the PP has addressed all the CARs /CLs that were raised by the Validation Team. It is concluded that the Validation Team has reviewed the project in line with the VVM (version 01.2) and all the evidence, corrections, justifications and updating done on the final PDD with respect to CARs /CLs raised are accepted and closed by the Validation Team, issuing the positive validation opinion for project registration.		

TÜV Rheinland validation team considers the project description of the project contained in the PDD to be complete and accurate. The PDD complies with the relevant methodology, tools, forms and guidance at the time of PDD submission for registration.

3.4 Baseline Determination

3.4.1 Applicability of the selected methodology to the project activity

Approved baseline and monitoring methodology AM0029 "Baseline methodology for grid-connected electricity generating plants using natural gas" (version 03), which is currently the latest one.

The validation team determined the applicability of methodology AM0029 (version 03) as follows. The project's compliance with the applicability criteria of the methodology AM0029 (version 03) as documented in the PDD part B and annex 3 is evaluated in detail under the validation protocol in Appendix A to this report based on the webhosted PDD.

Applicability criteria of the methodology AM0029, Version 03	Criteria fulfilled	Determination by the validation team
1 The project activity is the construction and operation of a new natural gas fired grid-connected electricity generation plant. Natural gas should be the primary fuel. Small amounts of other start-up or auxiliary fuels can be used, but can comprise no more than 1% of total fuel use, on energy basis.	☒ Yes ☐ No	The Sumgayit power plant uses natural gas as fuel. It was confirmed that no auxiliary fuels will be used.
2 The geographical/physical boundaries of the baseline grid can be clearly identified and information pertaining to the grid and estimating baseline emissions is publicly available;	☒ Yes ☐ No	The electricity generated will be supplied to the national grid of Azerbaijan, of which the geographic and system boundaries can be clearly defined.
3 Natural gas is sufficiently available in the region or country, e.g. future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in the	☒ Yes ☐ No	Natural gas is sufficiently available in the region. Azerbaijan produces an excess supply of natural gas. Moreover, Azerbaijan has access to the Russian natural gas pipeline

Applicability criteria of the methodology AM0029, Version 03	Criteria fulfilled	Determination by the validation team
project activity.		system.

As per the Meth Panel's clarification on applicability criteria of AM0029 v1.1 (AM_CLA_0091) as indicated in the footnote to the applicability condition in question, the third condition is required to ensure the project activity does not displace natural gas that would otherwise be used elsewhere in an economy of the country or region, thus leading to possible leakage. This is also applicable for the applied version 3 of AM0029.

Notwithstanding where the natural gas is imported from, this applicability condition is to be implemented by demonstrating, through monitoring, that the full demand of natural gas by the project activity is dedicatedly met with imported gas, and where dedicated imports is not the case, the monitoring should show that satisfying the project activity's demand for natural gas will not lead to a shortages in supplies of the gas to other projects within Azerbaijan. In other words, AM0029 allows demonstrating that the project activity will not constrain future natural gas capacity additions by demonstrating that the full demand of the natural gas by the proposed project is dedicatedly met with imported gas. The validation team was able to verify that the project meets these criteria and that the consumption of natural gas by the proposed project will not constrain future natural gas capacity additions as required by AM0029. This is supported by an analysis of the natural gas supply in the Azerbaijan Republic and further background investigations and follow-up interviews.

The fulfilment of the third applicability condition of the methodology AM00029, Version 3 with regard to the sufficient availability of natural gas has been assessed as part of the validation. This can be confirmed with information provided in the 2004 Annual Report of State Oil Company of Azerbaijan Republic (SOCAR). It was expected in 2004 that the natural gas production would more than triple by 2007/2008, enough to convert Azerbaijan from a net natural gas importing company to a net natural gas exporting company. Suitable references to this source has been made on page 8 and 9 of the CDM PDD.

This main reference (SOCAR Annual Report 2004) was available at the time of investment decision making in May 2005, see /63/.

All the additional sources have been added to the validation report under the following document numbers:

/63/ Excerpt from SOCAR 2004 Annual Report that relates to natural gas production forecasts (the original version is in Azeri, hence English translation of the text on page 25 of the Annual Report has also been provided. This source is considered as the main source available at time of starting date.

The following sources further substantiate the anticipated trend and re-confirm the forecast figures with actual figures:
/63a/ Natural Gas in Azerbaijan in 2008 (Source: IEA)
/63b/ ESTIMATES OF AZERBAIJAN'S PROVED GAS RESERVES INCREASE
(Source: http://www.azembassy.com/new/nl/2010/n10.html)
/63c/ In 2010 Forecasts on Oil and Gas Production Confirmed in Azerbaijan (Source: Article of A. Korotkov, dated January 29, 2010, see: http://www.theazeritimes.com/site/fuel-energy/3397
/63d/ "Azerbaijan's natural gas reserves will be sufficient for 100 years - Minister of Industry and Energy", Azerbaijan, Baku, July 19 / Article Trend A.Akhundov/ (Source: *http://en.trend.az/capital/energy/1722703.html)*

The annual natural gas consumption of the project is 713.6 million m^3, which is rather small compared with the total amount of natural gas available in Azerbaijan Republic of 11,287.00 million m^3(2008), which is around 6.3 %. This has been confirmed by the feasibility study report of the project /11/ and the actual figures of SOCAR /9/, /10/,/11/.

For the above reason, except the leakage addressed by the baseline methodology, the consumption of the natural gas will not lead to any leakage effects.

3.4.2 Project Boundary:

The geographical and physical project boundary of the project activity was determined by the validation team during the on-site assessment. The validation team has confirmed that the project location is correctly documented in the PDD. The sources and sinks of greenhouse gas identified in the PDD are deemed to be appropriate. The decimal coordinates (Latitude: 40.6034 N, Longitude: 49.6332 E) were confirmed by the validation team through Google Earth.

Emission sources and gases included in the project boundary are:

Emissions	GHGs involved	Description
Baseline emissions	CO_2	The major source of emissions in the baseline, from power generation in baseline.
Project emissions	CO_2	Emissions from on-site fuel consumption at the Sumgayit CCGT plant.
Leakage emissions	None	Two sources of leakage emission have to be considered under the methodology. (1) There is no leakage associated with the combustion of LNG, because no LNG is used at that Sumgayit power plant. (2) Leakage from fugitive methane emissions has been considered. The leakage emissions would be associated with fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of natural gas used in the project plant and fossil fuels used in the grid in the absence of the project activity. PPs have shown that such leakage emissions can reliably be expected to be negative. According to AM0029 (version 03) leakage emissions can therefore be assumed to be zero.

According to AM0029, leakage may result from fuel extraction, processing, liquefaction, transportation, regasification and distribution of fossil fuels outside of the project boundary. This includes mainly fugitive CH4 emissions and CO2 emissions from associated fuel combustion and flaring. For this project, leakage emission source was considered fugitive CH4 emissions associated with fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of natural gas used in the project plant and fossil fuels used in the grid in the absence of the project activity.

The value of leakage emissions due to fugitive upstream CH4 emissions results to be negative, because leakage emissions in the baseline scenario are higher than leakage emissions in the project

scenario. Therefore the net leakage is negative, and the leakage emissions are omitted for the purpose of calculation of Emissions Reductions and are thus be assumed zero as per AM0029.

The used approach is in the opinion of the validator a conservative approach avoiding an overestimation of the achievable emission reduction in the course of the crediting period.

In summary, the project boundary was correctly identified in accordance with the methodology AM0029 (version 03). All greenhouse gas emissions occurring within the proposed project activity boundary as a result of the implementation of the proposed CDM project activity have been appropriately addressed in the PDD.

The identified project boundary and selected sources of emissions are justified for the project activity. The validation of the project activity did not reveal other greenhouse gas emissions occurring within the proposed CDM project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 1% of the overall expected average annual emission reduction, with respect to the methodology applied.

3.4.3 Baseline Identification:

As per the applied methodology AM0029 (version 03), the baseline is established by first identifying all plausible baseline scenarios and then identifying the economically most attractive baseline scenario alternative. The validation team confirms that the proposed project activity meets the above requirement. Therefore, the baseline scenario identified in the PDD, i.e. power generation using condensing steam turbine technology running on heavy fuel oil (mazut) is applicable to the proposed project activity and in line with AM0029 (version 03). The validation took cognizance of § 105 of VVM (version 01.2) and confirms that all credible alternatives have been identified in the PDD and that the most realistic alternative has been chosen.

The PDD has identified all plausible baseline scenarios in compliance with the baseline methodology AM0029, including:
Option 1 – The project activity not implemented as a CDM project activity
Option 2 – Power generation using condensing steam turbine technology running on heavy fuel oil (mazut)
Option 3 – Power generation using condensing steam turbine technology running on natural gas

PPs have identified the economically most attractive baseline alternative with an investment analysis. In particular they have shown that the project without CDM revenue is not the baseline alternative. This conclusion is validated in section 3.5 of this report, with special attention to the input values, the benchmark selection and the choice of the financial parameter.

PPs have further demonstrated that option 2 (with mazut as fuel) is more financially attractive than option 3 (with natural gas as fuel). This is the case since the fuel cost for each year are cheaper leading to a lower NPV, while all other costs can be expected to be very similar.

All the relative references have been verified by the validation team and the above justification is deemed reasonable, as it is based on the actual power plant fleet in the Republic of Azerbaijan.

In conclusion, the construction of a Power Plant using condensing steam technology running on mazut (Option 2) of 525 MW capacity is identified as the baseline scenario.

With regard to article 86 of the VVM, TÜV Rheinland confirms that:

- All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;

- All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD as per Annex 3, EB meeting 22;
- The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.4.4 GHG Emission Reductions:

All assumptions made for estimating GHG are listed in the PDD	☒ Yes ☐ No	See section B.6., B.7. and Annex 3 of PDD /2/.
All data used by project participants are listed in the PDD	☒ Yes ☐ No	See section B.4., B.6. and Annex 3 and 4 of PDD /2/
Their references and sources are also listed in the PDD	☒ Yes ☐ No	See section B.4., B.6. and Annex 3 and 4 of PDD /2/.
Formulas, parameters, values are complete, accurate, transparent and conservative	☒ Yes ☐ No	See section B.4., B.6. and Annex 3 and 4 of PDD /2/
All the references and documents used are correctly quoted and conservatively interpreted in the PDD	☒ Yes ☐ No	The data and parameters available prior to project implementation and which have to be monitored during project lifecycle are correctly quoted and will be conservatively applied as could be demonstrated in the first assumptions of the PDD.
Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions	☒ Yes ☐ No	See section B.4., B.6. and Annex 3 and 4 of PDD. /2/. Relevant procedures have been established for the project operation /22/ and the correct monitoring /2/, especially section B.7 and Annex 4 /.
All the emissions of baseline emissions can be replicated using information provided in the PDD	☒ Yes ☐ No	See section B.4., B.6. and Annex 3 of PDD /2/

TÜV Rheinland has assessed the calculations of project emissions, baseline emissions and leakage and emission reductions. Corresponding calculations were carried out based on calculation spreadsheets. The parameters and equations presented in the PDD and further documentation have been compared with the information and requirements presented in the methodology and respective tools.

The equation comparison has been made explicitly following all the formulas presented in the calculation files. The calculation of the baseline emissions followed the procedures described in the methodology AM0029, Version 03.

Finally, the data, rationales assumptions, justifications and documentation provided have been checked using local knowledge and sectoral expertise, the same has been crosschecked by the local audit team with available information in the internet and research of the to be utilized biomass residues and the technology that will be installed in the project activity.

According to AM0029 if option 1 (BM) or option 2 (CM) are selected to be the emission factor in the baseline, they will be monitored ex post during the fixed crediting period annually. It was confirmed, that Azerenerji will be in charge of recalculating the build margin using data on power plants built in Azerbaijan, and that ICF International, the Carbon Consultant that prepared the PDD will assist Azerenerji during the first monitoring period and will train Azerenerji staff on proper application of the "Tool to calculate the emission factor for an electricity system". According to AM0029 there is another option possible, namely option 3: The emission factor of the technology (and fuel) identified as the most likely baseline scenario. The methodology AM0029 requires that the lowest emission factor among three options is used (build margin, combined margin and the emission factor of the technology chosen in the baseline scenario).

The following are the results of calculations, which have been assessed and found correct:
Option 1. The build margin results to be equal to 0.6022 t CO2/MWh.
Option 2. The combined margin results to be equal to 0.6078 t CO_2/MWh
Option 3. The emission factor of the condensing steam turbine technology, running on heavy fuel oil (mazut), results to be equal to 0.6324 t CO2/MWh
Thus, the option that provides the **lowest result of the three Options** is **Option 1**, the build margin. The baseline emission factor therefore equals to **0.6022 t CO_2/MWh**, which is in line with the applied baseline and monitoring methodology AM0029.

Therefore, baseline emissions are calculated as
BEy = EGPJ,y * EFBM,y = 3,552,000 MWh * 0.6022 tCO2/MWh = 2,138,896 t CO2/year.

For the calculation of project emissions, the NCV of the natural gas, 34.68 GJ/m^3, is from calorific value measurements provided by the suppliers of natural gas. Default values from the IPCC 2006 Guidelines at the lower end of the uncertainty range have been used for the emission factor of natural gas (54.3 t CO2 / TJ) and for the oxidation factor of natural gas (1.000). These input values result in a project emission factor of 0.3708 t CO2/MWh and total project emissions of 1,364,466 t CO2 per year.

PE,y = 3,552,000 MWh * 0.3708 tCO2/MWh = 1,364,466 tCO2/year.

According to section 3.4.2 of this report, leakage emissions should be assumed to be equal to zero and need not be considered.

Emission reductions
ERy = *BE,y* - *PE,y*- *LE,y*= 2,138,896 tCO2/year – 1,364,466 tCO2/year = 774,430 tCO2/year.

Based on the calculations shown in the PDD and spreadsheet, the project will generate emissions reductions of 7,744,300 tCO2e over its fixed 10 year crediting period starting from date of registration.

3.5 Additionality

3.5.1 CDM consideration:

The validation team confirmed the below history of the CDM project activity by reviewing the listed documents.

Table: CHRONOLOGY OF EVENTS

Ítem	Event / Evidence for CDM Consideration	Date	Document	Conclusion Validation team
01	Certificate of Completion of CDM	March 07,	Training Certificate	CDM Awareness

	Training by Mr. Abdulkhalik Heydarov	2003		OK
02	Certificate of Completion of CDM Training by Mr. Abdulkhalik Heydarov	March 19, 2003	Training Certificate	CDM Awareness OK
03	Certificate of Completion of CDM Training by Mr. Abdulkhalik Heydarov	June 18-20, 2003	Training Certificate	CDM Awareness OK
04	Enprima Consulting Report (Technical Feasibility Report) that first recommended CCGT plant being set up at Sumgayit and suggested that CDM benefit be availed for it to bypass high cost of project financing	April 28, 2004	Report submitted by Enprima	CDM Awareness of the Sumgayit Power Plant OK
05	Power of Attorney being given to Mr. Abdulkhalik Heydarov for being the legally responsible entity to undertake CDM for emission reduction eligible power plants in Azerbaijan	May 17, 2004	Power of Attorney singed by the President of AzerEnerji and endorsed by the top management of AzerEnerji	CDM Seriousness for Renewable, Energy Efficiency and CCGT type projects in Azerbaijan (Sumgayit being the first plant to be affected) OK
06	Tender document announced for technology providers for the Sumgayit Project	May 31 2004	Tender announcement date by AzerEnerji	Project implementation OK
07	Certificate of Completion of CDM Training by Mr. Abdulkhalik Heydarov	July 2-6, 2004	Training Certificate	CDM Awareness Also, meets the requirement of EB 41, Annex 46 OK
08	First PIN being prepared on Sumgayit CCGT project	December 2004	PIN Document	CDM Seriousness OK
09	Around this time AzerEnerji was in touch with the Danish government for several climate change initiative and Danish government appointed Jorgen Boldt (as Consultant) to review the Sumgayit CCGT project – Jorgen Boldt sent his comments through FAX and since AzerEnerji was satisfied their analysis they decided not to work with Jorgen Boldt	January 21, 2005	FAX sent by Jorgen Boldt	CDM Seriousness and concrete actions Also, meets the requirement of EB 41, Annex 46 OK
10	First communication by the President of AzerEnerji to the DNA of Azerbaijan to apply for the host nation approval of the Sumgayit CDM project. Please note that Azerbaijan doesn't have a formal board of directors, and the President of Azerbaijan is the key decision maker in Azerbaijan. Thus, the letter of communication from the President serves as the most important document and as per the "Guidance on the Demonstration and Assessment of Prior Consideration of	May 02, 2005		Meets the requirement for prior CDM consideration as per EB 41, Annex 46. Serves the requirement of both Para 5.a. and 5.b OK

	the CDM"; helps meet the requirement as laid out in paragraph 5.a. and 5.b. for CDM projects with start date prior to August 02, 2008			
11	Loan agreement between AzerEnerji and the consortium of Banks (BNPP, Societe Generale and Bayerische Landesbank)	May 20, 2005	Loan agreement	PROJECT OK
12	Contract between AzerEerji and Siemens to start work on the Sumgayit CCGT plant	May 23, 2005	Contract Document	PROJECT OK
13	Inauguration of the project site by the President of Azerbaijan	August 12, 2005	---	PROJECT OK
14	Handover of the project site by AzerEnerji to Siemens for starting the construction work	September 23, 2005	Though the contract between Siemens and AzerEnerji was signed in May 2005; the site was transferred by AzerEnerji to Siemens only in Sept 2005; hence the expected date of transfer of the plant to AzerEnerji was September 2008; however this is now likely to happen in December 2008, see S.N. 23	PROJECT OK
15	Stakeholder Consultation (for CDM) - All the participants were given a copy of PIN of the Sumgayit CDM Project.	November 28, 2005	Minutes of meeting of the stakeholder consultation meeting	CDM Stakeholder consultation meeting OK
16	AzerEnerji around this time was in talks was in talk with KfW bank for CDM for Sumgayit. (AzerEnerji was already working with KfW bank for other debt financing projects in Azerbaijan for their long distance transmission line project) – Consultants from ECS Gmbh (appointed by KfW bank) submitted a proposal to AzerEnerji in November 2005 and were given go-ahead to start work on the CDM components of the Sumgayit project	November 2005	Proposal document	CDM consideration for the project. Concrete action to materialize CDM benefits OK
17	Report presented by the consultants from ECS Gmbh (Mr. Lange and Mr. Mahel) – AzerEnerji was not satisfied with the work of ECS Gmbh and decided to discontinue their services	June 2006	Report (excel file presented by ECS Gmbh)	CDM Consideration OK
18	Appointment of BNPP for Sumgayit CDM development	September 2006	Communication between BNPP and AzerEnerji	CDM Consideration OK
19	Appointment of ICF International for undertaking CDM work for Sumgayit	February 2007	Contract between ICF and BNPP	CDM Consideration and real action OK
20	Submission of the PDD for Validation to TUV Rhineland	November 2007	Contract with TÜV Rheinland and	CDM Consideration and

			subsequent hosting of the PDD on the website for international stakeholder consultation	real action OK
21	Site visit by CDM auditor of TÜV Rheinland to AzerEnerji	January 2008	On-Site Assessment from 21/01/2008 to 23/08/2008 according to audit plan of 11/01/2008	CDM Real action OK
22	First test running of the Sumgayit plant and connection to the grid	June 12, 2008	Feedback of AzerEnerji / ICF International	PROJECT OK
23	Proposed transfer of the Sumgayit to AzerEnerji	December 2008	Actual Feedback of AzerEnerji / ICF International	PROJECT OK

Starting date of project	Justification of and evidences (references) on the starting date of project	Date of CDM consideration
23/05/2005	EPC contract between AzerEnerji and the equipment supplier Siemens	28/04/2004

The starting date is 23/05/2005, i.e. the date when the EPC contract between AzerEnerji and the equipment supplier Siemens was signed. The validation team has reviewed the contract and has confirmed that this constitutes the first real action towards the implementation of the project activity.

In conclusion, the starting date of the project activity was before 02/08/2008 as well as the date of publication of the PDD for global stakeholder process. Thus, the proposed project activity is defined as an "Existing project activity" according to the Annex 13 of EB 62 "Guidelines on the demonstration and assessment of prior consideration of the CDM (version 04)".

There is clear evidence that AzerEnerji started seriously considering the CDM as early as March 2003. The feasibility study that was completed in April 2004 already suggested making the project a CDM project activity.

Based on the documented evidence as described above, it is clearly demonstrated that the CDM was seriously considered by the project owners prior to starting dates of the project activity. The real actions relating CDM development took place in parallel with the project's implementation and there were no significant gaps in the documented evidence. Therefore, the validation team confirms that the implementation of the proposed project activity as a CDM project is fully in line with the Annex 13 of EB 62 "Guidelines on the demonstration and assessment of prior consideration of the CDM (version 04)".

3.5.2 Approach for Demonstrating Additionality:

According to methodology AM0029 (version 3), the assessment of additionality comprises the following steps that refer to steps of the "Tool for the demonstration and assessment of additionality", version 06.1.0.:

- Step 1: Benchmark investment analysis by applying Sub-steps 2b (Option III: Apply benchmark analysis), Sub-step 2c (Calculation and comparison of financial indicators), and 2d

(Sensitivity Analysis) of the latest version of the "Tool for demonstration and assessment of additionality"

- Step 2: Common practice analysis by applying Step 4 (Common Practice Analysis) of the latest version of the "Tool for demonstration and assessment of additionality"
- Step 3: Impact of CDM registration by applying Step 5 (Impact of CDM registration) of the latest version of the "Tool for demonstration assessment and of additionality"

If all steps are satisfied, then the project is considered additional.

3.5.3. Benchmark Investment Analysis (Step 1)

3.5.3.1 Choice of approach:

The Investment Analysis has been assessed for compliance with the "Tool for the demonstration and assessment of additionality" (version 06.1.0) and the "Guidelines on the Assessment of Investment Analysis" (version 5).

The pre-tax Internal Rate of Return (IRR) of the differential cash flow, i.e. the difference between the project cash flow and the baseline cash flow. Project IRR is commonly used by Azerenerji to evaluate the profitability of power investments in Azerbaijan and is the financial indicator most appropriate for the analysis of the profitability of power plant investments. AzerEnerji is the national power generation company of Azerbaijan. As a result, the proposed baseline scenario, i.e. the construction of a mazut-based power plant, leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services. Since the baseline alternative requires an investment by the company, the Benchmark Analysis needs to consider the differential cashflow, i.e. the difference between the project cash flow and the baseline cash flow, in order to properly evaluate the attractiveness of the project. The revenues from power production are not considered in the investment analysis. This is appropriate, since power production is identical in the project and baseline scenarios and hence does not influence the differential cash flow.

A 20-year period of assessment has been chosen. This is the maximum suggested in paragraph 3 of the "Guidelines on the assessment of investment analysis". Since the expected operational lifetime is 25 years, 20% of the capital costs have been included as a residual value in the final year of the period of assessment. The validation team considers this sufficiently conservative in line with paragraph 4 of the "Guidelines on the assessment of investment analysis".

3.5.3.2 Benchmark selection:

PPs have chosen a benchmark of 14.95%, based on the average interest rate reported by the Central Bank of Azerbaijan for Deposits and Savings in foreign currency with a maturity of at least 5 years in May 2005, i.e. at the time of the investment decision. The benchmark is a pre-tax benchmark, which is appropriate for the chosen financial indicator. The benchmark is in "hard" foreign currency, which makes it appropriate for an analysis done in US$ and in constant prices (i.e. without inflation). The benchmark is reliable because the interest rate varies very little in the relevant time frame (between 2004 to 2006) and the rate is slightly lower than the average interest rate on foreign currency loans (credits placed) with a maturity of 5-10 years in 2005.[1]

The applicability of the benchmark to evaluate the profitability of power investments in Azerbaijan was also confirmed during the site visit. The validation team confirmed via follow-up interviews that power projects in Azerbaijan are considered viable only if guaranteed returns of minimum 15% are ensured. This requirement was set uniformly in the Soviet Union for power investments and was

[1] http://www.cbar.az/assets/751/bulleten_08_2006.pdf

officially maintained in Azerbaijan since the break-up of the Soviet Union. During the site visit it was confirmed that this benchmark continues to be used as tool for evaluating investments by Azerenerji. The rate of 14.95% is reasonable and conservative, because no additional risk premium was added.

In conclusion, the validation team confirms that the chosen benchmark meets the requirements set out in paragraph 12 of the Guidelines on the Assessment of Investment Analysis.

3.5.3.3 Input parameters:

The validation team has assessed the applicability of the key input values for the project and the two baseline alternatives, in particular power plant efficiency, gas and mazut prices, CAPEX and O&M cost as well as power production. The results of the assessments are summarised in the table below:

Assumptions Project CCGT plant with Natural Gas as fuel

Parameter	Value	Unit	Source of data used	Conclusions
Efficiency	52.71	%	Performance Guarantee on actual plant operation in December 2008 (also authenticated by plant efficiency information as given by the EPC contractor Siemens)	The reference source for efficiency of 52.71% is the performance test of the Sumgayit power plant /61/, where the net heat rate of 6829.0 kJ/kWh is equivalent to an efficiency of 52.7 %. It could be confirmed in additional interviews with the EPC contractor and other technical experts at the PowerGen 2009 and other background research that the plant configuration does not allow higher efficiencies of the CCGT plant OK
Plant capacity	525	MW	Project Information (Publication from NewEurope – European News Source)	Further sources during on-site visit has been shown for evidence OK
Auxiliary Consumption	3.45	%	Calculated based on the total capacity of 525MW and the plant net capacity of 506.8MW (as given in the performance guarantee by Siemens)	The applied approach is reasonable and in line with the project documentation. OK
Capacity factor	80	%	The capacity factor is based on the maximum capacity factor for any plant in Azerbaijan grid.	The validation team has confirmed that the highest capacity factor for any power plant in Azerbaijan in the 2004-2006 period was 77.3%. The factor is hence chosen conservatively. OK
Expected electricity production to the grid	3,552	GWh	Calculated based on the plant capacity and the capacity factor	The applied approach is reasonable and in line with the project documentation. OK
Project Lifetime	25	Years	Feasibility Study Report /18/	After further background research a project lifetime of 25 years can be confirmed for the power plant

Parameter	Value	Unit	Source of data used	Conclusions
				configuration. OK
Price of natural gas	60	USD/ 1000 m3	Based on actual 2005 prices. The validation team reviewed the invoices for natural gas deliveries in 2005. An additional sensitivity analysis is done based on the assumption that Azeri prices for natural gas and mazut approximate international energy prices. EIA projections for natural gas prices are used to model this. http://www.eia.doe.gov/oiaf/archive/aeo05/excel/aeotab_13.xls	The price assumption accurately reflects the market conditions at the time of the decision making. The possibility of price changes towards international market prices is sufficiently addressed in the sensitivity analysis. OK
Capital costs (EPC)	405,580,000	USD	Audited project cost estimated calculated based on equipment, civil work and infrastructure costs	The specific investment costs of 773 USD / kWe are at the lower end of the range of a Study of IEA /17/, carried out in April-May 2008, which states specific construction Cost for CCGT power plants between 750 USD/KWe and 1,000 USD/kWe and for Russia 850 USD/KWe. OK
Non-fuel O&M costs	10,630,000	USD/ year	Feasibility Study Report/18/	The O&M costs are based on the Feasibility Study Report of 2004, page 102. The values have been properly converted from Euros to USD at the average exchange rate of 1.31 USD/Euro. The values have been escalated by 3.4% to convert them into 2005 prices. Note: 3.4% is the US Consumer Price Index for 2005. The same O&M costs are chosen for both the project and the baseline. This is conservative since the project has significantly higher CAPEX than the baseline. OK

Option 2. Condensing Steam turbine technology on Mazut

Parameter	Value	Unit	Source of data used	Conclusions
Efficiency	43	%	Based on the observed efficiency for supercritical technologies from several technologies from 1990-2000. Average efficiency has been	It could be confirmed after additional background research /69-71/ that the plant configuration allows an efficiency of 43 %. OK

Parameter	Value	Unit	Source of data used	Conclusions
			considered (http://nst.e-apbe.ru/book/6.1.4.pdf	
Plant capacity	525	MW	The same capacity has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Auxiliary Consumption	3.45	%	The same value has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Capacity factor	80	%	The same value has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Expected electricity production to the grid	3,552	GWh	Calculated based on the plant capacity and the considered capacity factor	The approach is considered as plausible. OK
Project Lifetime	25	Years	The same value has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Price of mazut (2008 onwards when the plant becomes operational)	69.80	USD/ton	Based on actual 2005 prices based on the official decision by the Cabinet of Ministers. An additional sensitivity analysis is done based on the assumption that Azeri prices for natural gas and mazut approximate international energy prices. EIA projections for natural gas prices are used to model this. http://www.eia.doe.gov/oiaf/archive/aeo05/excel/aeotab_13.xls	The price assumption accurately reflects the market conditions at the time of the decision making. The possibility of price changes towards international market prices is sufficiently addressed in the sensitivity analysis. OK
Capital costs (EPC)	236,340,000	USD	Based on the 2002 price quote for installing a 300MW unit /72/ at AzDRES power plant. The 2002 costs were US$38million for technology. According to Russian default values the technology costs are estimated to be 40% of the overall CAPEX for thermal power plants, with the remainder being construction costs. However, in order to be conservative a ratio of 35% has been applied. The costs of two units (US$76 million) are calculated by doubling the costs of a single unit. Doubling the costs of a 300 MW unit is conservative, since the installed capacity of 525 MW is less than twice as much. Since the costs are for 2002, the	The approach and the assumptions applied are traceable and conservative. OK

Parameter	Value	Unit	Source of data used	Conclusions
			costs are escalated with the US Consumer Price Index to arrive at values in 2005 USD.	
Non-fuel O&M costs	10,630,000	USD/year	Feasibility Study Report for the project /18/	The same O&M costs are chosen for both the project and the baseline. This is conservative since the project has significantly higher CAPEX than the baseline. OK

Option 3. Condensing Steam turbine technology on Natural Gas

Parameter	Value	Unit	Source of data used	Conclusions
Efficiency	43	%	Based on the observed efficiency for supercritical technologies from several technologies from 1990-2000. Average efficiency has been considered (http://nst.e-apbe.ru/book/6.1.4.pdf	It could be confirmed after additional background research /69-71/ that the plant configuration allows an efficiency of 43 %. OK
Plant capacity	525	MW	The same capacity has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Auxiliary Consumption	3.45	%	The same value has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Capacity factor	80	%	The same value has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Expected electricity production to the grid	3,552	GWh	Calculated based on the plant capacity and the considered capacity factor	The approach is considered as plausible. OK
Project Lifetime	25	Years	The same value has been chosen for the baseline as for the project.	The approach is considered as plausible. OK
Price of gas (2008 onwards when the plant becomes operational)	60	USD/ton	Based on actual 2005 prices. The validation team reviewed the invoices for natural gas deliveries in 2005. An additional sensitivity analysis is done based on the assumption that Azeri prices for natural gas and mazut approximate international energy prices. EIA projections for natural gas prices are used to model this. http://www.eia.doe.gov/oiaf/archive/aeo05/excel/aeotab_13.xls	The price assumption accurately reflects the market conditions at the time of the decision making. The possibility of price changes towards international market prices is sufficiently addressed in the sensitivity analysis. OK
Capital costs	236,34	USD	Based on the 2002 price quote for	The approach and the assumptions

Parameter	Value	Unit	Source of data used	Conclusions
(EPC)	0,000		installing a 300MW unit /72/ at AzDRES power plant. The 2002 costs were US$38million for technology. According to Russian default values the technology costs are estimated to be 40% of the overall CAPEX for thermal power plants, with the remainder being construction costs. However, in order to be conservative a ratio of 35% has been applied. The costs of two units (US$76 million) are calculated by doubling the costs of a single unit. Doubling the costs of a 300 MW unit is conservative, since the installed capacity of 525 MW is less than twice as much. Since the costs are for 2002, the costs are escalated with the US Consumer Price Index to arrive at values in 2005 USD.	applied are traceable and conservative. OK
Non-fuel O&M costs	10,630,000	USD/year	Feasibility Study Report for the project /18/	The same O&M costs are chosen for both the project and the baseline. This is conservative since the project has significantly higher CAPEX than the baseline. OK

The validation team thus confirms that the input values for the investment analysis are plausible at the time of the investment decision in line with the "Guidelines on the assessment of investment analysis" version 5.0.

3.5.3.4 Financial calculation and conclusion

The financial analysis is in accordance with the "Tool for demonstration and assessment of additionality", version 06.1.0 and the "Guidelines on the assessment of investment analysis", version 5.0. All input parameters used in the IRR calculation were valid at the time of investment decision making. The validation team confirms that the pre-tax project IRR without any CDM revenue works out to be 1.33% which is clearly below benchmark of 14.95%. It is clearly demonstrated that the proposed project activity without CER revenues is financially unattractive. The validation took cognizance of § 97, 112 and 113 of VVM (version 01.2).

3.5.3.5 Sensitivity analysis

According to the "Guidelines on the assessment of investment analysis" (version 05), only variables including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. The validation team thus confirms that the following parameters meet the requirement and these parameters have been subjected to variations in the range of +10% and -10% in the PDD.

- Investment costs
- Natural Gas Price
- Non-fuel OPEX
- Fuel Efficiency
- Power Production (for both project and baseline)

In addition the following two scenarios have been analyzed: First a CAPEX reduction by 20% has been considered in order to provide additional assurance in the face of relatively large uncertainty about baseline CAPEX. Second a change in fuel prices towards world market prices, i.e. the fuel price projections of the US Energy Information Administration, has been considered. These projections are the best available price projections from a reliable third party source. These price projections have been taken from EIA /64a/,/64b/. These gas prices are in line with market projections. There is a very well defined international price for oil (tracked for Brent and WTI Crude price) and gas prices are generally pegged to oil prices, as stated in the reference source, the study by 'George Washington University, especially figure 1 on page 3 /65/: (http://www.eia.doe.gov/pub/oil_gas/natural_gas/feature_articles/2006/reloilgaspri/reloilgaspri.pdf)

Input Values	10%	0%	-10%
Investment costs	-0.1%	1.3%	3.5%
Natural Gas Price	-2.8%	1.3%	4.8%
Mazut Price	5.4%	1.3%	-3.7%
Non-fuel OPEX	0.4%	1.3%	2.2%
Project Fuel Efficiency	4.5%	1.3%	-3.3%
World Market Prices	2.9%		
Investment Costs (-20%)	7.3%		

The validation took cognizance of § 111 (e) of VVM (version 01.2). The table below summaries the situation where the IRR would reach the benchmark:

Input value	Variation	Validation team's opinion
Investment costs	If the project investment cost decrease by approx. 27%, the IRR reaches the benchmark.	This is not plausible given that the specific investment costs of 773 USD / kWe are already at the lower end of the range of a Study of IEA /17/, carried out in April-May 2008, which states specific construction Cost for CCGT power plants between 750 USD/KWe and 1,000 USD/kWe and for Russia 850 USD/KWe.
Natural Gas Price	If the natural gas price increases by approx. 185%, the IRR reaches the benchmark.	This is not plausible. Even if natural gas prices reach world market prices, the benchmark is not reached.
Non-fuel OPEX	Even if the project non-fuel OPEX are set equal to zero, the IRR does not reach the benchmark.	This is impossible.
Fuel Efficiency	If the fuel efficiency increases by 70%, the IRR reaches the benchmark	This is technically impossible.
Power Production for both project and baseline	If the annual power production increases by approx. 180%, the IRR reaches the benchmark.	This is technically impossible.

The validation team thus confirms that the sensitivity analysis is in accordance with the "Tool for demonstration and assessment of additionality" version 06.1.0" and "Guidelines on the assessment of investment analysis" version 5.0. All input parameters used for sensitivity analysis constitute more than 20% of either total project costs or total project revenues. The justifications provided by the PP with the variations of these parameters are been analysed, clarified and accepted by the DOE.

3.5.4 Common Practice Analysis (Step 2)

In section B.5 of the PDD, PPs have applied a step-by-step approach in line with step 4 of the "Tool for demonstration assessment and of additionality", version 06.1.0. They have also followed the "Guidelines on Common Practice", version 2.

Step 1: PPs have correctly calculated the applicable capacity range of 263 MW - 788 MW.

Step 2:
PPs have correctly identified the applicable geographical area as the country of Azerbaijan, i.e. the entire host country in line with paragraph 1 of the Guidelines on Common Practice.
PPs have correctly identified the measure as a "Switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies". Given that energy efficiency improvements and power generation based on renewable energy are specifically listed as examples, the efficient generation of electricity with a CCGT power plant is clearly covered in the framework offered by the Guidelines on Common Practice.
PPs have correctly identified the energy source / fuel as natural gas, which is the sole fuel used at the project power plant.
PPs have correctly identified the output is grid-connected electric power.
PPs have correctly identified the applicable capacity range as of 263 MW - 788 MW.
PPs have correctly stated the starting date as 23/05/2005 and clarified that the starting date was before the publication for global stakeholder consultation.
Based on the above project characteristics, there was only a single power plant in Azerbaijan in 2005 that was similar, i.e. the Shimal CCGT power plant. The validation team confirmed via the data used for the calculation of the 2005 Operating Margin that all other power plants could be eliminated, either based on size or energy source.

Step 3: PPs have correctly not eliminated any of the power plants identified in step 2. The Shimal CCGT power plant is not a CDM project. N_{all} is correctly calculated as 1

Step 4: PPs do not claim that Shimal uses a different technology and have correctly calculated N_{diff} as 0. This is conservative since it could be argued that the Shimal CCGT plant took advantage of a different investment climate. In particular, it had a credit line available for 40 years at 0.75% rate of interest, which was not available to the proposed project. Moreover, the Sumgayit CCGT is using a multi-shaft technology (three shafts), while the Shimal CCGT uses a single –shaft turbine. The Sumgayit is the first power plant applying multi-shaft technology in Azerbaijan, and hence adds to the technology risk faced by AzerEnerji. The multi-shaft technology is also costlier than the single-shaft technology based on figures from IEA.

Step 5: PPs have correctly calculated F = 1 and N_{all}-N_{diff} = 1. In conclusion the validation team confirms that the project is not a common practice, since N_{all}–N_{diff} is smaller than 3. It can therefore be concluded, that the existence of the Shimal CCGT does not contradict the claim that the Sumgayit project is financially unattractive without the benefit of carbon revenue.

3.5.5 Impact of CDM registration (Step 3)

The methodology requires PPs to describe the impact of the registration of the project activity by applying Step 5 (Impact of CDM registration) of the latest version of the "Tool for demonstration assessment and of additionality" agreed by the CDM Executive Board. Since Step 5 has been eliminated in version 06.1.0 of the Tool, this condition is automatically fulfilled.

3.5.6 Conclusion of assessment of Additionality

The CDM was seriously considered by the PP. The evidences were transparently reviewed by the validation team and considered to be effective. Investment analysis and sensitivity analysis clearly demonstrate that the proposed project activity is financially unattractive. The Common practice analysis demonstrates that the proposed project activity is not a common practice in Azerbaijan. Therefore, the proposed project activity is not business-as-usual, i.e. the proposed project activity is additional.

In conclusion, the validation team is of the opinion that all 3 steps are satisfied, and the project is additional.

3.6 Monitoring

The project is applying monitoring methodology AM0029 "Grid Connected Electricity Generation Plants using Natural Gas" (version 03, dated 16 May 2008) which has the same applicability criteria as the baseline methodology.

Monitoring of sustainable development indicators is not required by the DNA of Azerbaijan.

The project monitoring plan is in compliance with the monitoring methodology AM00029 (version 03).

It is DOE's opinion that the project participants are able to implement the monitoring plan.

3.6.1 Parameters determined ex-ante

Parameters	Description	Conclusion
$EF_{OM,y}$	The operating margin emission factor calculated according to the "Tool to calculate the emission factor for an electricity system" for 2004 to 2006	The values were correctly derived with the Tool to determine the emission factor of an electricity system.
$EF_{BM,y}$	The build margin emission factor calculated according to the "Tool to calculate the emission factor for an electricity system" for 2004 to 2006	The values were correctly derived with the Tool to determine the emission factor of an electricity system.
GWP_{CH4}	The global warming potential of methane	Based on IPCC data
$EF_{NG,Upstream,CH4}$	Emission factor for upstream fugitive methane emissions of natural gas from production, transportation, distribution (Easter Europe and Former USRR)	Based on AM0029

$EF_{oil,Upstream,CH4}$	Emission factor for upstream fugitive methane emissions of oil from production, transport, refining and storage (World).	Based on AM0029

The build margin emission factor (BM), combined margin emission factor (CM) and the emission factor of the technology (and fuel) identified as the most likely baseline scenario are determined *ex-ante* based on the most recent information available to identify the lowest emission factor among the three as the baseline emission factor as stipulated by AM0029.

No relevant corrective action and clarification requests have been issued.

The validation team confirms that all relevant parameters have been sufficiently considered and the values of the parameters are real, measureable and conservative.

3.6.2 Parameters monitored ex-post

According to the PDD /2/ the following parameters will be monitored:

Parameters	Description	Measurement Methods and Procedures
$EF_{BM,y}$	The build margin emission factor calculated according to the "Tool to calculate the emission factor for an electricity system"	Calculated according to the latest version of the Tool to Calculate the Emission factor of an Electricity System.
$FC_{NG,y}$	Annual quantity of natural gas consumed by the Sumgayit Power Plant.	Based on continuous measurements by AzerEnerji. Used to calculate project emissions. The measurement procedures are in line with AM0029.
$FC_{D,y}$	Annual quantity of diesel oil (emergency fuel) consumed by the project activity	Based on Measurements by AzerEnerji. Used to calculate project emissions.
$EG_{,y}$	Net electricity exported to grid by the project activity	Based on continuous measurements by AzerEnerji. Used to calculate baseline emissions. The measurement procedures are in line with AM0029.
$EF_{CO2,NG,y}$	Carbon Emission Factor of Natural Gas	Based on latest IPCC values. Used to calculate project emissions. The data is from a credible source.
$EF_{CO2,D,y}$	Carbon Emission Factor of Diesel Oil	Based on latest IPCC values. Used to calculate project emissions. The data is from a credible source.
$EF_{CO2,M,y}$	Carbon Emission Factor of Mazut	Based on latest IPCC values. Used to calculate baseline emissions. The data is from a credible source.
$OXID_{NG,y}$	Oxidation Factor for Natural Gas	Based on latest IPCC values. Used to calculate project emissions. The data is from a credible source.
$OXID_{D,y}$	Oxidation Factor for Diesel	Based on latest IPCC values. Used to calculate project emissions. The data is from a credible source.
$OXID_{M,y}$	Oxidation Factor for Mazut	Based on latest IPCC values. Used to calculate baseline emissions. The

		data is from a credible source.
$NCV_{NG,y}$	Net Calorific Value of Natural Gas	Based on Measurements by AzerEnerji and supplier data. Used to calculate project emissions. The data reflects local country conditions.
$NCV_{D,y}$	Net Calorific Value of Diesel Oil	Based on latest default values from US Energy Information Administration. Used to calculate project emissions. The data is from a credible source.
$NCV_{M,y}$	Net Calorific Value of Mazut	Based on Measurements by AzerEnerji and supplier data. Used to calculate baseline emissions. The data reflects local country conditions.

In summary, the validation team is convinced of compliance of the monitoring plan with the requirements of the monitoring methodology of AM0029 (version 03). During the on-site assessment, the validation team interviewed the PP and confirmed that the monitoring arrangements described in the monitoring plan are feasible within the project design. The emission reductions resulting from the proposed CDM project activity can be reported ex post and verified.

3.6.3 Management system and quality assurance

The responsibilities for the monitoring routines are stated in the PDD. The prepared monitoring sheets assessed during the validation process, correctly elaborates on the procedures for project operation, monitoring and reporting, procedures for measurement, records handling, calibration and maintenance. All the data will be archived for a period of two years after the crediting period.

The authority for project management is described in an organizational chart for Monitoring of the Project for CDM and in section B.7.2 of the PDD. A Technical Team of Azerenerji under supervision of Mr. Elchin Mammedov, Director Sumgayit CCGT Plant and Mrs. Zarema Mammadova, the Deputy Head of Ecology department of AzerEnerji receiving further guidance from ICF International will be responsible for the day-to-day monitoring of the CDM project activity. Section B.7.2 of the PDD contains an organizational chart that illustrates the responsibilities.

This Technical Team will also be responsible for monitoring key variables required for meeting the CDM monitoring requirements as well as calibration and maintenance of monitoring equipment. An internal verification report will assess the uncertainty associated with any category of adjustments if needed. All critical data are either measured or calculated and will be kept on site for the duration of the crediting period and 2 years. On a monthly basis, the technical team will review the performance of the project activity and annual internal audits are scheduled to evaluate the whole performance during that period. All relevant procedures and work instructions have been developed based on the manufacturer's technical specifications and will be implemented prior to the start of the crediting period. Training will be executed prior to the implementation of the project.

In summary it can be concluded by the validation team of TÜV Rheinland that the monitoring plan and relevant procedures reflect good engineering and monitoring practise appropriate to the project type.

The project's monitoring plan includes:

- Parameters monitored
- Installation of monitoring equipment
- Responsibilities for monitoring incl. an organizational chart
- Reporting procedure
- Data storage
- Data quality and contingency management
- Internal audit (QA/QC procedures)
- Procedures for corrective actions
- Procedures for emergency cases that cause unintended emissions
- Calibration of the meters

These procedures will be maintained and implemented to enable subsequent verification of emission reductions.

After several interviews with different responsible persons of JSC "Azerenerji", such as Mr. Machir Cheirhabarov (Chief Engineer of Sumgayit Power Plant) , Mr. Elchin Mammadow (Director Sumgayit Power Plant), Mr. Abdulkhalik Heydarov (Deputy Head of Technical Department), and in addition Mr. Oktay Abbasov, Director of the National Metrological Centre of the State Agency on Standardization Metrology and Patents as well as Mr. Rafig B. Abdullayev, The Deputy of Chief – The Deputy of Main State Inspector of the Industry and Energy Ministry State Energy Control during the on-site visit the validation time is confident and can confirm that the project participant, assisted by the Carbon Consultant ICF International is able to implement the monitoring plan as per the requirements of the applied monitoring methodology and the VVM.

3.7 Sustainable Development

As stated in section 3.1 of this report, the LoA of Azerbaijan confirms that the proposed CDM project activity contributes to the sustainable development in the host country Azerbaijan.

3.8 Environmental Impacts

According to the Environmental Impact Assessment (EIA) report, the proposed project has no significant negative impacts on the environment, this assessment has been revised and approved by the State Expertise Department of the Ministry of Ecology and Natural Resources of the Republic Azerbaijan on February 27, 2006. All the necessary environmental clearances have been obtained by AzerEnerji and the Sumgayit project meets all the environmental obligations required from a thermal plant installation in the country.

The potential impacts have been identified, corresponding appropriate mitigation actions will be implemented by Azerenerji.

The validation team concludes that the environmental impact by the project activity has been assessed by the project proponent and that the results of the environmental impact analysis have been summarized in the PDD. To confirm the impact associated with the project proponent, the validation team has physically inspected during the on-site visit and also through conducting interviews with the relevant stakeholders. It is validation team's opinion that the project activity does not cause any significant adverse environmental impacts, has obtained the necessary environmental approvals and complies with the relevant environmental regulations.

3.9 Local Stakeholder Consultation

Stakeholder consultation was undertaken as part of the EIA process.

The stakeholder meeting and the development of the Sumgayit power plant were extensively covered by the local media (TV, radio, and newspaper). The stakeholder invitation was even publicly announced through radio. The stakeholder meeting was attended by 43 key stakeholders (whose name and addresses have been provided in the minutes of meeting), these stakeholders were invited for the stakeholder meeting through personal invitation. On the day of the stakeholder meeting Mr. Abdulkhalik Heydarov gave a presentation on CDM component of the Sumgayit project, while the Chief Engineer of Sumgayit Power Plant Mr. Elchin Mammedov gave presentation on the plant itself. All the participants were presented with the PIN of the Sumgayit CCGT project.

The minutes of meeting with detailed question answer session that was conducted during the stakeholder consultation meeting has been provided to the validation team. TÜV Rheinland was able to verify the stakeholder comments process during the on-site assessment and through checking all related information of the meeting and the EIA documentation.

It can be concluded that all relevant stakeholders have been consulted in a timely and effective manner, the stakeholder consultation process has been carried out in accordance with the national and relevant CDM requirements and properly executed and documented. In summary, TUV Rheinland considers the local stakeholder consultation carried out adequately.

3.10 Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited nongovernmental organizations and make them publicly available. This chapter describes this process for this project.

The PDD (version 1) /1/ of November 28, 2007 was made publicly at the CDM website during a 30 days period from 01-12-2007 to 31-12-2007. No public comments were received during that period.

APPENDIX A

CDM VALIDATION PROTOCOL

CONSTRUCTION OF SUMGAYIT COMBINED CYCLE POWER PLANT

in Azerbaijan

Table 1a: Validation requirements VVM (based on § 37 of the CDM Modalities and Procedures and on CDM Validation and Verification Manual, Annex 1 of EB55)					
Checklist question	**Ref.**	**MoV[2]**	**Findings, comments, references, data sources**	**Draft conclusion**	**Final conclusion**
1. Approval					
1.1 Have Letters of Approval have been provided from all involved Parties? If yes, indicate: – when and by which Party the LoA has been issued, with a clear reference to the LoA itself and any supporting documentation; – whether the LoA was provided to the DOE by the project participants or directly by the DNA; – the means of validation employed to assess the authenticity of the document; and – by a clear statement, that the DOE considers the LoA to be valid.	VR 3.1	DR, I, www	The relevant LoAs have been provided by the project participants. The LoAs are deemed to be valid, as it is obvious that there is no other CDM project activity of this scale in Sumgayit, Aterbaijan with the same technology and methodology applied, which could be verified by follow-up interviews during the on-site assessment and by additional background and country analysis.	CAR 07: OK CL 14: OK	OK
1.2 Are all Parties, who issued the LoA, Parties to the Kyoto Protocol and is this stated in the LoA?	VR, 3.1	DR, www	Azerbaijan is a Party of the Kyoto Protocol since 28/09/2000, the United Kingdom of Great Britain and Northern Ireland is Party of the Kyoto Protocol since 31/05/2002.	OK	OK

[2] MoV = Means of Verification, DR = Document Review, I = Interview, www = internet search.

1.3	Is every LoA from the Parties involved issued by an organisation listed as Designated National Authority (DNA) on the UNFCCC web site? *Indicate the official name of the DNA and contact person name.*	VR, 3.1	DR, I, www	The DNA of Azerbaijan is the Climate Change and Ozone Centre of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. The official contact persons are the Minister H. Bagirov (Ministry of Ecology and Natural Resources), who is authorized to sign on behalf of the DNA of Azerbaijan and Mr. M. Mehtiev from the Secretariat of Climate Change and Ozone Centre). The DNA of the United Kingdom of Great Britain and Northern Ireland is the Department for Environment, Food and Rural Affairs (DEFRA), namely the International Climate Change Division. Contact person is Mr. Chris Dodwell, Head of International Climate Change Division, who is authorized to sign a LoA on behalf of the DNA.	OK	OK
1.4	Is the participation in the CDM project activity voluntary and is this stated in all LoAs? *Indicate the source of proof.*	VR, 3.1	DR	Both LoAs are stating a voluntary participation of the Parties involved (/26/,/27/).	OK	OK
1.5	Is the LoA unconditional with respect to 1.2 to 1.4?	VR, 3.1	DR	Both LoAs are unconditional.	OK	OK
1.6	Is the title of the CDM project activity as given in the PDD identical with the title given in all LoAs and Modalities of Communication? *Provide Yes/No answer, and include details into Tables 2, 3 and 4 accordingly.*	VR, 3.1	DR	Yes, the title of the project activity in the PDD (/2/) is the same as the title in the LoAs (/26/,/27/) and the MoC (/28/).	**CAR12: OK**	OK

1.7	If any of provided LoAs contains additional specification of the CDM project activity (PDD version number, validation report version number, amount of ER, etc.) are those specifications valid and consistent with other documents?	VR, 3.1	DR	No version numbers of the PDD or the validation report are mentioned in the LoAs.	OK	OK
1.8	Does the project activity involve any public funding from Annex I Parties? If yes, has Annex I Party provided a written confirmation that the use of such funding does not lead to the diversion of the official development assistance.	VR, 3.1	DR	The project owner has provided a self-declaration, confirming that no ODA has been used for the financing of the project activity (/6/), see also /56/ and /60/.	OK	OK
2.	**Participation (VVM E.2)**					
2.1	Are the Parties and project participants (PP) listed in the section A.3 of the PDD correctly and is this information consistent with the contact details provided in Annex 1 of the PDD?	PDD, A.3, Annex 1	DR	Yes. In section A.3 of the PDD the PPs JSC "Azerenerji" and BNP Paribas are correctly listed. The information is consistent with the contact details provided in Annex 1 of the PDD.	**CAR13: OK CAR 32: OK CL 12: OK**	OK
2.2	Has every Party involved approved the participation of each corresponding PP, either by means of a LoA or by a separate written document? *Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4 accordingly.*	VR, 3.1	DR	The LoAs are authorizing the project participants JSC Azerenerji and BNP Paribas (/26/, /27/).	OK	OK

3.	**Project Design Document (VVM E.3)**					
3.1	Is the PDD presented for validation based on the latest template available at the UNFCCC website? *Indicate Yes / No answer and describe all inconsistencies in the Tables 2, 3 and 4 accordingly.*	VR, 3.2	DR	The PDD form template, version 03 has been used, which is the latest version.	OK	OK
3.2	Has the PDD been established in accordance with the CDM requirements for completing PDDs issued by the CDM EB?	VR, 3.2	DR	The guidelines for completing the project design document (CDM-PDD), version 07 have been correctly applied.	CAR 08: OK CAR 31: OK CL 46: OK	OK
4.	**Project Description (VVM E.4)**					
4.1	Does the PDD contain a description, which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation?	VR, 3.2 PDD, A.2	DR, I	The project design is sufficiently described in the PDD, further documents have been provided to the validation team, relevant explanations were given during the on-site assessment..	CAR 1: OK CAR 19: OK CL 22: OK CL 24: OK CL 26: OK	OK
4.2	In the case of a greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals? *Provide Yes/No answer and indicate the documents which have been reviewed in relation to the issue.*	VR, 3.2 PDD, A.2	DR, I	The project design is sufficiently described in the PDD, further documents have been provided to the validation team, relevant explanations were given during the on-site assessment.	OK	OK
4.3	Does the project activity reflects current good practices, uses state of the art technology or would the technology result in a significantly better performance, than any commonly used technologies in the host country? *Provide the description of how validation has been carried out and what comparisons have been made.*	VR, 3.2 PDD, A.2	DR, I	The project activity represents the advanced multi-shaft CCGT technology of SIEMENS, which is being imported from Germany and is the first of its kind in Azerbaijan.	CAR 2: OK CL 23: OK	OK

4.4 In cases where the project activity involves the alteration of an existing installation or process, does the PDD provide a clear description of the differences between the project and the pre-project scenario? *Please, provide Yes/Now answer and update Tables 2, 3 and 4 accordingly, if there is anything unclear in the provided description.*	VR, 3.2 PDD, A.2	DR, I	The pre-project scenario, the former "TETs-1 Sumgayitskaya" power plant is not comparable with the project activity and can therefore not be considered as an alteration. The "TETs-1 Sumgayitskaya" combined heat and power plant, which has been taken out of service in 2002 after ending of its lifetime (2001), was based on a mix of mazut (heavy fuel oil) and natural gas and has supplied heat to the neighboring chemical industries, which have been shutdown meanwhile resulting in no more heat demand according to follow-up interviews. The distinction between the project activity and the other combined cycle power plant in Azerbaijan, namely the Shimal CCGT, which is a single-shaft combined cycle power plant has been sufficiently elaborated.	OK	OK
5. Baseline and Monitoring methodology					
5.1 General requirements					
5.1.1 Is the methodology used in the project activity approved by the CDM EB and is the selected version still valid?	VR, 3.4.1	DR, www	The methodology AM0029, version 03 has been applied. It has been valid from 16 May 2008 and continues to be valid.	OK	OK
5.2 Applicability of the selected methodology					
5.2.1 Does the project activity qualify under the criteria for small-scale CDM project activities set out in § 6 (c) of decision 17/CP.7 and Annex II of the Modalities and Procedures for the CDM? *Please provide Yes/No response and description of how this was validated.*	VR, 3.4.1	DR	N/A. The project is a large-scale project activity with an installed net capacity of 525 MW.	OK	OK

5.2.1.1 If yes, does the PDD extensively demonstrates and confirms that the small-scale project activity is not a debundled component of a larger project? *Please indicate Yes/No answer. In case of positive conclusion provide details of the validation measures taken and data found during the procedure. Otherwise amend the Tables 2, 3 and 4 accordingly.*	VR, 3.4.1	DR	N/A.	OK	OK
5.2.2 Are all applicability conditions of the selected baseline and monitoring methodology and all tools involved satisfied by the project activity? *Please indicate Yes/No answer. In case of positive conclusion provide details of the validation measures. Otherwise amend the Tables 2, 3 and 4 accordingly.*	VR, 3.4.1 PDD, B.2	DR	Yes. All applicability conditions of the methodology and all applicable additional tools are fulfilled.	CAR 20: OK CL 30: OK CL 32: OK CL 54: OK	OK
5.2.3 Is the selection of the applied baseline and monitoring methodology justified?	VR, 3.4.1 PDD, B.2	DR	The selection of the applied methodology could be sufficiently justified.	OK	OK
5.2.4 Is the selected methodology correctly quoted in all related documents?	VR, 3.4.1	DR	The selected methodology AM0029 "Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas" is correctly cited in the PDD and other related documents.	OK	OK

5.2.5 Does the PDD sufficiently describe all the GHG emission sources or sinks occurring as a result of project activity, which have not been accounted for under the selected methodology and are expected to contribute more than 1% of the overall expected average annual emission reductions? *Provide Yes/No answer. Indicate the sources or sinks of GHG, which were proved to be negligible. Otherwise amend the Tables 2, 3 and 4 accordingly.*	VR 3.4.1 PDD, B.3	DR, I	Not applicable. All GHG emission sources or sinks resulting from the project activity have already been taken into account in the methodology.	OK	OK
5.3 Project boundary					
5.3.1 Does the PDD correctly describe the project boundary? *Provide Yes/No answer. And amend the Tables 2, 3 and 4, if needed.*	VR, 3.4.2 PDD, B.3	DR	Yes, the project boundary has been correctly described according to the applied methodology.	CL 28: OK CL 29: OK	OK
5.3.2 Does the PDD correctly indicate and describe the emission sources and sinks of GHG gases that are included in the project boundary?	VR, 3.4.2 PDD, B.3	DR	This applies also for the emission sources and sinks of GHG gases.	OK	OK
5.3.3 In cases where the methodology allows project participants to choose whether a source or gas is to be included in the project boundary, is the choice explained and justified by PPs?	VR, 3.4.2 PDD, B.3	DR	N/A. The methodology does not offer such a choice.	OK	OK
5.4 Baseline identification					
5.4.1 Has the procedure contained in the selected methodology to identify the most reasonable baseline scenario been applied correctly and documented in the PDD?	VR 3.4.3 PDD, B.4	DR	As per the applied methodology AM0029 (version 03), the baseline is established by first identifying all plausible baseline scenarios and then identifying the economically most attractive baseline scenario alternative. The procedure has been followed step by step.	CAR 21: OK	OK
5.4.1.1 Is the identified baseline scenario plausible?	VR 3.4.3 PDD, B.4	DR	The identified baseline scenario is plausible and in line with the applied methodology.	OK	OK

5.4.1.2 Are all assumptions stated in a transparent and conservative manner?	VR 3.4.3 PDD, B.4	DR	The assumptions stated are re-traceable and comparable to similar projects with an equivalent technology applied. The most conservative baseline scenario has been selected.	OK	OK
5.4.2 Does the selected methodology require the use of tools and does PDD reflects that correctly?	VR, 3.4.1. PDD, B.1		The following tools, required by AM0029 have been applied, which is also stated in the PDD under section B.1. The versions are the latest available versions. „Tool for the demonstration and assessment of additionality“(Version 6.0.0) “Tool to calculate the emission factor for an electricity system“(Version 2.2.1)	OK	OK
5.4.2.1 Were all the tools applied correctly?	VR, 3.4.4, 3.5 PDD, B.5, Annex 3	DR	The „Tool for the demonstration and assessment of additionality“(Version 6.1.0) has been adequately and correctly applied in section B.5 of the PDD. The “Tool to calculate the emission factor for an electricity system“(Version 2.2.1) in Annex 3 of the PDD.	CAR 33: OK CAR 34: OK CL 31: OK CL 44: OK	OK
5.4.3 In case the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, have all scenarios been considered and have no reasonable alternative scenario been excluded?	VR, 3.4.3 PDD, B.4	DR	According to AM0029, the following alternatives should be analyzed: • The project activity not implemented as a CDM project; • Power generation using natural gas, but technologies other than the project activity; • Power generation technologies using energy sources other than natural gas; • Import of electricity from connected grids, including the possibility of new interconnections. All of these alternatives have been considered in section B.4 of the PDD.	OK	OK

5.4.3.1 Has the choice of the baseline scenario been done using conservative assumptions?	VR, 3.4.3 PDD, B.4	DR	The selection of the baseline scenario has used conservative assumptions.	CAR 36: OK	OK
5.4.4 Is the identified baseline scenario reasonable according to the assumptions, calculations and rationales used in the PDD and other reference sources?	VR, 3.4.3 PDD, B.4	DR	The resulting baseline scenario is reasonable as the option with the highest financial indicator (IRR).	OK	OK

5.4.6 Does the PDD describe how the national and sectoral policies relevant to the baseline scenario have been identified and considered in the PDD?	VR, 3.4.3 PDD, B.4	DR	In the Republic of Azerbaijan there are no policies / regulations in place, that give a comparative advantage to less emission-intensive technologies over more emission-intensive technologies. Thus according to annex 3 of the EB 22 report such policies need not to be taken into account in developing a baseline.	CL 01: OK CL 58: OK	OK
5.4.7 Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the project activity?	VR, 3.4.3 PDD, B.4	DR	The baseline scenario has been sufficiently described and could be verified during the on-site assessment.	OK	OK
5.5 Algorithm and/or formulae used to determine emission reductions					
5.5.1 Are all calculations applied and documented according to the selected methodology and in a complete and transparent manner?	VR, 3.4.4 PDD, B.6	DR	All calculations are included in the PDD and the provided worksheets.	OK	OK
5.5.2 In case the methodology allows a selection between different options for equations or parameters, has adequate justification been given and have the correct equations and parameters been used, in accordance with the methodology selected?	VR, 3.4.4 PDD, B.6	DR	According to AM0029, it is required to consider three different options for the calculation of the emission factor: - the build margin - the combined margin - the emission factor of the methodology In line with AM0029, the lowest and therefore most conservative option has been chosen. This is the emission factor of the build margin.	OK	OK

5.5.3 In case some data and parameters will not be monitored throughout the crediting period, but have already been determined and fixed, are all data sources, assumptions and calculations correct, applicable to the proposed CDM project activity and conservative?	VR, 3.4.4 PDD, B.6	DR	The following parameters have been determined and fixed ex-ante: GWP_{CH4}, $EF_{CM,y}$, $EF_{NG,Upstream,CH4}$ and $EF_{oil,Upstream,CH4}$ using applicable recognized sources.	CAR 27: OK CL 04: OK CL 37: OK	OK
5.5.4 In case data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters reasonable?	VR, 3.4.4 PDD, B.6	DR	The data and parameters, that have been assumed before project implementation are based on re-traceable and reliable sources.	CAR 28: OK	OK
5.5.5 Have the major risks and uncertainties, which can influence the emission reduction estimates, been identified and addressed in the PDD?	VR, 3.4.4 PDD, B.6	DR	The monitoring plan contains QA/QC procedures in order to minimize major risks and uncertainties.	OK	OK
5.6 Leakage					
5.6.1 Has the leakage been identified and calculated according to the approved methodology?	VR, 3.4.4 PDD, B.6	DR	The related leakage has been calculated resulting in a negative value, which can be neglected. This is due to the fact that natural gas consumption will be reduced as a result of the project. Moreover, no LNG will be consumed in the project.	CAR 26: OK CL 61: OK	OK
5.6.2 Have the leakage been addressed in complete, conservative and substantiated manner?	VR, 3.4.4 PDD, B.6	DR	The leakage calculation follows the guidance of AM0029 for fugitive CH4 emissions and CO2 emissions from LNG.	OK	OK

5.6.3 Are uncertainties in the leakage emission estimates properly addressed?	VR, 3.4.4 PDD, B.6	DR	The ex-ante assumptions are based on conservative default values from the methodology, which are applicable for the former USSR and hence also for Republic of Azerbaijan, which are appropriate and needs no further uncertainty assessment ex-post.	OK	OK
6. Methodology-related issues for afforestation or reforestation CDM project activities					
Add specific A/R requirements – if applicable!			Not applicable for this CDM project activity	OK	OK
7. Additionality					
7.1 Prior consideration of the CDM (VVM E.6.III.a)					
7.1.1 Is there documented evidence provided by the project participants on how and when the decision to proceed with the project activity was taken?	VR, 3.5 PDD, B.5, Annex 5	DR	The chronology of events described shows the different steps that were taken to secure CDM status, the relevant evidences are available.	OK	OK
7.1.2 Is the starting date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms" and CDM VVM (§97)?	VR, 3.5 PDD, B.5, Annex 5	DR	The starting date of the project activity is 23/05/2005, i.e. the EPC contract closure, see Annex 5 of the PDD.	CAR 04: OK CAR 29: OK	OK
7.1.3 Is the date stated in the provided evidence consistent with other available evidence (e.g. dates of construction, purchase orders for equipment)?	VR, 3.5 PDD, B.5, Annex 5	DR	The date selected as project starting date is re-traceable and not conflictive with the other documents.	CAR 04: OK CAR 19: OK CAR 37: OK CL 02: OK CL 10: OK CL 19: OK CL 41: OK	OK

7.1.4 If the project was not published and the starting date is on or after 2nd August 2008, was it possible to receive from UNFCCC secretariat and/or DNA a written confirmation that PPs previously informed the above entities on commencement of the project activity and of their intention to seek CDM status?	VR, 3.5 PDD, B.5, Annex 5	DR	The PDD was published on UNFCCC website from 22 November to 21 December 2007.	OK	OK
7.1.5 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were previously aware of CDM?	VR, 3.5 PDD, B.5, Annex 5	DR	The presented chronology of events and further evidences demonstrate that the project developer was aware of CDM long before the framework for CDM in the host country and at UNFCCC level was in place.	OK	OK
7.1.6 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that CDM benefits have been a decisive factor in the decision to proceed with the project activity?	VR, 3.5 PDD, B.5, Annex 5	DR	It was demonstrated that CDM benefits were discussed in the technical feasibility report in order to bypass the high cost of project financing.	OK	OK
7.1.7 Does the individual or body that took the decision to proceed with the project activity have/had the authority to do so?	VR, 3.5 PDD, B.5, Annex 5	DR	The power of attorney was given to Mr. Heydarov, Deputy Director of Azer Enerji	OK	OK

7.1.8 For the project activities with a starting date before 2nd August 2008 and before the actual publication, was there enough evidence presented to prove that PPs were taking continuing and real actions to secure CDM status for the project in parallel with its implementation?	VR, 3.5 PDD, B.5, Annex 5	DR	It was demonstrated that continuing and real actions were taken to secure CDM status of the project activity.	CL 50: OK	OK
7.1.9 In case there is a significant gap between the start date of the project activity and the commencement of validation, how was it possible for the project participant to commit funds to the project in advance of receiving a positive validation opinion?	VR, 3.5 PDD, B.5, Annex 5	DR	The CDM revenues is an important part for the project financing of the bank consortium, the bank BNP Paribas is the authorized project participant of the Annex I Party involved.	CL 03: OK	OK
7.2 Identification of alternatives					
7.2.1 Does the PDD identify and list credible alternatives to the CDM project activity in order to determine the most realistic baseline scenario, unless selected approved methodology prescribes/identifies the baseline scenario and no further analysis is required?	VR, 3.4.3 PDD, B.4	DR, I	The baseline scenario has been identified following the steps outlined in the applied methodology AM0029 and according to the local circumstances in Azerbaijan.	OK	OK
7.2.2 Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a CDM project activity?	VR, 3.4.3 PDD, B.4	DR	Yes, this is one of the alternatives, which is also required as alternative to be analysed from the methodology.	OK	OK

7.2.3 Does the list contain all realistic/credible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the project activity? *Note: All alternatives listed in the selected methodology should be included, as well as those not covered by the methodology.*	VR, 3.4.3 PDD, B.4	DR	All alternatives listed in the applied methodology AM0029 have been taken into account, which is plausible for the local circumstances.	CL 47: OK	OK
7.2.4 Is the exclusion of the alternatives for legal reasons justified? *Note: Some alternatives might be illegal, according to the local regulations, but still widely practiced due to lack of enforcement. It should be verified.*	VR, 3.4.3 PDD, B.4	DR	All presented alternatives are legal, no exclusion of an alternative because of legal reasons has been undertaken.	OK	OK
7.3 Investment Analysis					
7.3.1 Are all sources of revenues (including savings) have been considered in the PDD and all calculations?	VR 3.5 PDD, B.5	DR	The revenues of the project are consisting of power sales and CER sales.	OK	OK
7.3.2 Is the type of investment analysis selected correctly in the PDD?	VR 3.5 PDD, B.5	DR	The application of the benchmark investment analysis is in accordance with the applied methodology AM0029. Since the baseline alternative would also require an investment, the benchmark analysis is applied to the differential investment, i.e. the difference between the project cash flow and the baseline cash flow. This is the appropriate way to determine the attractiveness of the additional investment the project requires.	OK	OK
7.3.3 Is the selected financial indicator chosen and applied correctly?	VR 3.5 PDD, B.5	DR	The selection of project IRR as the financial indicator is plausible and re-traceable.	OK	OK

7.3.4 Is the guidance on IRR calculation and assessment correctly applied? *Note: Means of validation should be recorded.*	VR 3.5 PDD, B.5	DR	The guidance on IRR calculation and assessment has been correctly applied.	CAR 03: OK CAR 10: OK CAR 11: OK CAR 22: OK CAR 23: OK CAR 24: OK CAR 25: OK CL 15: OK CL 27: OK CL 34: OK CL 35: OK CL 36: OK CL 45: OK CL 48: OK CL 49: OK CL 52: OK CL 55: OK CL 59: OK	OK
7.3.5 In case project participants use values from Feasibility Study Reports (FSR) is it possible to verify that the period between the FSR date and investment decision was reasonably short and FSR values did not change materially?	VR 3.5 PDD, B.5	DR	The input values applied for the investment analysis are based on reasonable assumptions, that are based on the prices of the year 2005, the year of the project start date. The FSR of Enprima has been released in April 2004, the price level is based on conditions as at April 2004.	OK	OK

7.3.6 Are all the values consistent between FSR and PDD and are inconsistencies properly justified?	VR 3.5 PDD, B.5	DR	As base year was 2005 (year of financial closure, after conclusion of the tendering process and the selection of the suppliers, EPC contract closure) selected for the assumptions in the PDD and the related documents and not the figures of the feasibility study report.	OK	OK
7.3.7 Were all the values from FSR applicable and valid at the time of the investment decision?	VR 3.5 PDD, B.5	DR	The values applied are updated to the base year 2005, the year of the financial closure and EPC contract, see also 7.3.5 and 7.3.6.	OK	OK

7.3.8 Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants or some verifiable circumstances that have lead to a change in the benchmark?	VR 3.5 PDD, B.5	DR	PPs have chosen a benchmark of 14.95%, based on the average interest rate reported by the Central Bank of Azerbaijan for Deposits and Savings in foreign currency with a maturity of at least 5 years in May 2005, i.e. at the time of the investment decision. The benchmark is a pre-tax benchmark, which is appropriate for the chosen financial indicator. The benchmark is in "hard" foreign currency, which makes it appropriate for an analysis done in US$ and in constant prices (i.e. without inflation). The benchmark is reliable because the interest rate varies very little in the relevant time frame (between 2004 to 2006) and the rate is slightly lower than the average interest rate on foreign currency loans (credits placed) with a maturity of 5-10 years in 2005.[3] The applicability of the benchmark to evaluate the profitability of power investments in Azerbaijan was also confirmed during the site visit. The validation team confirmed via follow-up interviews that power projects in Azerbaijan are considered viable only if guaranteed returns of minimum 15% are ensured. This requirement was set uniformly in the Soviet Union for power investments and was officially maintained in Azerbaijan since the break-up of the Soviet Union. During the site visit it was confirmed that this benchmark continues to be used as tool for evaluating investments by Azerenerji. The rate of 14.95% is reasonable and conservative, because no additional risk premium was added.	OK	OK

[3] http://www.cbar.az/assets/751/bulleten_08_2006.pdf

7.3.9 Is the Investment Analysis prepared in compliance with the latest version of the "Guidance on the Assessment of Investment Analysis" as provided by the CDM EB?	VR 3.5 PDD, B.5	DR	Yes, the "Guidelines on the Assessment of Investment Analysis" (version 5) (EB 62) have been applied.	OK	OK
7.4 Barrier analysis					
7.4.1 Are there any issues addressed in the barrier analysis that have a clear impact on the financial viability of the project activity and that shall be assessed by an investment analysis?	VR 3.5 PDD, B.5	DR	Not applicable. A barrier analysis was not applied.	OK	OK
7.4.2 Do the listed barriers exist and is their existence substantiated? Note: (a) by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics and/or (b) by interviews with relevant individuals: including members of industry associations, government officials or local experts if necessary?	VR 3.5 PDD, B.5	DR	See above.	CL 51: OK CL 56: OK	OK
7.4.3 Would any of the identified barriers prevent the implementation of the project activity but not equally prevent the implementation of the possible alternatives, in particular the implementation of the identified baseline scenario?	VR 3.5 PDD, B.5	DR	See above.	OK	OK
7.5 Common practice analysis					
7.5.1 If the PPs claim in the PDD that CDM project activity is the "first of its kind", is it justified?	VR 3.5 PDD, B.5	DR	Not applicable. PPs do not claim that the project is the first of its kind.	OK	OK

7.5.2 Are the geographical boundaries of the project activity identified correctly?	VR 3.5 PDD, B.5	DR	Yes. The applicable geographical area has been selected as Azerbaijan. This is in line with the Guidelines on Common Practice, version 2.0..	CAR 03: OK	OK
7.5.3 Does the PDD provide an explanation why this region was selected and deemed more appropriate and is this explanation traceable and reliable?	VR 3.5 PDD, B.5	DR	Yes. The applicable geographical area has been selected as Azerbaijan. This is in line with the Guidelines on Common Practice, version 2.0..	CAR 03: OK	OK
7.5.4 Are there similar operational project activities, other than CDM activities, "widely observed and commonly carried out" in the defined region? *Note: Use official sources and local and industry expertise.*	VR 3.5 PDD, B.5	DR, I	No. The only other Power plant which uses similar technology in Azerbaijan is the Shimal CCGT. The Shimal power plant is also different because it received subsidies via highly preferential financing terms.	CAR 03: OK CL 21: OK CL 53: OK CL 60: OK	OK
7.5.5 In case there are similar commercially operated project activities, other than CDM activities, already "widely observed and commonly carried out" in the defined region, are there essential distinctions between the CDM project activity and the other similar activities?	VR 3.5 PDD, B.5	DR, I	The Shimal CCGT has been financed based on special conditions in 2000, before the Kyoto Protocol and the national framework in Azerbaijan was in place.	CAR 03: OK	OK
8. Monitoring plan					
8.1 Are all parameters required by the selected approved methodology or tool identified and listed in the PDD?	VR, 3.6 PDD, B.7	DR	All from the applied monitoring methodology required parameters have been listed in the monitoring plan.	CL 20: OK	OK

8.2 Is the measurement method clearly stated for each value to be monitored and deemed appropriate?	VR, 3.6 PDD, B.7	DR	Yes, section B.7. contains all details.	CL 38: OK CL 39: OK CL 40: OK	OK
8.3 Are values of the ex-ante parameters / monitoring parameters selected correctly and conservative in accordance to methodology or tools?	VR, 3.6 PDD, B.7	DR	The relevant ex-ante determined parameters are listed correctly in section B.6.2. of the PDD	OK	OK
8.4 Is the measurement equipment for each parameter described and deemed appropriate?	VR, 3.6 PDD, B.7	DR	The description of the monitoring plan contains all necessary measuring devices.	CL 62: OK	OK
8.5 Is the measurement accuracy addressed and deemed appropriate?	VR, 3.6 PDD, B.7	DR	The measurement accuracy is sufficiently addressed. Relevant procedures have been confirmed during the on-site assessment.	OK	OK
8.6 Are procedures in place on how to deal with erroneous measurements and are the corrective actions identified?	VR, 3.6 PDD, B.7	DR	The monitoring plan under section B.7.2. of the PDD contains the relevant procedures.	CL09: OK	OK
8.7 Is the frequency of measurement identified and deemed appropriate?	VR, 3.6 PDD, B.7	DR	The measurement interval / frequency is sufficiently addressed in the PDD. The main parameters electricity generation and natural gas consumption are measured continuously.	**CAR14: OK**	OK
8.8 Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	VR, 3.6 PDD, B.7	DR	The monitoring plan is in accordance with the applied monitoring methodology.	OK	OK
8.9 Are the sampling, measurement methods and procedures defined?	VR, 3.6 PDD, B.7	DR	The monitoring plan as described in section B.7. includes the necessary measurement methods and procedures.	OK	OK

8.10 Are procedures identified for maintenance of monitoring equipment and installations?	VR, 3.6 PDD, B.7	DR	Section B.7.1. and B.7.2. contain the relevant procedures for maintenance.	OK	OK
8.11 Are the equipment calibration intervals identified and justified?	VR, 3.6 PDD, B.7	DR	The calibration intervals are described under B.7.2., which could be confirmed during on-site assessment and follow-up interviews.	OK	OK
8.12 Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	VR, 3.6 PDD, B.7	DR	The record handling and storage procedure is described under B.7.2.	CL 05: OK CL 18: OK	OK
8.13 Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VR, 3.6 PDD, B.7	DR	The monitoring arrangements described under section B.7.2. and the monitoring schemes for gas meters and electricity meters are according to the design and the local conditions.	OK	OK
8.14 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by / resulting from the project activity can be reported ex post and verified?	VR, 3.6 PDD, B.7	DR	The means of implementation of the monitoring plan including the data management and quality assurance and quality control procedures as described under B.7.2. are deemed to be sufficient for the future ex-post reporting and verification of the relevant data.	CL 13: OK	OK
8.15 Do the PPs make provisions for personnel training needs?	VR, 3.6 PDD, B.7	DR	The relevant training is provided and organised by the main contractor and supplier SIEMENS with support of the Chief Engineer, the Deputy Director and the subcontracted CDM consultant regarding preparation for periodic verification.	CL 06: OK	OK

8.16 Is the authority and responsibility of overall project management clearly described?	VR, 3.6 PDD, B.7	DR	The organizational chart describes the relevant responsibilities.	CL 16: OK	OK
8.17 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	VR, 3.6 PDD, B.7	DR	Relevant procedures for emergency cases are in place, see section B.7.2.	CL 07: OK	OK
8.18 Are procedures identified for review of reported results/data?	VR, 3.6 PDD, B.7	DR	Relevant procedures are defined under the headers “Internal audit in case of problems (QA/QC procedure)” and “Procedures for corrective actions”.	CL 08: OK	OK
8.19 Is the data archiving period for this project activity stated in the PDD and appropriate? *Note: All archived monitoring data, required for verification and issuance, should be kept for at least two years after the end of the crediting period or the last issuance of CER.*	VR, 3.6 PDD, B.7	DR	Provisions on storage are made in section B.7.2. under “Data storage”, but the time of archiving is not defined.	**CAR15**	OK
8.2 Monitoring of the leakage					
8.2.1 Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	VR, 3.6 PDD, B.7	DR	Not applicable. No leakage emission sources were identified.	OK	OK

8.2.2 Is the choice of project leakage indicators made according to selected methodology in a reasonable and conservative manner? *Note: local knowledge and sectoral expertise shall also be considered.*	VR, 3.6 PDD, B.7	DR	See above.	OK	OK
8.2.3 Is the measurement method clearly stated and deemed appropriate for each leakage value?	VR, 3.6 PDD, B.7	DR	See above.	OK	OK
9. Sustainable development					
9.1 Does the LoA from the Host country DNA contain the confirmation that the proposed CDM project activity contributes to the sustainable development of the host Party?	VR, 3.7	DR	The LoA of the DNA of Azerbaijan states, that the project on the basis of the PDD and other documents submitted, contributes to achieving the sustainable development objectives of the Republic of Azerbaijan.	OK	OK
9.2 If PDD indicates any additional environmental benefits of the project, other than GHG emission reductions, were those benefits properly substantiated?	VR, 3.8 PDD, D.1	DR	According to the PDD, additional environmental benefits are reduction of other emissions (SOx, NOx) and other particulate/solid emissions, typical for heavy fuel oil based thermal power plants, which is further substantiated in the FSR (/18/).	OK	OK
10. Stakeholders' consultation and comments					
10.1 Were the stakeholders identified in appropriate and complete manner?	VR, 3.9 PDD, E	DR, I	Stakeholder consultation was undertaken as part of the EIA process. All relevant stakeholders including local citizens and institutional bodies are identified and consulted.	OK	OK
10.2 Are the identified stakeholders plausible?	VR, 3.9 PDD, E	DR, I	The list of attended stakeholders is deemed to be appropriate.	OK	OK

10.3 Does PDD describe the means being used to invite local stakeholder's comments?	VR, 3.9 PDD, E	DR, I	The PDD summarises the different means applied for the stakeholder consultation. The stakeholder meeting and the development of the Sumgayit power plant were extensively covered by the local media (TV, radio, and newspaper). The stakeholder invitation was even publicly announced through radio. The stakeholder meeting was attended by 43 key stakeholders (whose name and addresses have been provided in the minutes of meeting), these stakeholders were invited for the stakeholder meeting through personal invitation.	OK	OK
10.4 Were those means appropriate?	VR, 3.9 PDD, E	DR, I	The different means applied are deemed to be appropriate.	OK	OK
10.5 Was the project presented to the stakeholders in unbiased manner?	VR, 3.9 PDD, E	DR, I	On the day of the stakeholder meeting Mr. Abdulkhalik Heydarov gave a presentation on CDM component of the Sumgayit project, while the Chief Engineer of Sumgayit Power Plant Mr. Elchin Mammedov gave presentation on the plant itself. All the participants were presented with the PIN of the Sumgayit CCGT project.	CAR 38: OK CL 42: OK CL 43: OK	OK
10.6 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	VR, 3.9 PDD, E	DR, I	The stakeholder consultation is in accordance with the relevant requirements in Azerbaijan for such size of power plant investments, which is documented.	OK	OK
10.7 Is a summary of the stakeholder comments provided in the PDD?	VR, 3.9 PDD, E	DR, I	The available comprehensive meeting minutes are summarized under section E. of the PDD.	OK	OK
10.8 Has due account of any stakeholder comments been taken by PPs and reflected in the PDD?	VR, 3.9 PDD, E	DR, I	No negative comments were received, Hence no amendments needs to be conducted to the project activity.	OK	OK

11. Environmental impacts					
11.1 Is the documentation supplied by the PPs regarding environmental impacts relevant and accurately reflected in the PDD?	VR, 3.8 PDD, D.1	DR	The PDD makes reference to the performed EIA, all environmental approvals and the final environmental clearance.	CAR 30: OK CL 11: OK	OK
11.2 Is an environmental impact assessment (EIA) required for the CDM project activity? *Note: determine by using a review of relevant legislation and local expertise.*	VR, 3.8 PDD, D.1	DR	Yes, as the CCGT project is classified as category "A" project, for which an EIA is mandatory.	CL 17: OK	OK
11.3 In case an EIA is required, has the EIA has been approved by local authorities and is the outcome accurately reflected in the PDD?	VR, 3.8 PDD, D.1	DR	The EIA has been approved by the State Expertise Department of the Ministry of Ecology and Natural Resources.	OK	OK
11.4 Does the PDD include a brief description of the environmental effects of the project, including transboundary?	VR, 3.8 PDD, D.1	DR	A summary of the content of the EIA is provided under section D in the PDD.	**CAR16: OK** **CL 25: OK**	OK
11.5 Are those effects properly addressed in the design of the project activity?	VR, 3.8 PDD, D.1	DR	No such effects are addressed in the PDD. According to the EIA there are no adverse environmental effects and no transboundary environmental impacts foreseen for the project activity.	OK	OK
11.6 Does the project comply with environmental legislation in the host country?	VR, 3.8 PDD, D.1	DR	Yes, the project is in line with the environmental legislation of the host country Azerbaijan.	OK	OK

Table 2: List of Requests for Corrective Action (CAR) and Clarification (CL)

Validation / Verification Manual

(35) The DOE shall raise a corrective action request (CAR) if one of the following occurs:

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

(b) The CDM requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

(36) The DOE shall raise a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

The wording of CAR/CL shall clearly address nonconformity or seek clarification, and avoid instructive / consultative language in order to prevent actual or perceived consultancy.

No.	CAR/CL		Observation (CAR/CL)	Reference	Summary of project owner response	Validation team conclusion
1	X		The technical description of the applied technology is very general within the PDD. CAR 1: The PDD has to be updated with more technical details according to the technical specification, which has to be disclosed to the validator during on-site assessment in Sumgayit in January 2008. The description of the project activity should contain more technical specifications, parameters. The results from the performance guarantee tests have to be presented. This section should include a description of how environmentally safe and sound technology and know-how to be used is transferred to the host Party(ies). Systems plans and responsibilities with regard to initial training (capacity building) and maintenance efforts during the project period should be outlined in this section. This is relevant when new technology is implemented such as a new boiler type, new gas turbine	4.1 PDD, A.4.2	Additional technical information was added to section A.4.3 of Version 2 of the PDD. In section A.4.3 wording is added on why the plant will effectively generate electricity during the crediting period (i.e. info on lifetime of plant components and training for effective operation and maintenance). Also wording on training regarding the CDM monitoring plan is added. ICF has provided the performance guarantee provided by Siemens. The performance guarantee has been incorporated while calculating the power output from the CCGT project y-o-y. The use of SI units is now adhered to throughout the PDD.	The issues raised under CAR 1 are adequately addressed. The handed over technical documents including the performance test results of 03/12/2008 /61/ are sufficient. CAR 1 is closed. OK

			type,new waste heat recovery and steam turbine, etc.			
2	X		It has to be demonstrated through a planned training for operation and maintenance, conditioning monitoring and other means, how it can be secured, that the CDM project activity can survive during the whole crediting period and deliver the CERs. The project required extensive initial training and maintenance efforts. However, these requirements have been elaborated in the PDD, but the final training activities were not yet included. The training on the implementation of the CDM monitoring plan and the preparation of the raw data for the periodic verification is missing. CAR 2: The requested procedure and documentation and responsibilities assignation, shall be applied, a site specific organigram and task allocation and training plan should be submitted to the validation team for evidence. The project proponent is requested to identify the training needs for the proper operation and maintenance of the project including implementation of the monitoring plan for CDM. It has to be confirmed in this context, that relevant procedures for review of reported data, for internal audits, for corrective actions and for project performance are in place.	4.3 PDD, A.4.2	Training plan is already included in the PDD (page 6). Documentary evidence of the Siemens training was provided during the site visit (presentation entitled "Sumgayit CCPP Azerenerji JSC Baku, Azerbaijan Training Program of January 2007). An organigram and task allocation plan is added to section A.4.3. of the PDD. Training needs regarding the CDM monitoring plan will be identified by ICF International before the actual training will take place towards the end of the first year of the crediting period. Procedures for internal audit and internal reporting are already described in detail in section B.7.2 of the PDD. Mr. Heydarov is the deputy director of AzerEnerji and responsible for the collection of information from the Director of the Sumgayit Plant. Subsequently, he would be the direct contact person for any discussion with the DOE/UNFCCC. Mr. Heydarov is the current deputy director of AzerEnerji. In future during the crediting period of the project – Mr. Heydarov or any of his successors would be responsible for any discussions with DOE/UNFCCC.	The issues raised under CAR 2 are adequately addressed. CAR 2 is closed. OK
3	X		CAR 03: Further evidence supporting the additionality assessment should be presented in	PDD, B.5	CAR 3. During the site visit, Azerenerji provided documentary evidence	The entire chronology of events

			the PDD and substantiated with further background information to the validation team in order to confirm the additionality of the project activity. The details about the investment parameters needs to be submitted to the validation team for verification. The increase in total investment and of the installed capacity compared to other official documentation (Initial National Communication of Azerbaijan Republic on Climate Change) needs to be substantiated with explanation. Why was the already 2001 mentioned project idea postponed for such a long time. Further information is required to justify the essential distinctions between the project activity and the current common practice based on the sub-step 4b of the additionality tool.		substantiating the investment costs and the financing structure of Sumgayit. Documentary evidence included the following commercially sensistive documents: Loan agreement between Azerenergy and the banks "BNP Paribas", "Societe Generale" and "Bayerischelandesbank" of 20 May 2005; Contract between Azerenergy and Siemens of 23 May 2005, Feasibility study conducted by company ENPRIMA in April 2004. *Why more MW capacity compared to the plan?* The Initial National Communication of Azerbaijan Republic on Climate Change of year 2001 on page 15 mentions the Sumgayit TPP 1 (also called "TETs-1 Sumgayitskaya") within the "the "Plan of perspective development of electrical energy system of Azerbaijan till 2010". The plan was developed in 1994-1995 with EU technical assistance and assumed that the Sumgayit TPP 1 would have added new gas turbines, would be constructed in 2003-2004, would have additional capacity of 420 MW and would cost 295 million USD. This was a plan of intents and was not substantiated with detailed feasibility studies, tenders for contracting engineering companies, loan agreements with banks. These practical steps were delayed because of difficulty of finding sources of funding	have been presented in the Annex 5 of the CDM PDD; and the supporting documents have also been presented and are deemed to be transparent and sufficient proof of early consideration of CDM for the project. It was further substantiated with a Statement of the Vice-President of JSC Azerenerji on Applicability of Open-Cycle Technology in Azerbaijan, dated 19 January 2010, that open cycle natural gas based cogeneration including gas turbines or internal combustion engine technology is not an option as base load plant of similar capacity /57/. The clearance of the open issues is satisfactory. CAR 3 is resolved and closed. OK

					for the project. The units of the former ”TETs-1 Sumgayitskaya” have reached the end of their technical lifetime in 2001. In addition, the units were optimized to produce heat for nearby chemical industries. Since the slowdown and closure of the chemical industries, the demand of heat from”TETs-1 Sumgayitskaya” dropped substantially making the operation of the plant uneconomic. The units were therefore taken out of service in 2002 and written off in 2004. The initial plan has been revised substantially by Azerenerji. Azerenerji decided to build a *new* power plant, since the TETs-1 Sungayitskaya was written off. Azerenerji requested the submission of proposals for the construction of a new thermal power plant in the range of 400-500 MW of capacity to be economically interesting for Azerenerji. Siemens submitted a proposal for 506 MW capacity. A new CCGT is also more expensive than rehabilitation or capacity addition of an existing plant, hence the higher investment cost then the one stated in the “Plan”. *Consideration of CDM component* The CDM component was taken seriously into account by Azerenerji during the planning of the Sumgayit project. Azerenerji prepared a Project Idea Note in December 2004 (the	

					document was made available to the DOE during the site visit). The PIN was sent to KfW in early 2005 for the development of Sumgayit as a CDM project: KfW hired the company "Energy & Commodity Services" for the preparation of the PDD (e-mail exchange between Azerenerji and "Energy & Commodity Services" is provided as documentary evidence). In April 2005 the DNA (Ministry of Ecology and Natural Resources of the Republic of Azerbaijan) was officially created in Azerbajan. In June 2005 Azerenerji submitted a request for a Letter of Endorsement to the newly created DNA. The DNA issued a letter of endorsement on 21 October 2005. Lengthy negotiations of financial arrangements were conducted in 2004 and 2005 with the three commercial banks ("BNP Paribas", "Societe Generale" and German "Bayerischelandesbank") interested in the Sumgayit project. The CDM component was discussed during these negotiations and was an important factor in the decision to finance the project by the three banks. A loan agreement was signed on 20 May 2005. Since Azerenerji was not satisfied with the work done by "Energy & Commodity Services" for the preparation of the PDD, it decided to	

					instead collaborate with BNP Paribas on the CDM front. On 20 June 2006 Azerenerji informed the DNA of this change with an official letter and the Ministry issued a confirmation letter (Letter of Endorsement) that favoured the development of the project under the CDM framework (see attached DNA letter as well as page 112 of the document "CDM Handbook Azerbaijan"). BNP Paribas chose ICF International for the development of the PDD. A consulting contract was signed by ICF International and BNP Paribas in February 2007 (see attached contract). Around 9 months were necessary for the preparation of the PDD and its submission for validation. *Common practice* Documentary evidence of Sub-step 4b is the loan agreement signed between Azerenerji and the three banks to be provided during the site visit. This shows that no ODA funds were used to finance the Sumgayit CCGT. Instead, the only other CCGT recently built in Azerbaijan - Shimal CCGT- could be constructed only thanks to ODA funds and would not have been constructed on a commercial basis. CCGT plants are not common practice in Azerbaijan: they can be constructed only if foreign technology is imported and either additional financial sources in the form	

					of CERs are sought for, or very favourable public funding conditions are applied for financing. _____ __ For CDM consideration: Way back in 2004 – AzerEnerji was considering investing in the CDM document development and making overall investment in 7 emission reduction project ideas with AzerEnerji. AzerEnerji had approached KfW bank. KfW bank had appointed Jogen Boldt to perform the feasibility study for these projects. Jogen Boldt had sent a memo to AzerEnerji through a FAX (fax date: January 25, 2005 – much before the financial closure for this project was completed). The memo had several observations and comments of Jogen Boldt on the CDM potential of each of the seven projects with AzerEnerji. This is the best evidence that we have to establish that AzerEnerji was seriously considering CDM revenues at the time of making investment in the CCGT project. – The internal combustion engine (IC) has been considered as one of the	

					plausible option but summarily rejected as it can't be considered as one of the baseline option. The reason for considering IC Engine as one of the plausible option is that the methodology guides you to consider "power generation technologies that use natural gas but technology different from the project activity". No changes are made in the PDD.	
4	X		CAR 04: The project starting date should be updated according to the actual situation and the status of permits and approvals. Please provide the schedule of works to the DOE for review (see PDD, page 7).	7.1.2 PDD, C.1	As documentary evidence of the implementation plan see the three documents attached (entitled Qrafik 1, 2, 3). Delays are expected compared to the estimated construction time. The CCGT is not expected to generate electricity for the grid before 1 June 2008. _____ The revision of the Organigram has been presented in the PDD. Mr. Heydarov is the deputy director of AzerEnerji and responsible for the collection of information from the Director of the Sumgayit Plant. Subsequently, he would be the direct contact person for any discussion with the DOE/UNFCCC. Mr. Heydarov is the current deputy director of AzerEnerji. In future during the	CAR 4 is resolved and closed. OK

					crediting period of the project – Mr. Heydarov or any of his successors would be responsible for any discussions with DOE/UNFCCC. Suitable changes made in the PDD.	
5	X		CAR 05: The fuel consumption of each power or energy source should be included on section B.6.2. (e.g. electricity imported from the grid or from diesel generation set, steam – if applicable), for the calculation the following tools should be applied: "Tool to calculate project emissions from electricity consumption", "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion".	PDD, B.6.2	The PDD now incorporates information on: - electricity imports from the grid during start up periods and during emergency shut downs of the Sumgayit plant - electricity consumption of the Sumgayit plant for its own energy needs - natural gas consumption by the auxiliary boiler for the start up of the plant (the natural gas consumption figure of 645,000,000 m3 includes this natural gas consumed by the auxiliary boiler) - diesel oil consumption by the two small diesel generators operated only in emergency cases (i.e. fires, electricity network shutdowns etc.)	The CAR is resolved and closed. OK
6	X		CAR 06: Emission coefficient of each fuel should be included on section B.6.2. (incl. electricity if fixed ex-ante).	PDD, B.6.2	Emission coefficients are included in the PDD.	The CAR is resolved and closed. OK
7	X		CAR 07: The confirmation by the host country in form of the host country approval has not been received yet. Please clarify in this context, how the project activity meets the sustainable development criteria and national criteria of the	1.1	The project has received the LoA from the Designated National Authority of the country. The LoA from the buyer country (UK – DEFRA) has also been received, dated	The CAR is resolved and closed. OK

			host country. The sustainable development effects like local employment during construction and operation, know how and technology transfer, fulfillment of national CDM criteria for sustainable development and other voluntary criteria has to be explained and justified to the validation team. It has to be clarified, if the national requirements for technology transfer within CDM-projects be sufficiently applied ?		3 September 2008.	
8	X		CAR 08: Annex 4 of the PDD have to be provided according to the relevant PDD guidelines issued by UNFCCC, which includes in Annex 4 copy of worksheets used by the operator based on aggregation of monthly / weekly / daily worksheets and calculated from the formulasgiven in methodology AM0029 respectively ACM0002 are required.	3.2 PDD, Annex 4	We have added in Annex 4 reference to the spreadsheet "Azeri carbon emission factor final" which includes the worksheets to be used to calculate ex post the project emissions, baseline emissions and leakage emissions. The spreadsheet will need to be submitted together with the PDD to the CDM Executive Board. In addition, the spreadsheet called "Monitoring spreadsheet" will be used by the personnel at Sumgayit power plant in charge of monitoring. This spreadsheet tracks daily and monthly data on electricity production, consumption, export to grid and natural gas and diesel consumption.	The CAR is resolved and closed. OK
9	X		CAR 9: The net electricity will be metered and is included in the monitoring plan, B.7.1 of the PDD. The electricity consumption during total plant shut-down has to be monitored in addition and has to be added to the monitoring plan.	PDD, B.7.1	We have added electricity consumption during plant shut down in B.7.1.	The CAR is resolved and closed. OK
10	X		CAR 10: There are different needs for further	7.3.4	The PDD has been made consistent	According to audited project

			justification of the additionality, which are related to the combined cycle technology: - Please justify the different capital cost of option 1 on page 20 (403,320,000 USD), equivalent to approx. 261,643,000 EUR to the mentioned amount on page 4, which is 336,100,000 EUR. - Please clarify in this context the effects of revaluation of the EUR against the USD and relation to local currency Azerbaijan Manat (New Manat) and effects on NPV / IRR calculation. - Please clarify why the investment cost of option 1 (403,320,000 USD) is approximately 25 % higher than the investment cost of option 2 (324,000,000 USD).	PDD, B.5	w.r.t. investment in various technologies. The various typo errors of the previous submission have been duly corrected o The cost of the baseline technology is 225.95 million US$ (2005 basis) o The cost of the project activity (Sumgayit CCGT) is 421.91 million US$ (2005 basis) The investment in the CCGT technology is almost twice as that of the condensing cycle technology. This is further established by the ICF internal analysis of the costs of various technologies, given in the table below. The cost of Sumgayit CCGT is especially higher than the usual combined cycle technology as the Sumgayit CCGT technology utilizes multi-shaft technology and one of the first of its kind in Azerbaijan: Further specific information (strictly confidentially) has been provided to the validation team, which substantiate the statements above.	cost estimates the capital costs of the project are USD 405,580,000 (in 2005 USD). The capital cost of the baseline alternative are USD 236,340,000 (in 2005 USD). The amount is based on the 2002 price quote for installing a 300MW unit /72/ at AzDRES power plant. The 2002 costs were US$38million for technology. According to Russian default values the technology costs are estimated to be 40% of the overall CAPEX for thermal power plants, with the remainder being construction costs. However, in order to be conservative a ratio of 35% has been applied. The costs of two units (US$76 million) are calculated by doubling the costs of a single unit. Doubling the costs of a 300 MW unit is conservative, since the installed capacity of 525 MW is less than twice as much. Since the costs are for 2002, the costs are escalated with the US Consumer Price Index to arrive at values in 2005 USD. CAR 10 has been resolved. OK
11	X		CAR 11: Because 2/3 of the output is produced	7.3.4	The CAR may not be true in the real	CAR 11 has been resolved.

			in gas turbines and only 1/3 in the simple steam turbine, the investment costs required should be approximately 30 % less than those for a conventional steam power plant.	PDD, B.5	sense. The project baseline is not an IC engine as is the 2/3 of the project activity. The baseline is a multi-fuel fired steam boiler-turbine-generator arrangement. Given that it may not be correct to make an estimate cost comparison between the baseline and project activity. An IC turbine-generator arrangement, which will run on natural gas is costlier than the baseline. Next, 1/3 of the project is heat recovery (from the flue gases from the IC engine of the project activity) – coupled with a turbo-alternator. This is a more complicated arrangement than the baseline and thus, even for the same capacity – the heat recovery generator is likely to be costlier than the baseline itself. No, changes made in the PDD. _____ It may not be absolutely valid to say that: since the 2/3 of the output is produced in gas turbines and only 1/3 in the simple steam turbine, the investment required should be approximately 30% less than those for a conventional steam power plant. Reason being the CCGT technology employs IC engine, where the temperatures due to direct burning of fuels in the combustion chamber leads	OK

					to the movement of piston. The chemical composition of the expansion chamber for the hot gases in the case of the IC engine is much more complicated than that of the steam turbine engines, where the hot steam expands, converting into water, and while doing that moves the piston. Next, a waste heat recovery boiler (WHRB) is a costlier investment than the stand alone boiler itself, as it is required to be able to extract the maximum possible heat from flue gases along with having a co-firing facility to reach the optimum temperature to provide steam temperature to produce required electricity in the steam turbine attached to the WHRB. Further specific information (strictly confidentially) has been provided to the validation team, which substantiate the statements above.	
12	X		CAR 12: The title of the project activity in the PDD is different from the title in the LoAs (/26/,/27/) and also different from the MoC (/28/).	VP: 1.6 PDD, A.1	The titles of the PDD, MoC and the LoA have been made consistent. (The revised MoC has also been submitted to the DOE)	The CAR has been resolved and closed. OK
13	X		CAR 13: Annex 1 of the PDD contains only the project participant of the host country, but not from the Annex I country.	VP: 2.1 PDD, Annex 1	Annex 1 of the PDD has been updated, it is now consistent with the MoC and other parts of the PDD.	The CAR has been resolved and closed. OK
14	X		CAR 14: The measurement interval / frequency is not explicitly mentioned in the PDD under section B.6.4. and B.7.1., but under section	VP: 8.7 PDD, B.7.1	Appropriate changes made in the revised PDD under section B.7.	The CAR has been resolved and closed. OK

			B.7.2., even it is obvious that the main parameters electricity and natural gas will be measured continuously.			
15	X		CAR 15: Provisions on storage are made in section B.7.2. under “Data storage”, but the time of archiving is not defined.	VP: 8.19 PDD, B.7.2	Appropriate changes made in the revised PDD under section B.7.	The CAR has been resolved and closed. OK
16	X		CAR 16: A summary of the content of the EIA is provided under section D in the PDD without any description of environmental impacts, which is mentioned only under section A.2. of the PDD.	VP: 11.4 PDD, D	Summary of the main areas of environmental impact assessment has been provided to emphasize that the project is rigorously assessed on environmental grounds and only if the project is found satisfactorily an EIA NOC and a Host Country Approval for the project could be issued. The PDD has been updated (section D) accordingly.	The CAR has been resolved and closed. OK
17	X		CAR 17: "The new CCGT is expected to start in June 2008": Status of implementation should be updated.	VP: 7.1.2 PDD, C.1	Appropriate changes made in the revised PDD.	The CAR has been resolved and closed. OK
18	X		CAR 18: Project coordinates should be indicated in decimal form with 4 digits. The coordinates seem to match residential areas but not the project activity.	VP: PDD: A.4.1	The actual project coordinates have been referred to in the PDD. The information for this has been sourced from Google Earth. Since there is no prescribed format for presenting this information; the project coordinates have been provided in decimal and degree system	The CAR has been resolved and closed. OK
19	X		CAR 19: The project implementation timeline is attached as Annex 5, but not referenced from the text. As this subject belongs to chapter B.5, there should be a reference made to Annex 5 and a short summary be provided within section B.5. as discussed before.	VP: 4.1 PDD: B.5	Appropriate changes made in the revised PDD. Section B.5 has been amended accordingly.	The CAR has been resolved and closed. OK

20	X		CAR 20: The discussion neglects the demand for natural gas in Azerbaijan, which has imported natural gas to meet its own demand at least at the time of decision making. Whereas there are untapped resources, it must be demonstrated that the project does not lead to supply shortages or constrain other comparable projects.	VP: 5.2.2 PDD: p. 8	As discussed under the justification for the third applicability criteria on page 8 of the PDD. Further, the web links of gas production in Azerbaijan has also been provided in the PDD. It is evident that there is potential of more supply than demand. Also, the project's natural gas demand is less than 7% of total gas demand in the country. Thus, the project would neither have shortage of natural gas for electricity generation nor would the project lead to any disruption of natural gas supply to other similar power plants in the region. Further background research of the validation team has been undertaken, the statement can be confirmed.	Natural gas is sufficiently available in the region. Azerbaijan produces an excess supply of natural gas. Moreover, Azerbaijan has access to the Russian natural gas pipeline system. The CAR has been resolved and closed. OK
21	X		CAR 21: Identification of baseline scenarios, Table p11 and following pages: 1. What is the source for the technical lifetime for the project alternative a)? 15-25 years is a wide range! 2. Scenario b): descripton refers to turbines whereas the scenario is internal combustion engine; the explanation does not match and is not plausible to exclude engines. 3. A scenario of gas turbines without waste heat utilization (without waste heat boiler & steam turbine) is missing. 4. The exclusion for following alternatives are not convincingly demonstrated: - "steam turbine using gas"	VP: 5.4.1 PDD: B.4, p. 11-15	The following changes have been made in the PDD: (1) An amended feasibility report /18/ has now been provided that indicates that the unit lifetime is 25 years. Also, several web references *("TACKLING INVESTMENT CHALLENGES IN POWER GENERATION IN IEA COUNTRIES", pages 76, table 2.1 { Source: IEA, 2006b }* /54/ has been provided that the lifetime of a typical CCGT is 25 years. (2) The confusion regarding the scenario under (b) other technologies using natural gas, has been corrected. There are three options for technologies that use natural gas (i) IC engine	CAR 21 is resolved and can be closed. OK

			- wind / hydropower - coal (why should coal not be available?) Step 2 (identification of the economically most attractive baseline scenario may have to be amended for further potential scenarios).		running in open cycle mode (ii) fuel cells, and (iii) steam turbine running on boilers that are natural gas fired has been considered. None of these three options meet the eligibility criteria to be considered as a plausible baseline option (for details refer the revised PDD). (3) A scenario of gas turbines without waste heat utilization would be nothing but IC engine running in open cycle mode: this has been considered as part of (b) Other technologies using natural gas. However, since open cycle gas turbines are not used for base load – this option has been removed from the PDD from further discussion. This is because Sumgayit is a base load plant. It was further substantiated with a Statement of the Vice-President of JSC Azerenerji on Applicability of Open-Cycle Technology in Azerbaijan, dated 19 January 2010, that open cycle natural gas based cogeneration including gas turbines or internal combustion engine technology is not an option as base load plant of similar capacity /57/. (4) The exclusion for following alternatives is demonstrated as such: - "Steam Turbine Using Gas" is not state of the art technology. When using natural gas it is internationally preferred	

					to either go for IC engine (when operating in open cycle) and CCGT (when operating in closed cycle). However, natural gas could indeed be used for steam turbines, but not as the only fuel but as a fuel mix (mazut and natural gas) - this is the neither economically most attractive nor allowed by the methodology which allows for only one fuel in the baseline. Hence, this technology has now been removed from the baseline – please note that under it is cheaper to run a steam plant on Mazut or other liquid fuels than gas. Hence, steam based electricity generation using gas would never be an attractive baseline option. - Wind/Hydro can not be used as baseload - thus these can not be used as the baseline option. During the on-site assessment it was confirmed, that no potential hydropower plant of this size and comparable load factor required for baseload operation is considered. Moreover it was confirmed that the meteorological conditions in Azerbaijan with average annual rainfall between 200 and 1,300 mm are not in favour for hydropower plants for baseload functions. Alternative energy will be made use of in all regions of Azerbaijan in the	

					future, said Etibar Pirverdiyev, President of AzerEnergy state utility on 20th of January 2010 in the news (http://en.apa.az/index.php) . According to him, first of all, untapped hydropower potential should be fully used. "We are constructing small hydropower stations on mountain rivers ". - Coal is not used in any of the power plants in Azerbaijan; there is no coal being mined in Azerbaijan or in the region. When Azerbaijan has its own natural gas and oil - there is no reason for it to import coal for power generation. Step 2: The baseline alternatives are still the same (i) CCGT - Sumgayit project activity without CDM and (ii) Steam turbine based generation using Mazut - Hence the financial analysis does not need to be redone.	
22	X		CAR 22: The following parameters do not appear conservative compared to published international benchmarks, no transparent evidences are provided to substantiated these figures (reference data in brackets): 1. Efficiency (57-58%) Please provide the results of the performance tests to the validation team. Should these figures	VP: 7.3.4 PDD: B.5	(1) Efficiency of the project activity has been quoted as provided by the technology provider (Siemens). Please note that this is as per the contract agreement that has already been provider to the validation team. Also the expected efficiency of the project activity is 52.7% (The guaranteed heat rate for the project is 6829 kJ/kWh - which translates into 52.7% efficiency). The performance test wherein this	1) Efficiency of 52.71 %. The reference source is the performance test of the Sumgayit power plant /61/, where the net heat rate of 6829.0 kJ/kWh is equivalent to an efficiency of 52.7 %. It could be confirmed in additional interviews with the EPC contractor and other technical experts at the

			be higher than anticipated so far, the CDM documentation (PDD, emission reduction calculation, financial analysis, sensitivity analysis) has to be updated accordingly. 2. Capacity factor (can be > 80% for baseload) The FSR of Enprima mentions 8000 h/a, number of normal startup, shutdowns less than 50 per year. Please provide the results of the performance tests to the validation team. Should these figures be higher than anticipated so far, the CDM documentation (PDD, emission reduction calculation, financial analysis, sensitivity analysis) has to be updated accordingly. 3. Price of gas (http://www.eurasianet.org/ departments/business/articles/eav011206.shtml reports for 2006, increase to 110$/1000Nm3 for imported(!) gas) 4. Capital Costs (publications: 400-550Euro/kWe; the 834US$/kWe appears too high) FSR of Enprima states 591 EUR/kW, equivalent to 710 US$/kWe at April 2004 currency exchange rate (1 US$ = 0.83267 € according to: http://www.oanda.com/convert/fxhistory) 5. Other O&M costs		performance was achieved has been provided to the validation team. The performance guarantee by Siemens has to be met by the vendor as part of their contract with AzerEnerji (Elaborate note on this has been provided in the Siemens contract including the tracability to an acceptable standard for conducting these performance test) Thus, efficiency value of 52.7% as committed by the technology provider should be deemed as final. The evidence for this has been provided as the report given to AzerEnerji by SIEMENS at the time of project commissioning. Table 8.1 from the book "Umweltschonende Energietechnik" of Prof. Dr.-Ing. Nilkolai V. Khartchenko (1997, ISBN: 3-8023-1587-1); Own translation ("Advanced Energy Systems" of Khartchenko, Nikolai V, ISBN: 1560326115) Table 8.1. Comparison of GUD (CCGT) plants with different steam cycle configuration (ISO conditions: 0°C, 1.013 bar, mean sea level) Steam | Capacity [MW] | Overall	PowerGen 2009 and other background research that the plant configuration does not allow higher efficiencies of the CCGT plant 2) Capacity factor of 80%. The validation team has confirmed that the highest capacity factor for any power plant in Azerbaijan in the 2004-2006 period was 77.3%. The factor is hence chosen conservatively. 3) Price of gas 60 USD/1000m3. The gas price is based on actual 2005 prices. The validation team reviewed the invoices for natural gas deliveries in 2005. An additional sensitivity analysis is done based on the assumption that Azeri prices for natural gas and mazut approximate international energy prices. EIA projections for natural gas prices are used to model this. http://www.eia.doe.gov/oiaf/archive/aeo05/excel/aeotab_13.xls 4) Capital costs of USD 405,580,000. The amount is

			6. Electricity tariff The resulting levelized cost seems at the upper limit of IEA data (37-60$/MWh, with very few specific cases >55$)		<table><tr><th>Cycle Configuration</th><th>Gas Turbine</th><th>Steam Turbine</th><th>CCGT (GUD)</th><th>Efficiency</th></tr><tr><td>One Pressure Cycle</td><td>318.6</td><td>148.1</td><td>466.7</td><td>51.6</td></tr><tr><td>Two Pressure Cycle</td><td>318.6</td><td>172</td><td>490.6</td><td>54.2</td></tr><tr><td>Three Pressure Cycle</td><td>318.6</td><td>179.2</td><td>497.8</td><td>55.0</td></tr><tr><td>Three Pressure Cycle with Reheating</td><td>318.6</td><td>181.1</td><td>499.7</td><td>55.2</td></tr></table> (2) Capacity Factor, though can be greater than 80%; please appreciate the project planning has to be done based on the consultation with the technology provider (Siemens) and not based on the recommendation of a consultant (Enprima) who has just submitted a 'feasibility report based on several options available in the market'. The base capacity factor of 72.2% has been provided by AzerEnerji based on their power planning and also in consultation	Based on audited project cost calculated based on equipment, civil work and infrastructure costs. The specific investment costs of 773 USD / kWe are at the lower end of the range of a Study of IEA /17/, carried out in April-May 2008, which states specific construction Cost for CCGT power plants between 750 USD/KWe and 1,000 USD/kWe and for Russia 850 USD/KWe. 5) Other O&M costs of 10,630,000 USD/year. The amount is based on the Feasibility Study Report/18/. The values have been properly converted from Euros to USD at the average exchange rate of 1.31 USD/Euro. The values have been escalated by 3.4% to convert them into 2005 prices. Note: 3.4% is the US Consumer Price Index for 2005. The same O&M costs are chosen for both the project and the baseline. This is conservative since the project has significantly higher CAPEX than the baseline. 6) Electricity Prices. Electricity sales are the same under the project and the baseline.

					able to address the comment raised by the validation team - in sensitivity analysis - two generation scenario has been considered (i) where the capacity factor reduces by 10% and another where capacity factor increases by 15% - taking the plant operation to close to 8,000 hours. Results of this sensitivity analysis has been presented along with the PDD submission. The project is still financially additional. (3) Price of Gas has been projected based on the best available source of gas projection price available at the time of decision making for the CDM project activity. The results of the gas price projection and suitable references have been provided in the financial analysis of the project activity. Again it seems the validation team reviewed an older version of the PDD - as there are no references to www.eurasianet.org in the PDD (4) Capital Costs for the baseline has been chosen using the past quotes available at the time of project planning. Also, the actual quote provided by the Technology Provider has been used. Please appreciate that the information provided by Enprima study is a report by Consultant (and is indeed not based on actual quotations and is also dated). Further even the	Electricity revenues therefore do not enter the investment analysis. CAR 22 is resolved and closed.

					Enprima $/KWevalue on average (1US$ = 0.77 € for HY1 2005 www.oanda.com) for the first half of FY 1 2005 gives a value of 770 US$/KWe. Please appreciate that the state of the art German technology (Siemens) that has to be exported from Germany to Azerbaijan (with no shipping connection) adds further to the cost. Thus, the estimate of 834US$/KWe is within the acceptable range for a new CCGT power plant. Since this parameter may also affect the project financials - a +/- 10% variation has been applied to the Capital Costs associated with the project cost too while conducting the sensitivity analysis. (5) O&M Costs had originally been taken as 3.3million US$/turbine (this includes all overheads, salaries, repairs etc.) These numbers are based on the estimate provided by AzerEnerji based on the several plants that they operate throughout the country. The baseline plant involves two turbines and hence a cost of 6.6million US$ had been considered. The project acticity has three turbines hence a cost of 9.9million US$/turbine had been considered. Given the total CAPEX of 421million US$ - O&M costs at ~2.2% is conservative by any international standard. Since it is an assumption up to a 10% +/- sensitivity analysis has been	

					applied to these assumptions. However, to be conservative a constant O&M factor of 6.6million US$ in both the baseline and project scenario has been considered. (6) Electricity Tariff has been taken as base for the year 2005 and every year there on an annual escalation of 7.5%, which is 2.5% lower than the country's inflation rate for the year 2005 has been applied. Since, it is an assumption up to a 10% +/- sensitivity analysis has been applied to these assumptions.	
23	X		CAR 23: Sensitivity analysis should separate the effects for plant load factor and generation efficiency. It is not clear how the variation in generation is achieved (higher load factor or higher efficiency), see also CAR 22.	VP: 7.3.4, PDD: B.5	The sensitivity analysis currently being applied in the financial model is for a +15% and - 10% variation in the capacity factor. Another sensitivity analysis for a +5% and -10% efficiency has also been included in the updated financial model. However, please note that this project is about natural gas based generation and not for efficiency gain at a project plant. Hence considering differing efficiency value for different loads etc. are beyond the scope of the sensitivity analysis.	CAR 23 is resolved and can be closed. OK
24	X		CAR 24: 1. IRR spreadsheet seems to presume unequal time periods for the IRR calculations. In some spreadsheets, rows are hidden. 2. "Correction factor" for electricity generation used for calculation is not mentioned in PDD.	VR: 7.3.4 PDD: B.5	1. The IRR spreadsheet had considered unequal time periods as it takes much longer to construct a CCGT plant (project activity) than a condensing cycle plant (baseline). However, the unequal time periods have now been removed, and both the baseline and	1) OK 2) OK 3) In the revised investment analysis a 20-year period of assessment has been chosen. This is the maximum suggested

			3. Is the assumed project lifetime of 20 years (up to 30/40 years should be feasible for CCGT power plants under consideration of advanced preventive maintenance) plausible and substantiated manufacturer information and independent technical knowledge? (Given case, a fair value would have to be considered). 4. How is it confirmed that the selected benchmark allows for consideration of taxes as expenses (as is done in the spreadsheet)? 5. Documents referred to substantiate the benchmark seem ambiguous with respect to commercial lenders. Also, the actual loan conditions (3.072%) differ significantly from the benchmark. There is no evidence that the same benchmark has been applied by Azerenerji in similar projects. 6. How was it substantiated that the range of variations presented in the benchmark analysis is reasonable?		project activity have the same time period for IRR calculations. 2. The correction factor in the spreadsheet (to account for deterioration of CCGT operation as per the graph provided by Siemens) has now been removed from the spreadsheet for simplicity. 3. As per the EB 41, Annex 45 paragraph 3 the maximum period for investment analysis has been provided as 20 years and updated for 25 years in line with the operational life time. Also please note that for both IRR and levelized cost of generation calculation a discounted cash flow is incorporated, which would have little or no impact on the IRR or levelized cost of generation for cash flows happening beyond 20 or 30 years. 4. Selected benchmark does not remove taxes from the free cash flow calculations to incorporate those as expenses. But this is done as the financial benchmark IRR is to be calculated based on the free cash flow only, which requires that tax (which represents cash outflow) be removed from the net cash accrual before the IRR is calculated. This approach of IRR calculations was developed in consultation with one of the prime	in paragraph 3 of the "Guidelines on the assessment of investment analysis". Since the expected operational lifetime is 25 years, 20% of the capital costs have been included as a residual value in the final year of the period of assessment. The validation team considers this sufficiently conservative in line with paragraph 4 of the "Guidelines on the assessment of investment analysis". ad 4) In the revised investment analysis a the pre-tax Internal Rate of Return (IRR) is chosen as financial indicator. ad 5) PPs have chosen a benchmark of 14.95%, based on the average interest rate reported by the Central Bank of Azerbaijan for Deposits and Savings in foreign currency with a maturity of at least 5 years in May 2005, i.e. at the time of the investment decision. The benchmark is a pre-tax benchmark, which is appropriate for the chosen financial indicator. The benchmark is in "hard" foreign currency, which makes it appropriate for an analysis done in US$ and in constant prices

					lending bank to the project (BNP Paribas): if needed further references on procedure to calculate IRR can be provided to the validation team. This is the way to calculate IRR based on financial procedures. 5. Please note that the benchmark required from an investment project is reflection of the country risk: Azerbaijan is still struggling with high inflation - close to 10% and a not very well reformed electricity markets. However, the loan conditions are based on the standard Eurobor rates of exchanges based on the loan being sanctioned by a consortium of leading banks from Europe. If however, AzerEnerji seeks the same loan from a national bank in Azerbaijan - they would not be able to get the loan at any less than 15% rate of interest (Please refer Annex 6 of the PDD). The proofs for high interest rates have already been provided to the validation team. Also note that AzerEnerji has provided a self-declaration that they consider a 15% rate of internal return for investment in power projects (this is based on usual financial calculation methods of IRR, which applies on net cash flow after tax deductions only), which has been updated on 16.36 %. 6. Range of variations to be	(i.e. without inflation). The benchmark is reliable because the interest rate varies very little in the relevant time frame (between 2004 to 2006) and the rate is slightly lower than the average interest rate on foreign currency loans (credits placed) with a maturity of 5-10 years in 2005. The applicability of the benchmark to evaluate the profitability of power investments in Azerbaijan was also confirmed during the site visit. The validation team confirmed via follow-up interviews that power projects in Azerbaijan are considered viable only if guaranteed returns of minimum 15% are ensured. This requirement was set uniformly in the Soviet Union for power investments and was officially maintained in Azerbaijan since the break-up of the Soviet Union. During the site visit it was confirmed that this benchmark continues to be used as tool for evaluating investments by Azerenerji. The rate of 14.95% is reasonable and conservative, because no additional risk premium was added.

					incorporated in the sensitivity and benchmark analysis has been so chosen so that it suitably reflects the inflation in the country. In Azerbaijan inflation is in the vicinity of 10% (2005 basis) based on several agencies. Hence, a variation of 10% has been considered as appropriate. Suitable changes in the excel file showing the project financials have been made.	6) According to the "Guidelines on the assessment of investment analysis" (version 05), only variables including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. The validation team thus confirms that the following parameters meet the requirement and these parameters have been subjected to variations in the range of +10% and -10% in the PDD. • Investment costs • Natural Gas Price • Non-fuel OPEX • Fuel Efficiency • Power Production (for both project and baseline) In addition the following two scenarios have been analyzed: First a CAPEX reduction by 20% has been considered in order to provide additional assurance in the face of relatively large uncertainty about baseline CAPEX.

						CAR 24 is resolved and can be closed. OK
25	X		CAR 25: "this IRR is estimated using the present prices for natural gas": This statement is misleading as the gas prices are based on some adaptive and increasing value.	VP: 7.3.4, PDD: B.5	The identified statement was a typo error in the PDD, which has now been corrected. Further a thorough proof-reading of the PDD was completed to ensure that any such typos if still present are suitably corrected.	Gas prices are based on actual 2005 prices. The validation team reviewed the invoices for natural gas deliveries in 2005. The CAR is resolved and closed. OK
26	X		CAR 26: Leakage: 1. The formula for EF_BL,upstream,CH4 is not the one to be used for Option 3 (see p24) (see also B.6.2) 2. Is GHG data for leakage (other than based on tier 1) reported to UNFCCC? In such case, use of the data table in the methodology is not justified. 3. The conclusion to neglect leakage does not seem plausible, if the baseline plant is mainly using fuel oil with low CH4-emissions. Please provide the according spreadsheet for review. 4. validation report to be revised accordingly.	VR: 5.6.1 PDD: B.6.1	The following changes have been made in the PDD: 1. Treatment of leakages (whether in the main section of the PDD or in the Annex) has been revised; following the guidelines provided in the latest version of AM0029. Project leakage is calculated based on the expected quantity of gas to be used in the project activity; And for the baseline - since option 1 has been used to estimate the baseline emissions (as this would give the least baseline emissions) - the leakage emissions have also been calculated for the Option 1 (baseline - cohort of plants contributing to the build margin). The formulas have been updated 2. As per the methodology since the baseline and project activity natural gas would come from Azerbaijan (a non-Annex I country) use of the default	The CAR is resolved and closed. OK

					leakage emission factor for leakage calculation is justified. 3. Please review the spreadsheet provided - the worksheet on leakage - it is very evident leakages in baseline are more than the leakages in the project activity. 4. Validation report review - No action for the Consultant.	
27	X		CAR 27: 1. NCV_NG,y is a monitoring parameter, belonging into B.7.1. (also for NCV_m, NCV_d) 2. title and contents of the table for EF_BL,Upstream,CH4 do not match 3. OXID_NG, OXID_oil: according to methodology, IPCC default value (1) should be applied. 4. What is the purpose to list the carbon content of gas, mazut and diesel? 5. Justification for tabled data for EF_upstream,CH4 missing. In general, please refer to the GUIDELINES FOR COMPLETING THE PROJECT DESIGN DOCUMENT:	VP: 5.5.3 PDD: B.6.2	Appropriate changes made in the revised PDD. 1. Corrections made 2. Corrections made 3. Suitable action taken for monitoring table 4. Carbon content of gas, mazut and diesel has been listed so as to be able to monitor the same for calculation of baseline, project and leakage emissions. 5. Tabled data is provided as default in the methodology itself - hence its use is justified.	The CAR is resolved and closed. OK

			" Data that is calculated with equations provided in the methodology or default values specified in the methodology should not be included in the compilation."			
28	X		CAR 28: 1. p33: "…selection is the build margin(BM).": This contradicts Option 3, selected on p24! 2. EF_BM and EF_CM seem obsolete if Option 3 prevails 3. recording frequency for Fuel consumptions (gas, Diesel) should be indicated as per methodology. 4. EF for fuel f not listed as monitoring parameter. 5. How was it substantiated that the calibration once in 3 years meets the relevant requirements?	VP: 5.5.4 PDD: B.7.1	1. The baseline is the build margin and the same changes have now been applied throughout the PDD. 2. Since, the baseline is the build margin, the monitoring tables for operating margin, build margin continue to remain valid and thus have been included in the monitoring table B.7.2 3. The PDD has been updated to reflect these changes. 4. All the fuels that will need to be monitored as part of the project activity have now been included in the monitoring table. Other parameters associated with these fuels to calculate emissions have also been included in the monitoring tables. 5. Electricity Meters in Azerbaijan are installed by Gosenergonadzor (agency included in the Ministry of the Industry and Power of the Azerbaijan Republic). All meters have an accuracy class of 0.2. The electricity meters are calibrated every three years. The calibration and sealing of meters is made by the State	The CAR is resolved and closed. OK

					Agency on Standardization, Metrology and Patents, which issues a calibration certificate for three years. Since, the metering is standardized by the state to conform to reliable standard in the country - it can be concluded that the metering calibration is reliable and also meets the relevant requirements.	
29	X		CAR 29: Starting date should be based on definition in EB41; it is understood that the contract with Siemens dates 2005-05-25, thus little impact.	VP: 7.1.2 PDD: C.1	The EB41para 67 states: In light of the above definition, the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project. For those project activities which do not require construction or significant pre-project implementation (e.g. light bulb replacement) the start date is to be considered the date when real action occurs. In the context of the above definition, pre-project planning is not considered “real action”.	The CAR is resolved and closed. OK

					Thus: our selection of start date (May 23, 2005) of the project when the EPC agreement with SIEMENS was signed is appropriate.	
30	X		CAR 30 1. How was it substantiated that "all necessary approvals…" (Which?) are obtained? 2. The PDD seems to indicate a table of contents of the EIA - no results. 3. A brief indication of environmental impacts should be presented and further substantiated.	VP: 11.1 PDD: D.1	1. That the project has received the EIA NOC and that the project is now already commissioned and is exporting electricity to the grid is enough substantiation that the project has all the necessary approvals necessary in the country to begin operation. 2. The PDD indicates the key areas on which the project is assessed for its soundness on environmental impacts before being approved. The EIA NOC and the CDM LoA from Host country is enough indication that the project has received all environmental clearance. 3. The project is being built at a site where a thermal power plant was already in operation and had been decommissioned in 2004. The project activity has no more environmental impacts than the situation that existed at the project site a few years back. Since, there are no incremental environmental impacts due to the project activity – none so have been highlighted in the section.	The CAR is resolved and closed. OK
31	X		CAR 31:	VP: 3.2	No negative comments were received	The additional provided

			Sections E.2 - E.3 are not completed as per the Guidelines for completion of PDD.	PDD: E	for the project. Stakeholder had discussion on what CDM is and how it can help the country – but since there were no comments received for the project no more information has been provided in the section. Likewise in the section E.3. of the PDD – since there were no corrective actions required for the project – no more (than what already present) information has been provided in the PDD. Section E has to be further elaborated as required by the UNFCCC guidelines and according to the permit procedures in Azerbaijan. Both the signed Azeri Version and English Version of the stakeholder consultation is attached with this submission.	evidences are deemed to be sufficient. CAR 31 is resolved and can be closed. OK
32	X		CAR 32 See also CAR 13: 1. Project participant BNP Paribas missing. 2. Contact information of Azerenerji inconsistent with MoC.	VP: 2.1 PDD: A.3, Annex 1	1. Project participant BNP Paribas name has been included in the PDD 2. Contact information of JSC AzerEnerji has now been made consistent with the MoC	The CAR is resolved and closed. OK
33	X		CAR 33: The data from Azerenerji to determine the baseline scenario's emission factor are not available for review. Please provide this evidence for transparency and tracebility reasons. Is the assumption of an unrestricted grid within Azerbaijan correct?	VP: 5.4.2.1 PDD: Annex 3	1. Please note that AzerEnerji is the state owned power utility with interests in power generation. They run and operate almost all the power plants in the country. The information on the power generation is not available on the internet as this information is not published on the internet. Mr. Abdulkhalik Heydarov who is the	The additional provided evidences are deemed to be sufficient. CAR 33 is resolved and can be closed. OK

					Technical Director at AzerEnerji manages the day to production information at all the plants in AzerEnerji. He is the source for complete information on the power generation and fuel consumption at the power plants in Azerbaijan. They are the only source of information on power sector in Azerbaijan. The information used in the PDD is accurate to our best knowledge. 2. Indeed the grid in Azerbaijan is unrestricted.	
34	X		CAR 34: The statement regarding registration of the Azerbaijan ThPP is not correct, not even a PDD has been published. Subsequent discussion of "Option 1" or "Option 2" for BM calculation is irrelevant as Option 3 for baseline has the lowest EF. Step 5: what is the meaning of "using a 1 year data vintage for 2006"? For the determination of the BM, please consider the inclusion of the Azerbaijan ThPP into the sample group.	VP: 5.4.2.1 PDD: Annex 3	Indeed the statement regarding the registration of Azerbaijan ThPP is not correct; the PDD is slated to be submitted for validation soon. However, the PDD is not registered with the UNFCCC. As suggested by the validation team - Azerbaijan ThPP has been included in the sample group being used to calculate the build margin for the CDM project activity The corrected approach for emission factor calculation has now been suitably incorporated in the CDM PDD.	The CAR is resolved and closed. OK
35	X		CAR 35: 1. Tables are not fully visible in hardcopy, consider reformatting. The related spreadsheets will be needed for submission to UNFCCC. 2. Spreadsheets listed under Annex 4 will be needed for submission to UNFCCC.	PDD: Annex 4	1. Tables have been suitably formatted - so as to improve visibility 2. Spreadsheets have also been provided with this submission	The CAR is resolved and closed. OK

36	X		CAR 36: 1. Assumptions for fuel mix in the baseline scenario are inconsistent between text and table (80:20 vs. 35:65). 2. The equation to determine EF_BL,CO2 does not account for multiple fuel. 3. SeeCL 59 8 above: Why would the efficiency of the baseline's steam turbine vary with the season? Is the value plausible?	VP: 5.4.3.1 PDD: B.6.1	1. All typo error associated with the fuel mix has been revised in the PDD. However, as noted by the validation team in no. 2 point below – the baseline allows for only one fuel technology. Hence in the baseline the fuel (Mazut/Gas) that would provide a better financial parameter has been included in the baseline. The IRR with 100% Mazut in baseline is 18.09%, which is more than 2% better than the IRR with 100% gas (15.91%). Hence, only single fuel (Mazut) has now been taken as the baseline. 2. As per the comment raised by the validation team – a single economically most attractive fuel option (Mazut) has now been taken as baseline option. 3. Indeed since in the baseline all the electricity is being exported to the grid (just as project activity with no heat extraction) - a constant efficiency in the baseline has been considered.	In the baseline a fuel mix of 100% mazut is assumed. This is the most economically attractive option. The CAR is resolved and closed. OK
37	X		CAR 37: The chronology of events suggests awareness of the CDM prior to the starting date, but it does not allow the conclusion that the CDM has been decisive in the decision making. Please provide as evidence all the relevant documents to demonstrate serious CDM consideration for submission to UNFCCC.	VP: 7.1.3 PDD: B.5, Annex 5	Necessary arguments as already mentioned in Annex 5 of the PDD; has now also been included in the Section B.5. of the PDD	The CAR is resolved and closed. OK

38	X		CAR 38: Please provide the original report of the stakeholder meeting including the signed list of attendees.	VP: 10.5 PDD: Annex	Original stakeholder consultation report with the signature of officials attending has now been provided to the validation team. Please note that this is in Azeri and an English translation of the stakeholder consultation report has already been provided to the validation team.	The CAR is resolved and closed. OK
39		X	CL 01: It has to be clarified, if there are any laws or regulations in Azerbaijan in place, which require the combined cycle technology for new power plants based on natural gas in Azerbaijan.	VP: 5.4.6 PDD: B.4, B.5	To our knowledge there are no laws and regulations in Azerbaijan that require CCGT plants. Other ways, the Azeri DNA would have not issued a letter of endorsement for this project.	The CL is resolved and closed. OK
40		X	CL 02: The confirmed start of the project activity and the crediting period has to be confirmed, also the amount of emission reductions for the several years within the crediting period in case of a possible delay of the project preparation.	VP : 7.1.3 PDD: C.1	The start of the crediting period will be confirmed towards the end of the validation process when more grounds for evaluating the most likely date of the registration of the project by the CDM Executive Board is available. Calculations of CERs within the crediting period will be updated thereafter. The date of 1 June 2008 is chosen for now. The starting date of the project activity chosen is the earliest date when real action was taken on the project. We had the choice of the following dates: April 2004: feasibility study concluded 20 May 2005: signing of loan with three banks 23 May 2005: signing of contract with Siemens 7 July 2005: entry into force of the loan 12 August 2005: opening ceremony of	The explanation of the whole project implementation schedule is deemed to be sufficient, hence CL 2 can be closed. OK

					the Sumgayit plant construction site 7 September 2005: start of construction works. The date of signing of the loan with the three banks (20 May 2005), is taken as starting date because it was the earliest "real action" on the project and point of no return (i.e. at the moment of the feasibility study reparation it was not yet clear whether the project would be implemented or not). _____ The project activity is likely to be commissioned by September-October 2008. Thus, the crediting period will start from either October 01, 2008 or the date of CDM Registration of the project, whichever is later. The project is CCGT power plant. Thus, the entire gas turbine –generator and waste heat recovery boiler – turbine and generator system would be commissioned at one go in September-October 2008. Since, the CDM project does not employ addition of subsequent units within the project site – the emission reduction from the project is expected to start immediately after the project is implemented. And no adjustment is required on the amount of emission reductions for the several years within the crediting period.	

41		X	If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity? The mentioned starting date on September 2005 has to be justified. CL 03: The project owner is requested to provide evidence, that incentives from CDM were seriously considered in the decision to proceed with the project activity before the start of the project implementation. Show that carbon finance was a driving factor in the decision to move ahead with the project, e.g. throughout a letter of loan decision with reference to the development of the project as CDM project, a LOI with ICF International. Was the project formally announced before the idea of carbon finance came into the picture (see Initial National Communication of Azerbaijan Republic on Climate Change , Phase II) ?	VP : 7.1.9 PDD: C.1, B.5	Although the idea of the rehabilitation of ”TETs-1 Sumgayitskaya” was launched much earlier and thus was included in the Azeri UNFCCC national communication, the project could not be concretized due to lack of finance. Carbon finance was considered by Azerenerji early on during the financial arrangements of the project: Azerenerji considered the CDM component first with KfW (in 2005) and BNP Paribas (in 2006-2007). Please see CAR 3 for the discussion regarding the consideration of the CDM component during the arrangement of finance for the Sumgayit project, with among others, the letter of the DNA which considered the project for CDM purposes back in October 2005. Below is the timetable of steps in the CDM cycle undertaken by the Sumgayit project proponent: December 2004: preparation of the PIN by Azerenerji Early 2005: PIN submitted to KfW by Azerenerji Early 2005: KfW’s hired consultant submits CDM feasibility study to Azerenereji April 2005: DNA created in Azerbaijan May 2005: CDM component discussed with banks providing the loan to Azerenerji June 2005: Azerenerji submits PIN to DNA to request Letter of Endorsement October 2005: Azerenerji receives LoE	The entire chronology of events has been presented in the Annex 5 of the CDM PDD; and the supporting documents have also been presented and are deemed to be transparent and sufficient proof of early consideration of CDM for the project. The date, when the EPC agreement was signed, which was the 23/05/2005 was selected as project activity start date. The project participants have demonstated that a couple of continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, among others there was a continuous contact with the newly established DNA of Azerbaijan. CL 3 is resolved and closed. OK

					June 2006: second request of the LoE to DNA, as BNP Paribas decides to be a buyer of CERs and covers the costs of PDD. LoE reissued immediately February 2007: ICF International hired by BNP as CDM consultant _____ _ CDM consideration is not incorporated in the loan document as the loan arrangement for the project is between JSC AzerEnerji (project proponent) and three banks (BNP Paribas, Societe Generale and Bayerische Landesbank). However, the carbon buyer from the project is only BNPP. Thus, the consideration of CDM is not incorporated in any of the loan documents – and it was considered as a separate commercial arrangement between BNP Paribas and JSC AzerEnerji. The fact that one of the commercial bank, who is the lender to the project, is also the carbon buyer further accentuates the argument that CDM consideration was prime at the time of making investment decision for the project. However, an Enprima study (feasibility study) dated 28 April 2004 (i.e. much	

					before the project was first considered) had recommendation that the project be developed as a CDM project so that the project could by-pass the additional financing cost associated with the CCGT project. The study is attached. _ For CDM consideration: Way back in 2004 – AzerEnerji was considering investing in the CDM document development and making overall investment in 7 emission reduction project ideas with AzerEnerji. AzerEnerji had approached KfW bank. KfW bank had appointed Jogen Boldt to perform the feasibility study for these projects. Jogen Boldt had sent a memo to AzerEnerji through a FAX (fax date: January 25, 2005 – much before the financial closure for this project was completed). The memo had several observations and comments of Jogen Boldt on the CDM potential of each of the seven projects with AzerEnerji. This is the best evidence that we have to establish that AzerEnerji was seriously considering CDM revenues at the time of making investment in the CCGT	

					project.	
42		X	Have conservative assumptions been used when calculating the project emissions? CL 04: Please provide evidence on the selected electricity consumption, the installed capacity of the electrical consumers and their planned operation time (energy demand in KW and in KWh, list of installed capacity of electricity consumers). The project emissions from any diesel generator-set have to be taken into account and has to be monitored by a separate power meter. Please provide the manufacturer data or technical specifications and excel worksheets to be able to re-trace the calculation figures used for the project emission determination. The calculation of the project emissions and leakage emissions and startup and auxiliary fuels (up to 1 % of total fuel used is allowed by the methodology AM0029) in case of emergency case or supplementary firing of fuel in the exhaust gas for controlling of the steam generation of the heat recovery steam generator independently of the gas turbine output, is not transparent and re-traceable within the PDD. Please provide additional worksheets for explanation, how it can be ensured, that the quantity of the used start-up fuel will not exceed 1 % of the total fuel used, which is the applicability criteria of AM0029.	VP: 5.5.3 PDD: B.6.1, B.6.2, B.7.1	Fuel and electricity consumption for own needs has been provided to DOE during site visit. Only natural gas is used as start up fuel. Diesel is used as an emergency fuel only (during fires and complete shut down of electricity network). All internal electricity consumption sources were specified by the Chief Engineer during the site visit. It is confirmed that no diesel is consumed as auxiliary or start up and is therefore less than 1% of the total fuel use as required by AM00029 methodology.	The CL is resolved and closed. OK
43		X	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) ? CL 05: Please specify these procedures more	VP: 8.12 PDD: B.7.2	CL 5 -7 -9-13 answered together. See “Data storage” in section B.7.2. of the PDD See “Emergency preparedness” in section B.7.2. of the PDD See “procedures for corrective actions”	The CL is resolved and closed. OK

			detailed in your monitoring plan.		in section B.7.2. of the PDD All monitoring procedures to be included after site visit	
44		X	Are procedures identified for training of monitoring personnel? CL 6: Procedures for training of monitoring personnel have not been provided yet. Please specify such procedures in your monitoring plan.	VP: 8.15 PDD: B.7.2	CL 5 -7 -9-13 answered together. Procedures for training of monitoring personnel have been included in the PDD section B.7.2. See "Data storage" in section B.7.2. of the PDD See "Emergency preparedness" in section B.7.2. of the PDD See "procedures for corrective actions" in section B.7.2. of the PDD All monitoring procedures to be included after site visit	The CL is resolved and closed. OK
45		X	Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions? *Currently no procedures for emergency cases where they can cause unintended emissions are foreseen in the PDD.* CL 07: Please clarify if such procedures will be implemented.	VP: 8.17 PDD: B.7.2	CL 5 -7 -9-13 answered together. See "Data storage" in section B.7.2. of the PDD See "Emergency preparedness" in section B.7.2. of the PDD See "procedures for corrective actions" in section B.7.2. of the PDD All monitoring procedures to be included after site visit	The CL is resolved and closed. OK
46		X	Are procedures identified for review of reported results/data? CL 08: Please specify in the monitoring plan,	VP: 8.18 PDD: B.7.2	See "Procedures for review of reported data" in section B.7.2. of the PDD CL 5 -7 -9-13 answered together.	The CL is resolved and closed. OK

			how these procedures will be applied.		See “Data storage” in section B.7.2. of the PDD See “Emergency preparedness” in section B.7.2. of the PDD See “procedures for corrective actions” in section B.7.2. of the PDD All monitoring procedures to be included after site visit	
47		X	Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting? CL 09: Please specify in the monitoring plan, how these procedures will be applied.	VP: 8.6 PDD: B.7.2	CL 5 -7 -9-13 answered together. See “Data storage” in section B.7.2. of the PDD See “Emergency preparedness” in section B.7.2. of the PDD See “procedures for corrective actions” in section B.7.2. of the PDD All monitoring procedures to be included after site visit	The CL is resolved and closed. OK
48		X	Are the project’s starting date and operational lifetime clearly defined and evidenced? CL 10: The confirmed dates for construction start and finishing have to be adjusted if necessary. *The PDD identifies September 2008 as the starting point for project construction. Please clarify this issue and amend the dates if necessary.*	VP : 7.1.3 PDD: C.1	As informed by the Director of the Sumgayit plant during the site visit, the start date of the construction process is 9 September 2005. The end date of the construction period is expected to be April 2008. The date, when the plant is expected to start generating electricity for the grid was announced: 1 June 2008, 1 October 2008, which was further delayed into end of 2008, early 2009. CL 5 -7 -9-13 answered together. See “Data storage” in	The explanation and justification of the applied dates is plausible. The date, when the EPC agreement was signed, which was the 23/05/2005 was selected as project activity start date. CL 10 is closed. OK

					preparedness" in section B.7.2. of the PDD See "procedures for corrective actions" in section B.7.2. of the PDD All monitoring procedures to be included after site visit _____ The project start date has been chosen as May 20, 2005. This is the date when the loan agreement was signed for the project (financial closure) and has been chosen as the project start date from the point of view of CDM. Actual implementation of the project started in August 2005, with the laying of the foundation stone. The project is likely to be completed and subsequently commissioned in the month of September-October 2008. The CDM crediting period will start from October 1, 2008 or the date of CDM project registration – whichever is later. Thus, at this stage no adjustment in the CER is required as finally the CERs from the project would be based on the actual power generation from the project and the ex-post emission factor calculation for the Azeri Grid.	
49		X	Has an analysis of the environmental impacts of the project activity been sufficiently described? CL 11: The PDD says that all necessary permits	VP: 11.1 PDD: D.1	Environmental permit: An environmental permit was received by Azererenerji in 2005. The permit mentions that a full environmental	The feedback covers the raised issues, CL 11 is closed. OK

			will be available to operate the project activity. Please send this document(s) to the DOE.		impact assessment is not required for the Sumgayit CCGT project because it consists in the construction of a more efficient thermal plant on the territory of a less efficient thermal plant which was written off. Only an environmental audit was required to be conducted. Operational permits: In Azerbaijan construction licenses and operation licenses are issued by the State Energy Control Agency (Gosenergonadzor). Gosenergonadzor evaluates the project plant and the technical specifications of the project before issuing a construction license. During the construction and montage works, the project developer must apply its internal regulations and safety rules. Once the plant is completed and performance tests of the commissioning phase started, the project developer requests an operation license to Gosenergonadzor. Personnel of Gosenergonadzor visit the site and controls that all construction, montage and performance tests activities have been conducted according to the state laws and regulations. In case inconsistencies are identified, the project developer is informed by Gosenergonadzor of the needed corrective actions. Only after corrective actions are implemented, the plant is issued an operation license and can start operating on a commercial basis. Sumgait CCGt obtained a construction	

					license but has not yet obtained an operation license. CL 5 -7 -9-13 answered together. See "Data storage" in section B.7.2. of the PDD See "Emergency preparedness" in section B.7.2. of the PDD See "procedures for corrective actions" in section B.7.2. of the PDD All monitoring procedures to be included after site visit _____ The list of all the approvals required for the project is attached. Further, it must be noted that the DNA of Azerbaijan looks closely into all the approvals sought for the project. And only if they are satisfied w.r.t. government/ environmental approvals for the project that they provide the project with the Host Nation Approval. The fact that the project has achieved host nation approval proves that the project has met all the environmental/ approval obligations required for the project. The translation of final Environmental Approval is also attached (not the best translation available) Performance Guarantee tests have not	

					been conducted as yet, but the performance guarantee provided by Siemens is also attached.	
50		X	Which Parties and project participants are participating in the project? CL 12: It has to be clarified if there are any changes planned with regard to the investor country (Party involved) and the authorized private entity or project participants of the investor country and host country respectively. It has to be clarified, if Azerenerji Joint Stock Company is the name of the registered company in Azerbaijan.	VP : 2.1 PDD : A.3	As per agreement between JSC Azerenerji and BNP Paribas, BNP Paribas has been included among the project participants. The PDD has been updated accordingly. A Letter of Approval from the French DNA will be requested by BNP Paribas. CL 5 -7 -9-13 answered together. See "Data storage" in section B.7.2. of the PDD See "Emergency preparedness" in section B.7.2. of the PDD See "procedures for corrective actions" in section B.7.2. of the PDD All monitoring procedures to be included after site visit _____ The project has received the LoA from the Designated National Authority of the country. The LoA from the buyer country (UK – DEFRA) has also been received, dated 3 September 2008.	The two LoAs and the signed MoC /28/ have been submitted to the validation team. CL 12 is therefore resolved and closed. OK
51		X	CL 13: For the monitoring plan the following procedures are requested (summary – see also CL 5 – 9):	VP: 8.14 PDD: B.7.2	CL 5 -7 -9-13 answered together. See "Data storage" in section B.7.2. of the PDD	The CL is resolved and closed. OK

			- Procedures to deal with erroneous measurements will need to be established. - Procedures for the maintenance of the monitoring equipments and installations and the calibration frequency need to be established. - Procedures for day-to-day record handling needs to be established. - However procedures for collection and archiving need to be identified. - The measurement accuracy needs to be addressed for the various parameters. - Procedures to deal with erroneous measurements need to be established. - Procedures for identification of training for the monitoring personnel need to be addressed. - Procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions. - No such emergencies were identified in the monitoring plan. It is not clear if such emergencies are likely to occur. - Procedures for review of reported results/data and for corrective actions in order to provide more accurate future monitoring and reporting need to be established.		See "Emergency preparedness" in section B.7.2. of the PDD See "procedures for corrective actions" in section B.7.2. of the PDD All monitoring procedures to be included after site visit	

52		X	CL 14: Letters of approvals of Azerbaijan and the investor country (e.g. UK) should be provided to the DOE at the time of requesting registration. Please clarify the application status.	VP: 1.1 PDD: A.3	The project obtained a letter of endorsement from the Azeri DNA, a letter of approval will be requested shortly. The investor country will be France. BNP Paribas will request the Approval Letter from the French DNA shortly. _____ The project has received the LoA from the Designated National Authority of the country.	The two LoAs and the signed MoC have been submitted to the validation team. CL 14 is therefore resolved and closed. OK
53		X	CL 15: A project schedule should be submitted to the DOE taking into account the necessary project permits for construction and operation and the above mentioned LoAs.	VP: 7.3.4 PDD: B.5, Annex 5	A project schedule has been prepared and submitted under CAR 3	See CAR 3. CL 15 is resolved and closed. OK
54		X	CL 16: The authority and responsibility of the project management have not yet been finalised, and need to be presented for validation. All the necessary procedures are to be finalised and put in place at latest by the time of project commissioning. Procedures in section D.6 "Project management planning" are to be evidenced before the submission of the project documentation for registration to UNFCCC secretariat.	VP: 8.16 PDD: B.7.2	An organigram is included in the PDD showing the project management structure. _____ _ The revision of the Organigram has been presented in the PDD. Mr. Heydarov is the deputy director of AzerEnerji and responsible for the collection of information from the Director of the Sumgayit Plant. Subsequently, he would be the direct contact person for any discussion with the DOE/UNFCCC. Mr. Heydarov is the current deputy director of	CL 16 is resolved and closed. OK

					AzerEnerji. In future during the crediting period of the project – Mr. Heydarov or any of his successors would be responsible for any discussions with DOE/UNFCCC.	
55		X	CL 17: The status of the EIA, the environmental impacts identified has to be clarified and included in the PDD.	VP : 11.2 PDD : D.1	EIA will be submitted to the DOE. An English summary of the EIA attached (not the best summary though). It may however be noted that the fact that the project has achieve host nation approval proves that the AzerEnerji has achieved all the necessary government and especially environmental clearance for completing the project.	The requested information was received. CL 17 is resolved and closed. OK
56		X	CL 18: The monitoring protocol containing the procedures for measurement, records handling, calibration and maintenance for this project has to be made available to the DOE for assessment during the validation.	VP: 8.12 PDD: B.7.2	Issues pertaining to the monitoring protocol are addressed in CL 4 to 9 and CL 13. _____ The entire plants internal operation and maintenance manual documents containing procedured for measurement, records handling, calibration and maintenance of monitoring devices have been presented to the DOE (in five emails covering 11 PDF files, the files are arranged in 7 volumes) ○ Volume 1 is a single file ○ Volume 2 is a single file ○ Volume 3 is a single file ○ Volume 4 is a single file	CL 18 is resolved and closed. OK

					○ Volume 5 is in 2 files ○ Volume 6 is a single file ○ Volume 7 is in 4 files The monitoring protocol has been updated in the PDD. The monitoring protocol containing procedures for measurement, record handling, calibration and maintenance for the project has been updated in the PDD. The project follows a rigorous quality control and quality check (QAQC) procedure that ensures that the CDM QAQC requirements are also met.	
57		X	CL 19: The project starting date is mentioned as 9th September 2005 and is not clear and needs to be clarified and evidence is to be provided.	VP: 7.1.3 PDD: C.1	"The starting date of a CDM project activity is the date on which the implementation or construction or real action of a project activity begins." For the Sumgayit plant on 23 May 2005 the EPC agreement was signed with SIEMENS. Documentary evidence for this will be provided by Azerenerji.	The date when the EPC Contract was signed (23/05/2005) was selected as the starting date. This is plausible. CL 19 is resolved and closed. OK
58		X	CL 20: AM0029 does not require the monitoring of social or environmental indicators. The monitoring plan does not provide for the monitoring of such data and this needs to be clarified if monitoring of such parameters is needed by regulations (e.g. environmental licensing) of Azerbaijan, because the project description contains positive sustainable development effects. Please concretize the number of people employed for construction (	VP: 8.1 PDD: B.7.2	The number of people employed in the construction phase are 700 (although not all these people worked at the site simultaneously). The number of people to be employed during the operation and maintenance of the plant is 190 of which around 50 people will be in charge of operation of the plant; around 50 people in charge of maintenance; and the remaining 90 people in charge	The CL is resolved and closed. OK

			1000 ?) and operation of the project (75 ?).		of administration, back-office, accounting, canteen etc. Many employees of ”TETs-1 Sumgayitskaya” who lost their jobs when the plant shut down will be offered an opportunity to come back to work on the CCGT plant.	
59		X	CL 21: The project proponent should provide further information regarding the common practice analysis to substantiate their statement in the PDD that the current practice in Azerbaijan is not combined cycle natural gas based power generation.	VP: 7.5.4 PDD, B.5.	To be common practice, at least another plant with characteristics similar to the Sumgayit CCGT should have been financed under similar conditions and constructed in Azerbaijan. The only plant with similar characteristics to the project activity (i.e. plant of considerable size, supplying base-load power and applying the CCGT technology) is the Shimal CCGT. However, the two plants present both differences from the technical and the financial point of view. <u>Technical differences:</u> Shimal CCGT is a CCGT with a single shaft configuration with only one gas turbine. This means that if a problem occurs with the turbine or any other component of the plant, then the whole plant has to be temporaairily shut down. This has an important impact on the reliability of the plant and the plant’s ability to provide baseload power. On the other hand, Sumgayit CCGT has a multiple shaft configuration, which is characterized by higher reliability. <u>Financial differences</u> Shimal CCGT plant was financed and constructed thanks to ODA funds under	The Common Practice Analysis is in line with the Guidelines, version 2.0. The CL is resolved and closed. OK

					preferable financial terms. CCGT plants are not common practice in Azerbaijan: they can be constructed only if foreign technology is imported and either additional financial sources in the form of CERs are sought for, or very favourable public funding conditions are applied for financing. Except for Shimal CCGT, all the other thermal plants operating in Azerbajan do not employ the CCGT technology. The other plants are either smaller size peakload gas turbine plants (e.g. "Astara", "Sheki", "Khachmaz", "Babek" gas based plants built in 2006 of 83 MW each; and "Baku I" combined heat and power plant of 101 MW built in 2001) or large baseload thermal plants running on heavy fuel oil and gas technology (e.g. Azerbaijan ThPP or AzDRES of 2400 MW to be rehabilitated from 2008 on). See the spreadsheet for calculating the operating margin for an overview of all plants operating in Azerbajan.	
60		X	CL 22: Please submit the information about the location of the plant, layouts of gas supply, energy distribution, location of monitoring points and the complete equipment description.	VP: 4.1 PDD : A.4.2	A layout of the plant and of monitoring points at the plant is submitted to the DOE.	CL 22 is resolved and closed. OK
61		X	CL 23: The complete training plan needs to be submitted to the validator.	VP: 4.3 PDD: A.4.2	Updated training plan is included in the PDD	The CL is resolved and closed. OK

62		X	CL 24: The project schedule needs to be submitted to the validation team, please include, the installation of the monitoring devices incl. technical specifications.	VP: 4.1 PDD: A.4.2	Project schedule is submitted to the DOE as per CL 15.	The CL is resolved and closed. OK
63		X	CL 25: Environmental impacts of the project (e.g. noise, NOx, SOx emissions) and safety issues have to be addressed in more detail.	VP: 11.4 PDD: D.1	Sumgayit CCGT plant as well as all the other power plants managed by Azerenerji submit annually to the Governmental Committee of Statistics (a state body positioned above the Ministries and in charge of collecting statistical data) a detailed list of environmental and emissions data, according to a specified format (shown to the DOE during the site visit). The following data are submitted: emission of CO2, N20, CH4, NOx, SO2, CO, volatile compounds, particulate matter, toxic materials. The Environment Ministry also is entitled to control on a regular basis that the supplied data are correct. These data will be supplied to the Governmental Committee of Statistics also for Sumgayit CCGT. As concerns noise levels at the Sumgayit plant, it must be noted that 1) no households or commercial buildings are situated in the vicinity of the plant as the plant is located in an industrial area 2) personnel operating in the plant is required to take precautionary measures as per plant regulations regarding noise protection (e.g. earplugs in the turbine area)	The CL is resolved and closed. OK
64		X	CL 26: It has to be clarified, if any emergency	VP: 4.1	Two emergency diesel generators belong to the system. Their technical	The CL is resolved and closed.

			equipment is belonging to the project's system.	PDD: A.4.2	description is included in the PDD	OK
65		X	CL 27: It has to be explained, why the operational lifetime of the project is 25 years. Evidence has to be provided for justification.	VP: 7.3.4 PDD: C.1.2	Siemens confirmed verbally that the technical life of the plant is 25 years. Documentary evidence will be supplied.	An amended feasibility report /18/ has now been provided that indicates that the unit lifetime is 25 years. According to an IEA study /54/ the lifetime of a typical CCGT is 25 years. The CL is resolved and closed. OK
66		X	CL 28: It has to be clarified, if any emergency electricity consumers respectively emergency generators could cause additional emissions throughout use of additional electricity or fossil fuels. Relevant procedures for monitoring of such emissions should be in place.	VP: 5.3.1 PDD: B.3, B.7.2	The issue is already addressed in CAR 5 and CAR 6	The CL is resolved and closed. OK
67		X	CL 29: It has to be confirmed, that all direct and indirect GHG emissions from the project have been captured in the project design (e.g. electricity, fuel oil, steam consumption of pumps, fans, compressors, emergency and back-up systems, lighting, control equipment).	VP: 5.3.1 PDD: B.3	The issue is already addressed in CAR 5 and CAR 6	The CL is resolved and closed. OK
68		X	CL 30 Please clarify, that the applicability criteria of AM 0029, especially with regard to the sufficient availability of natural gas from 2008 and during the crediting period or the lifetime of the project respectively has been met..	VP : 5.2.2 PDD : B.1	The production of natural gas in Azerbaijan is increased year by year. ○ In 2005 the production of gas in Republic of Azerbaijan was 5023.3 million m^3 ○ In 2006 the production of gas in	The CL is resolved and closed. OK

[4] http://socar.az/uploads/03-2006nqhen.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version
[5] http://socar.az/uploads/11-2007en.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version
[6] http://socar.az/uploads/07-2008.htm (in the attachment the relevant cell is highlighted in pink) – Azeri version only

					Republic of Azerbaijan was 6829.9 million m^3 ○ In 2007 the production of gas in Republic of Azerbaijan was 9977.3 million m^3 ○ For the seven months period of 2008 (January – July 2008), the production of gas in Republic of Azerbaijan is already 6158.8 million m^3 ○ In 2010 the production of gas in Republic of Azerbaijan is expected to be no less than 16,000 million m^3 *//The source of information is SOCAR, the state oil and gas company* This when compared with the annual gas requirement of Sumgayit Power Plant (pegged at 630.04 million m^3@) is less than 4% of the expected annual gas production in 2010. Thus, the Sumgayit plant is likely to get the gas demand to meet its production target of 72% capacity factor. @: The annual gas demand of 630.04 million m^3 for the Sumgayit power plant has been calculated based on the annual capacity factor of 72%, and the plant efficiency of 51.27% through the year. _____ Update of November 20, 2008:	

					The production of natural gas in Azerbaijan is increased year by year; every year the overall production target (based on the production capacity (gas recovery) is envisaged – and subsequently depending upon the demand of natural gas production is carried out). ○ In 2006[4] the production capacity of natural gas in Republic of Azerbaijan from all the sources was 7,300.00 million m^3 ○ In 2007[5] the production capacity of natural gas in Republic of Azerbaijan from all the sources was 10,135.00 million m^3 ○ In 2008[6] the production capacity of natural gas in Republic of Azerbaijan from all the sources was 11,287.00 million m^3. *//The source of information is SOCAR, the state Oil and Gas Company:* [1] http://socar.az/uploads/03-2006nqhen.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version [1] http://socar.az/uploads/11-2007en.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version [1] http://socar.az/uploads/07-2008.htm (in the attachment the relevant cell is	

					highlighted in pink) – Azeri version only The annual gas requirement of Sumgayit Power Plant (pegged at 631.7 million m^3) is less than 6% of the gas production target in 2008. The gas demand of Sumgayit Power Plant vis-à-vis the expected gas recovery target in Azerbaijan is likely to reduce further with increased gas production in future. Thus, the Sumgayit plant is likely to get the gas demand to meet its production target of 72.2% capacity factor. The annual gas demand of 631.7 million m^3 for the Sumgayit power plant has been calculated based on the annual capacity factor of 72.2%, and the plant efficiency of 51.27% through the year It can therefore be concluded that natural gas is sufficiently available in the country and future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in this project activity.	
69		X	CL 31: It has to be clarified, why electricity is imported from Azerbaijan (PDD, page 9 and page 14) and why an emission factor of 0 was applied for all imports of electricity.	VP: 5.4.2.1 PDD: B.6.1, Annex 3	Mistake was corrected: imports are from Georgia and not Azerbaijan. Electricity is imported into Azerbaijan	CL 31 is resolved and closed. OK

					from neighboring countries to meet the electricity demand of all parts of the country (including the Nakhchivan exclave). Electricity is exported from Azerbaijan to neighboring countries (Turkey, Iran, Russia and Georgia) to a much lesser extent because of price differentials of electricity due to time periods in which the electricity is traded. The following are data were supplied by Azerenerji (by –email) to ICF on imports and exports of electricity of Azerbajan: The emission factor of 0 is applied on all imports of electricity to Azerbaijan from abroad as per the "Tool to calculate the emission factor of an electricity system" page 4, which states: "For imports from connected electricity systems located in another host country(ies), the emission factor is 0 tons CO_2 per MWh. Electricity exports should not be subtracted from electricity generation data used for calculating and monitoring the electricity emission factors."	
70		X	CL 32: It has to be clarified, if there would be a constraint of natural gas supply during transition of Azerbaijan from natural gas importer to natural gas exporter in near future. Which effects are expected for the fuel mix of the project activity and the applicability of AM0029.	VP : 5.2.2 PDD: B.1	The transition period in which Azerbaijan shifts from being an importer to being an exporter of natural gas is actually happening today as stated in December 2007 by the Energy Information Administration	CL 32 is resolved and closed. OK

					(http://www.eia.doe.gov/emeu/cabs/Azerbaijan/NaturalGas.html) : "Despite the large Shah Deniz natural gas field, Azerbaijan will only begin to be a net natural gas exporter in upcoming months with increasing associated gas production from ACG and production from Shah Deniz. With consumption at almost 400 Bcf in 2006, and production expected to total as much as 350 Bcf during 2007, Azerbaijan will remain a net importer during 2007." In theory, Azerbaijan may find itself in a situation whereby natural gas volumes to be supplied under contractual obligations with other countries (e.g. Turkey, Iran, Georgia, BTC pipeline) are higher than the domestic demand of natural gas. However, Azerbaijan has intensified extensively production of natural gas in 2007. Statistical data on natural gas production and consumption in 2007 are not yet available. However, SOCAR President Rovnag Abdullayev has predicted that output should be more than enough for the country's domestic consumption by 2008 (see last line in the article at http://www.rferl.org/featuresarticle/2007/01/7a3ed823-dd12-4b81-bda2-f79a65930dbe.html Additional evidences that natural gas consumption figures and consumption	

					trend in Azerbaijan would indicate a surplus of natural gas has been included in the PDD. A chart and the requisite web-links have also been included in the PDD, see e.g. http://www.eia.doe.gov/emeu/cabs/Azerbaijan/NaturalGas.html Further background research of the validation team has been undertaken, the statement can be confirmed. OK	
71		X	CL 33: It has to be clarified, why India is mentioned (page 13 of the PDD).	PDD: B.1	Apologies for the mistake, we meant "Azerbaijan". The mistake has been corrected in the PDD	The CL is resolved and closed. OK
72		X	CL 34: It has to be clarified, why option 2 (3,794 GWh) is expected to deliver more electricity than option 1 (3,200 GWh). Which effects will have the increasing electricity demand on the capacity factor of the project activity (more than 72 %) as well as the electricity production (3,200 GWh ?) and the natural gas consumption (645,000,000 m^3) ?	VP: 7.3.4 PDD: B.5	Option 2 is expected to deliver more electricity than Option 1 because in the alternative scenario the capacity of the plant is larger than in the project scenario. The capacity factor (i.e. number of hours during which the plant is operated per year) is the same for both the alternative and the project scenario.(600 MW in Option 2 and 506 MW in Option 1). Both Option 1 and Option 2 are plants to be operated as baseload plants: a 72% capacity factor is expected by Azerenerji for Option 1. In case the electricity generation by the project activity (Option 1) increases to levels comparable to those of the	In the latest version of the project design a conservative calculation with a load factor of 80 % and an electricity production of 3,552 GWh for both the project scenario (Option 1) and the baseline scenario (Option 2/3) has been applied, which is deemed to be plausible. The CL is resolved and closed. OK

					alternative scenario plant of 3794 GWh per annum (i.e. the capacity factor of Sumgayit goes up from 72% to 85.6% then: - the natural gas consumption will rise to 766,082,000 m3 from 645,000,000 m3 - the levelised cost of electricity becomes 35.88 USD/MWh (down from 38.20 USD/MWh of the base case). This is still higher than the levelised cost of electricity of the alternative scenario. As documentary evidence see attached spreadsheet entitled "CL 34 High electricity generation scenario"	
73		X	CL 35: It has to be clarified, why not other varying parameters were used in the sensititivity analysis (e.g. electricity, investment cost, annual expenses, price of CER's). Further sensitivity analysis against more appropriate parameters is required to demonstrate that the project IRR cannot achieve the benchmark IRR.	VP: 7.3.4 PDD: B.5	Further sensitivity tests on total operating costs and investment costs are carried out as requested in the PDD. Sensitivity of electricity production levels has already been tested by varying the capacity factor: we have added the case in which the capacity factor increases by 15%. Sensitivity of the CER price is not relevant, because the latest "Tool for the demonstration of additionality", version 4 and later 05.2 at Sub-step 2-c) states: 5. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and	In the final version of the PDD, the sensitivity analysis has been performed with respect to the parameters power production, natural gas and mazut price, non-fuel OPEX and project fuel efficiency. This is appropriate. CL 35 is resolved and closed. OK

					maintenance costs), and revenues (excluding CER revenues, but including *inter alia* subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, nonmarket cost and benefits in the case of public investors. The benchmark analysis consists in the calculation of the IRR for the CDM project activity without CER revenues and in demonstrating that this IRR is lower than the selected benchmark IRR. The sensitivity analysis tests this demonstration by varying relevant parameters, without taking into account CER revenues.	
74		X	CL 36: It has to be clarified, where the company benchmark IRR for power plants of Azerenerji was defined (document for evidence, page 19 of the PDD)	VP: 7.3.4 PDD: B.5	The full methodology for determining the benchmark IRR is on pages 20-21 of the PDD (sub-step 2b) and it follows the sub-step b of the Tool for demonstration of additionality. Documentary evidence are the interest rates of governmental Azeri bonds already provided in the PDD (as links in references in the bottom of page 21 of the PDD)	PPs have chosen a benchmark of 14.95%, based on the average interest rate reported by the Central Bank of Azerbaijan for Deposits and Savings in foreign currency with a maturity of at least 5 years in May 2005, i.e. at the time of the investment decision. The benchmark is a pre-tax benchmark, which is appropriate for the chosen financial indicator. The benchmark is in “hard” foreign currency, which makes it appropriate for an analysis done in US$ and in constant prices (i.e. without inflation). The

						benchmark is reliable because the interest rate varies very little in the relevant time frame (between 2004 to 2006) and the rate is slightly lower than the average interest rate on foreign currency loans (credits placed) with a maturity of 5-10 years in 2005. The applicability of the benchmark to evaluate the profitability of power investments in Azerbaijan was also confirmed during the site visit. The validation team confirmed via follow-up interviews that power projects in Azerbaijan are considered viable only if guaranteed returns of minimum 15% are ensured. This requirement was set uniformly in the Soviet Union for power investments and was officially maintained in Azerbaijan since the break-up of the Soviet Union. During the site visit it was confirmed that this benchmark continues to be used as tool for evaluating investments by Azerenerji. The rate of 14.95% is reasonable and conservative, because no additional risk premium was added.

						The CL is resolved and closed. OK
75		X	CL 37: Please disclose the used sources for NCV (natural gas, mazut) , OXID (NG, mazut) , EF (natural gas, oil) to the validator.	VP: 5.5.3 PDD: B.6.2	Sources for NCV (net calorific value) of mazut and natural gas were provided by Azerenerji by e-mail. Technical specifications will be provided by Azerenerji. Source for OXID factors is the GHG Assessment Handbook of the World Bank (attached) exhibit 3.7 page 40. Source of EF factors is Table 2, page 8 of Approved baseline methodology AM0029 Version 03 Table 2. Default emission factors for fugitive CH_4 upstream emissions Activity / Unit / Default emission factor / Reference for the underlying emission factor range in Volume 3 of the 1996 Revised IPCC Guidelines Coal Underground mining — t CH4 / kt coal — 13.4 — Equations 1 and 4, p. 1.105 and 1.110 Surface mining — t CH4 / kt coal — 0.8 — Equations 2 and 4, p.1.108 and 1.110 Oil Production — t CH4 / PJ — 2.5 — Tables 1-60 to 1-64, p. 1.129 - 1.131 Transport, refining and storage — t CH4 / PJ — 1.6 — Tables 1-60 to 1-64, p. 1.129 - 1.131 Total — t CH4 / PJ — 4.1 Natural gas *USA and Canada* Production — t CH4 / PJ — 72 — Table 1-60, p. 1.129 Processing, transport and distribution — t CH4 / PJ — 88 — Table 1-60, p. 1.129 Total — t CH4 / PJ — 160 *Eastern Europe and former USSR* Production — t CH4 / PJ — 393 — Table 1-61, p. 1.129 Processing, transport and distribution — t CH4 / PJ — 528 — Table 1-61, p. 1.129 Total — t CH4 / PJ — 921 *Western Europe* Production — t CH4 / PJ — 21 — Table 1-62, p. 1.130 Processing, transport and distribution — t CH4 / PJ — 85 — Table 1-62, p. 1.130 Total — t CH4 / PJ — 105 *Other oil exporting countries / Rest of world* Production — t CH4 / PJ — 68 — Table 1-63 and 1-64, p. 1.130 and 1.131 Processing, transport and distribution — t CH4 / PJ — 228 — Table 1-63 and 1-64, p. 1.130 and 1.131 Total — t CH4 / PJ — 296 Note: The emission factors in this table have been derived from IPCC default Tier 1 emission factors provided in Volume 3 of the 1996 Revised IPCC Guidelines, by calculating the average of the provided default emission factor range.	The NCVs of natural gas (34.68 GJ/m3) and mazut (41,415 GJ/t) are based on supplier data. OXID for natural gas and mazut is based on IPCC default factors of 100%. The emission factors for natural gas and mazut are based on IPCC default factors. The CL is resolved and closed. OK
76		X	CL 38: It has to be clarified, if the measuring devices convert automatically the measured m^3 in $Nm^{3.}$ Are the gas parameters at all monitoring points similar ?	VP: 8.2 PDD : B.7.1		It was confirmed by the technical staff of AzerEnerji, that flow meters for natural gas will be applied, which automatically measure temperature and pressure, expressing natural gas volumes in normalized cubic meters. CL 38 can be considered as

						resolved and hence closed. OK
77		X	CL 39: It has to be clarified, which measuring devices are used for measurement of fuel oil (mazut), steam, condensate and feed water.	VP: 8.2 PDD : B.7.1	As part of the CDM project activity – none of the following are required to be monitored and hence would not be monitored and so no monitoring protocol has been assigned for these parameters: • Mazut (fuel oil) • Steam • Condensate • Feed water _____ The measurement of any liquid fuel being consumed by the project is not measured through any calibrated equipment. This is because the use of liquid oil is not in any of the gas turbines or for producing electricity from the plant, but the liquid fuel is used in the power back up generators. These generators have been provided to ensure that the plant auxiliaries are up and running in an eventuality that both the gas turbines at the Sumgayit plant fail, and the power import from the grid has also been disrupted. The expected frequency of such an eventuality is no more than once in 10-15 years. Any consumption of Mazut (or liquid fuel) at the plant site by the diesel would be recorded through the invoices of Mazut purchase in the crediting period.	It is not explicitly required by the methodology AM0029 to monitor the parameters as stated in CL 39. The parameters steam, condensate and feed water will be monitored without much doubt as part of an economic power plant operation. According to the applicability of AM0029 it is requested that small amounts of other startup or auxiliary fuels can be used, but can comprise no more than 1 % of total fuel use, on energy basis. Therefore to monitor e.g. Mazut (fuel oil) is mandatory according to AM0029, even it is not daily practice and may only be used in emergency situations. CL 39 is resolved and closed. OK

					For measurement of steam, condensate, feed water or other technical parameters associated with the operation of the plant – elaborate control panels would be recording the information on continuous basis. These are not as yet included in the monitoring protocol of the project.	
78		X	CL 40: It has to be clarified, why the daily measurements of natural gas (8 a.m.) and electricity (0 a.m.) is at different times.	VP: 8.2 PDD : B.7.1	<u>Explanation of metering of natural gas consumption at 8am</u>: The metering of natural gas, which is done at 8 a.m. daily for commercial accounting. The gas supplied by AzeriGas to Sumgayit power station is metered by four gas-meters connected in parallel are installed on the "AzeriGas's Sumgayit gas-distribution station at a distance of four kilometers from the power station. These gas-meters continuously register consumption of gas. Payment for gas consumed is made according to indications of these gas-meters. If one or two gas-meters fail the other operating ones will ensure reliable control and registration of gas volumes consumed by the Sumgayit power station. Metering and compilation of bilateral act (between Sumgayit Power Plant and Azerigas) is made on the station every day at 8.00 a.m. of local time. The act is signed both by the representative of gas-distribution station and representative of Sumgayit power station. One copy of the act is handed	CL 40 is closed. OK

					over to Production and Technical department of the station to verify indications of gas-meters installed on the Sumgayit gas-distribution station and Sumgayit power station. <u>Metering of gas and electricity for CDM</u>: However, for technical gas account (monitoring) for power consumption by the power station there are two gas-meters (connected in parallel) similar to those installed on the Sumgayit gas-distribution station. Moreover, gas-meters carrying out continuous control and registration of gas flow are installed in front of each gas turbine too. Metering of gas and electricity meters is done by the operation personnel of the Sumgayit power station at 12.00 p.m. regional time on daily basis. Report of energy output, station's auxiliary power consumption, electric power distribution in network and fuel consumption is made by Production and Technical Department (PTD) of the station. Information contained in this report is faxed to "AzerEnerji" JSC by (PTD) of the station on daily basis. Besides daily reports the (PTD) prepares and sends to "AzerEnerji" JSC " also monthly, quarterly, half-year and annual reports on electric energy and fuel balance.	

					So, metering of gas consumption by the Sumgayit Power Plant and the net electricity production from the Sumgayit Power Plant is done at the same time at 12 noon. At the end of the monitoring and verification period annually, the reading of gas consumption and electricity production would be done at 12 noon.	
79		X	CL 41: It has to be clarified, if the stakeholder meetings in August 2005 have mentioned the impact of CDM ?	VP : 7.1.3 PDD : B.5	The stakeholder meeting in August 2005 was to officially announce the start of the project at the project site. In the meeting the project proponents have announced that the project was being developed as a CDM project, as the project would reduce GHG emissions vis-à-vis the operation of lower efficiency plant or the use of Mazut in an alternate plant. It was further informed without giving much detail that CDM would help reduce the project cost and make it financially more viable. Generally the view of the CDM stakeholder meeting is to ensure that none of the stakeholder who could be adversely affected by the project be ignored or left out while implementing the project and not been given the chance to raise their concern. The rigorous project approval process and the environmental impact	CL 41 is closed. OK

					assessment required for a CCGT project like that of Sumgayit ensures that none of the stakeholder are adversely affected by the project. A copy of the rigorous environmental impact assessment requirement, which the project has already met, has been provided. _____ The impact of CDM was considered in the stakeholder consultation being conducted. The extensive minutes of meeting containing the list of all the participants that attended the meeting has been included with this submission.	
80		X	CL 42: It has to be clarified, where the mentioned stakeholder meeting has taken place and if affected stakeholders were invited and have attended ?	VP : 10.5 PDD : E	The impact of CDM was considered in the stakeholder consultation being conducted. The extensive minutes of meeting and the list of all the participants that attended the meeting has been included in a separate document.	The impact of CDM was considered in the stakeholder consultation being conducted. The extensive minutes of meeting and the list of all the participants that attended the meeting has been included with this submission. CL 42 has been resolved and closed. OK

81		X	CL 43: The relevant documentation of the stakeholder meeting like presentations, records, questionnaires, responses, meeting minutes, participant lists, summary of comments and how they have taken into account, newspaper announcements, articles, photos, website screen-shot, have to be disclosed to the DOE.	VP : 10.5 PDD : E	The development of the Sumgayit project was widely covered in the newspapers in Azerbaijan throughout the development of the project. Thus, the local population was aware about the project and had ample opportunities to report any misgivings that they may have about the project over-and-beyond the official stakeholder – foundation stone ceremony conducted at Sumgayit in August 2005. No negative comments have been received for the project, which would require any action to be undertaken by the project proponent. It may please be noted that the CDM project is being built at an existing plant site – where the original plant was once operational from and had to be scrapped due to poor plant performance. The CDM project, installation of CCGT plant, would not only be less polluting vis-à-vis the original plan but would also be able to provide more reliable supply to the city of Sumgayit and other regions of Azerbaijan and would thus have no negative comments from any party (public or private) anyway. In addition – the project proponent had invited the key personals from the representative government/community bodies in the stakeholder meeting – who by and large represent the interest of the country.	CL 43 is closed. OK

					—————————————————— —— The key stakeholders were rigorously identified and invited to participate in the event. The impact of CDM was considered in the stakeholder consultation being conducted. The extensive minutes of meeting and the list of all the participants that attended the meeting has been included with this submission.	
82		X	CL 44: It has to be explained and justified, why for the build margin only a data vintage of 1 year (2006) was used and why is this approach conservative.	VP: 5.4.2.1 PDD : Annex 3	The“Tool to calculate the emission factor for an electricity system”, page 14 states: “Step 5. Calculate the build margin emission factor The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows: “ In our case the most recent year for which generation data are available is the year 2006, this is why we have used only one year for the calculation of the build margin. —————————————————— – As already mentioned:	Considering the yearly ex-post update the selected approach is sufficiently justified. CL 44 is closed. OK

					The“Tool to calculate the emission factor for an electricity system”, page 14 states: “Step 5. Calculate the build margin emission factor The build margin emissions factor is the generation-weighted average emission factor (tCO2/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows: “In our case the most recent year for which generation data are available is the year 2006, this is why we have used only one year for the calculation of the build margin. Please let us know if this is acceptable to you. In any case – the emission reduction calculation would be calculated every year ex-post by calculating the build margin emission factor applicable for that year. In that context – we would propose that we let the PDD be as is and revert back to the issue of emission reduction calculation at the time of monitoring and verification annually.	
83		X	CL 45: It has to be clarified, if the project activity is designed as a peak load, medium load or base load power plants and which impacts this will have on the operating hours and the capacity factor.	VP: 7.3.4 PDD : A.4.2, B.5	Sumgayit plant is designed to operate as a baseload power station with an expected capacity factor of 72.2%. The plant is not expected to run for less than this. The plant may run with a capacity factor higher than 72.2% up to 85%. _____	In the latest version of the PDD a more conservative load factor of 80 % has been applied. CL 45 is resolved and closed. OK

					___ The project activity is designed as a base load plant with the annual expected capacity factor of at least 72%, a conservative factor of 80 % has been applied for the calculation. The same capacity factor has been chosen for the investment analysis of the project and also of the baseline scenario (alternate technology for power generation)	
84		X	CL 46 Section C.1.1., C1.2. of PDD The starting date shall be expressed in years and months (*DD/MM/YYYY)*.	VP : 3.2 PDD : C.1, C.2	Necessary changes made in the PDD. Both the dates have now been changed to October 2008. The project is expected to start commercial operation from October 2008. The project proponent have decided to chose October 01, 2008 or the Date of registration of the CDM PDD with the UNFCCC as the starting date of the crediting period (which ever is later)	The starting date of the project is 23/05/2005, i.e. the date of the EPC contract. CL 46 is resolved and closed. OK
85		X	CL 47 Further clarification is required as to whether and how all relevant power plant technologies that have recently been constructed or are under construction or are being planned, including those of other investors, were considered as additional baseline scenario candidates. The methodology requires that "among the alternatives that do not face any prohibitive barriers, the most economically attractive	VP : 7.2.3 PDD : B.4	As per the historical installed capacity structure and the forecasts of installed capacity structure of Azerbaijan in 2005, the following seven types of power plants were operational/expected to be operational in Azerbaijan. The table also shows the expected installed capacity pattern in 2008 (see table aatached). Thus, the only major addition planned from 2005 to 2008 is that of Sumgayit	CL 47 is resolved and closed. OK

			alternative should be considered as the baseline scenario". No such comparison has been conducted in the determination of the baseline regarding specific investment costs (gas-turbine-peak load power plant; combined cycle gas-turbine power plant have the lowest specific investment costs of power plants). Further information is required regarding why a natural gas fired plant using a different technology and the importation of electricity from other grids have not been considered as plausible alternatives. Further clarification is required as to whether and how all relevant power plant technologies that have recently been constructed or are under construction or are being planned, including those of other investors, were considered as additional baseline scenario candidates.		Power Plant, which is to serve as a base load plant. Other Packaged Power Plants and Gas Turbine Power Plants had also been planned but those are of very small size (packaged plants of 87.5 MW each and Gas turbine plants of 60MW each) – further these plants are to serve as peak load plants and not as base load plant as Sumgayit power plant. Given the above mix of installed capacity in Azerbaijan (and excluding the Hydro Sector) – the only two types of base load technologies are considered in Azerbaijan (i) Condensing cycle thermal power projects (with overall share of 65.9% and 57.8% in 2005 and 2008 respectively) and (ii) combined cycle thermal projects (with overall share of 7.2% and 14.3% in 2005 and 2008 respectively) Thus, the selection of the CDM baseline option, which is the condensing cycle technology, is appropriate. More so, if the Combined Cycle Thermal Power Project was not added (Sumgayit) the next available, tried and tested, and economically cheaper (though less efficient) option available with AzerEnerji was to implement the next available technology, which is condensing cycle technology. And it was only on the basis of the carbon	

					revenue that CDM would accrue to the Sumgayit Hydro Power Project that the installation of the Sumgayit project was considered by AzerEnerji.	
86		X	CL 48 Further clarification is required regarding how possible changes in key input values which result in an increase in the IRR beyond the benchmark are not likely to occur e.g. natural gas price, currency exchange rate, annual O&M cost and electricity tariffs for base load, medium load and peak load.	VP : 7.2.3 PDD : B.5	The additionality of the project has been presented in detail in the PDD. The sensitivity analysis has been applied on some of the key project parameters by varying these parameters by up to 10% (+/-) For the entire range of sensitivity analysis the project (Sumgayit) IRR and the levelized cost of generation of the power remains unattractive vis-à-vis the IRR and the levelized cost of generation of the project options (Condensing cycle technology).	CL 48 is resolved and closed. OK
11		X	CL 49 The use of a 20-year period of assessment for the investment analysis should be justified in the context of the project activity including how it complies with the EB guidance that the investment analysis should not be limited to the crediting period.. The source of the input values in the investment analysis should be transparently described and be provided to the validation team for evidence. The IRR analysis should consider issues related to higher levelised cost of electricity for power plants operating with natural gas, as the plant will operate as peak and medium load power.	VP : 7.2.3 PDD : B.5	The plant is to be constructed as a base load plant and not as peak load plant. _____ <u>20 year investment analysis:</u> The investment analysis has been done for a period of 20 years as advised by the investment analysis tool <u>Sumgayit is base load plant:</u> The plant is to be constructed as a base load plant and not as peak load plant (capacity factor of the plant is 72%, and all the investment analysis has been completed keeping the high capacity factor of 72% in perspective). Thus, no payments are made for the plant to	Efficiency of 52.71 %. The reference source is the performance test of the Sumgayit power plant /61/, where the net heat rate of 6829.0 kJ/kWh is equivalent to an efficiency of 52.7 %. It could be confirmed in additional interviews with the EPC contractor and other technical experts at the PowerGen 2009 and other background research that the plant configuration does not allow higher efficiencies of the CCGT plant

			Because it is known that peak load power plants do not operate with high capacity factor, it is very common to pay availability tariffs to the plants during stand-by periods. It is also very common to have different feed-in tariffs for peak/medium load power plants (usually higher than base load plants). Further clarification is required on the IRR analysis, particularly on the assumptions regarding natural gas prices and load hours and why they are unlikely to increase during the period of analysis or the operational lifetime of the project respectively. There is not information in the PDD what is the share of peak load electricity and what is the medium load and base load electricity share from annual operational hours.		remain stand alone (reserve) and for operating only during the peak hours. The construction of the plant in Azerbaijan has been done to meet the increasing power requirement of the growing economy of Azerbaijan. The Sumgayit plant is being constructed at a site where an old plant was previously operating at. The older plant had to be salvaged as it had already reached its end of life. <u>Fuel Price Projections:</u> The Sumgayit plant does not enjoy the fixed fuel price contract from its lone gas supplier (the state JSC Azerigas) and thus the gas price analysis has been done considering the gas market scenario of Azerbaijan in the most recent years. The gas price in Azerbaijan has historically been severely underdeveloped, and it was only recently that the country has taken view to expand its oil exploration and drilling activity. This is evident considering the gas production is expected to triple from 5,023 million m^3 per annum in 2005 to the 16,000 million m^3 per annum in 2010. In the absence of any specific market mechanism the best way to project price of natural gas in Azerbaijan is to compare it with the only natural gas (and also Mazut/residual fuel oil for power plants) price projections available from	Capacity factor of 80%. Even historically achieved capacity factors of the power plants in Azerbaijan were lower, an ambitious and hence conservative capacity factor of 80 % for the project activity has been selected. Price of gas 60 USD/1000m3. The gas price is based on actual 2005 prices. The validation team reviewed the invoices for natural gas deliveries in 2005. An additional sensitivity analysis is done based on the assumption that Azeri prices for natural gas and mazut approximate international energy prices. EIA projections for natural gas prices are used to model this. http://www.eia.doe.gov/oiaf/archive/aeo05/excel/aeotab_13.xls Capital costs of USD 405,580,000. The amount is based on audited project cost calculated based on equipment, civil work and infrastructure costs. The specific investment costs of 773 USD / kWe are at the lower end of the range of a Study of IEA /17/, carried out in April-May 2008, which

					the Department of Energy, USA. Way back in 2004 – the oil and gas industry was under severe pressure to reach the price parity (for oil and gas) with the international prices. A three year period has been provided since 2005 to reach the international price parity in 2008. The projections made in the context of 2005 are near accurate as the prices of natural gas and Mazut as projected (using the DOE data) is only conservative and the prices of natural gas and Mazut increased much faster by 2008. The fuel price projections (of Mazut for the thermal power plants and Natural Gas for power plants) are the best available price projections available in 2005; also these are in-line with the expected fuel price parity with International fuel prices in Azerbaijan. <u>Electricity Price Projection:</u> The same applies for the prices of electricity. The official trailing inflation in Azerbaijan in 2005 was at 10%. The projected increase in electricity prices has been kept at 7.5% per year. This is as would be expected.	states specific construction Cost for CCGT power plants between 750 USD/KWe and 1,000 USD/kWe and for Russia 850 USD/KWe. Other O&M costs of 10,630,000 USD/year. The amount is based on the Feasibility Study Report/18/. The values have been properly converted from Euros to USD at the average exchange rate of 1.31 USD/Euro. The values have been escalated by 3.4% to convert them into 2005 prices. Note: 3.4% is the US Consumer Price Index for 2005. The same O&M costs are chosen for both the project and the baseline. This is conservative since the project has significantly higher CAPEX than the baseline. Electricity Prices. Electricity sales are the same under the project and the baseline. Electricity revenues therefore do not enter the investment analysis. The capital cost of the baseline alternative are USD 236,340,000 (in 2005 USD). The amount is based on the

						2002 price quote for installing a 300MW unit /72/ at AzDRES power plant. The 2002 costs were US$38million for technology. According to Russian default values the technology costs are estimated to be 40% of the overall CAPEX for thermal power plants, with the remainder being construction costs. However, in order to be conservative a ratio of 35% has been applied. The costs of two units (US$76 million) are calculated by doubling the costs of a single unit. Doubling the costs of a 300 MW unit is conservative, since the installed capacity of 525 MW is less than twice as much. Since the costs are for 2002, the costs are escalated with the US Consumer Price Index to arrive at values in 2005 USD. CL 49 is resolved and closed. OK
88		X	CL 50 Given the time gap between the decision to invest in the project activity and the commencement of validation the project proponent should state with what level of assurance it considers that this project activity would not have been implemented without the CDM.	VP : 7.1.8 PDD : B.5, Annex 5	CDM consideration was critical from the point of view of implementation of the project. The evidence of CDM consideration has now been provided, which clearly indicate that the CDM was actively considered and recommended to AzerEnerji way back in 2004 – when they had got the first	CL 50 is resolved and closed. OK

					feasibility report of their project completed. AzerEnerji was/is quite confident about the CDM eligibility of the Sumgayit project – as they clearly understand the barriers they faced to implement the project, their environmental commitment to reduce GHG emission from the project (and so for the oil and gas risk country). They had been pursuing the development of the CDM documentation much before the financial closure of the project – but could never get the right consultant to assist them with the same. CDM improves the financials of the project considerably vis-à-vis the baseline option that they actively considered but rejected in favor of the project activity, as they clearly understood the impact of CDM to by-pass the several financial barriers faced by them. AzerEnerji (Azerbaijan) considers CDM as a golden opportunity to implement projects that reduce GHG emissions and also involve technology transfer. Like, in the case of the currnet project – the technology being employed is the state of the art German CCGT technology.	
89		X	CL 51 Further clarification is required how the claim for the prohibitive nature of the technological	VP : 7.4.2 PDD B.5	AzerEnerji had clearly recognized the importance of a multi-shaft CCGT technology that makes the power operations reliable. During the bidding	The technological barriers have not been presented from the point of view of establishing 'technological barriers' being

			barriers can be justified.		for the Shimal CCGT plant also they had desired to acquire a multi-shaft technology, but at that time – given the very attractive financing option provided by Japanese Bank for International Cooperation (JBIC), AzerEnerji had no choice but to go for a single-shaft technology. In the current context (investment in the Sumgayit CCGT plant) – there is no previous experience within the technical staff of the AzerEnerji (or Sumgayit CCGT) to maintain or run a multi-shaft technology. The only training that was available technical staff of Sumgayit CCGT was that provided by Siemens. The multi-shaft technology was costlier too. Thus, the choice of going for multi-shaft technology created both technological and financial barriers for undertaking the Sumgayit CCGT project, and only because of the promise of CDM revenue they decided to go for the multi-shaft technology.	faced by AzerEnerji, but from the context of establishing that another CCGT plant (Shimal), which was constructed from the support of a 'development bank' funding, and enjoyed exceptionally low interest rate credit line (0.75% for 40 years) was a single shaft technology, while the Sumgayit CCGT plant is a multi-shaft technology (which is an advanced, better, costlier but not a straight forward technology as single-shaft technology is). So, technologically Sumgayit CCGT is different from Shimal CCGT. The desrcription and further explanation during a follow-up meeting in October 2008 is sufficient in order to close CL 51. OK
90			CL 52 Further sensitivity analysis against other appropriate parameters is required to demonstrate that the project IRR cannot achieve the benchmark IRR considering that the natural gas is a natural energy source in Azerbaijan .	VP : 7.3.4 PDD : B.5	The project proponent (AzerEnerji) has to purchase gas for AzeriGas, the state Gas company, which has to further procure this gas from SOCAR (the State Oil and Gas Company of Azerbaijan	CL 52 is resolved and closed. OK

					Republic). So, the gas being sold the project proponent.	
91			CL 53 Further Information is required on incentives available to a similar project being developed by a multinational corporation without CDM (Shimal CCGT). Also further justification is required on why the project activity is not a common practice. The project proponent shall further clarify if the construction of the newly built Shimal CCGT for the provision of natural gas does not create the conditions for a CCGT as a business as usual activity. Further information is required to justify the essential distinctions between the project activity and the current common practice (including Shimal CCGT) based on the sub-step 4b of the additionality tool.	VP : 7.5.4 PDD : B.5	<u>Special Credit line and financial available for the Shimal CCGT power plant:</u> Right after the collapse of the USSR, major construction work within the power projects in the energy system of Azerbaijan was carried out with the help of external aid, grant or highly subsidized loans, this applies in case of investment in the Shimal CCGT plant. The investment in the power sector is no longer enjoys the same development funds, as it once used to. This is especially true for investment in Sumgayit CCGT. The decision on reconstruction of "Shimal" power station was accepted in 1995. In 1996 the feasibility report about reconstruction of station was executed. In the same year the negotiation on allocation of the credit was begun with Japanese Bank of the International Cooperation (JBIC). Bank has allocated long-term credit (for the period of 40 years) on these purposes in 2000 for 210 million US dollars, with interest rate 0.75 %. In 2000 the tender for technical services was executed. The Japanese company Mitsui won the tender in technical bidding and was awarded the contract. Mitsui has offered to establish at station singles-haft steam-gas unit of 400 MW capacity.	The following factors are of importance: The Sumgayit CCGT does not enjoy the same financial incentive as Shimal CCGT did. Unlike Shimal CCGT (which had a single –shaft turbine), the Sumgayit CCGT has multi-shaft technology (three shafts), this is technically the first of its kind for AzerEnerji and for Azerbaijan, and hence adds to the technology risk faced by AzerEnerji. The multi-shaft technology is costlier than the single-shaft technology too. The technological barriers have not been presented from the point of view of establishing 'technological barriers' but from the point of view of establishing that a different technology is used. The description and further explanation during a follow-up meeting in October 2008 is sufficient in order to close CL 53. OK

					The offer of other companies, to construct on stations territory steam-gas unit with multi-shaft items was not possible because of the very high cost of the multi-shaft technology vis-à-vis the single shaft technology. Despite the fact that single-shaft CCGT unit had low reliability, the "Azerenerji" joint-stock company was compelled to accept the Mitsui offer realization because of its lower cost and very attractive credit terms being offered by JBIC. The project decision was taken much before 2000 and at very attractive financial (credit terms) offered by JBIC – there was no CDM consideration for the Shimal CCGT plant at that time. Further, Azerbaijan ratified to Kyoto Protocol only in 2000 and the national body (Designated National Authority) in Azerbaijan was created on 1st April, 2005 according to order of the President of Azerbaijan Republic. <u>Sumgayit CCGT didn't have the same preferential financing as Shimal CCGT:</u> The first ever feasibility report for the Sumgayit CCGT power plant was prepared in 2004 (almost 9 years after the first ever consideration of investment in Shimal CCGT). The financial closure of Sumgayit CCGT was completed in the second half of 2005 (this date has been chosen as the start date of the project activity)	

					The Sumgayit CCGT was built at the site of original Sumgayit thermal power plant that had reached its end of life and had to be closed down. AzerEnerji at that time had two choices (i) rehabilitate the original power plant and (ii) construct a multi-fuel supercritical power plant. A third costlier choice was also available to AzerEnerji to construct a CCGT plant at the same site (the proposed CDM project activity) Construction of Sumgayit CCGT plant was costlier than the baseline option (multi-fuel fired supercritical power plant) and being a multi-shaft technology was technically risky and costlier than any other CCGT plant ever being built in Azerbaijan (Shimal CCGT, which was built with the availability of very attractive credit line from JBIC) <u>No special financing as Shimal CCGT:</u> Unlike Shimal CCGT (which had credit line available for 40 years at 0.75% rate of interest), Sumgayit CCGT has credit line available only for (on average) 10.5 years at (on average) 3.072% rate of interest. Thus, the Sumgayit CCGT does not enjoy the same financial incentive as Shimal CCGT did <u>No technological barrier as Shimal CCGT:</u> Unlike Shimal CCGT (which had a	

					single –shat turbine), the Sumgayit CCGT has multi-shat technology (three shafts), this is technically the first for AzerEnerji and thus adds to the technology risk faced by AzerEnerji. The multi-shaft technology is costlier than the single-shaft technology too.	
92			CL 54 One of the conditions of applicability of methodology requires demonstration that natural gas is sufficiently available in the region, country. Further clarification is required regarding how much of the field production will be used for power generation besides the amount used in the proposed project activity. If a significant amount of the gas produced in the field (more than 50%) will be supplied for power generation, the project activity is part of a much bigger regional power initiative that necessarily includes the development of the gas field (and natural gas was made available in the region or country because of the project activity). In addition, it is required to include in the common practice analysis an appraisal of the last electric power 5-year expansion plans in Azerbaijan to check the assumptions made for power generation with natural gas.	VP : 5.2.2 PDD : B.1	The production of natural gas in Azerbaijan is increased year by year. ○ In 2005 the production of gas in Republic of Azerbaijan was 5023.3 million m^3 ○ In 2006 the production of gas in Republic of Azerbaijan was 6829.9 million m^3 ○ In 2007 the production of gas in Republic of Azerbaijan was 9977.3 million m^3 ○ For the seven months period of 2008 (January – July 2008), the production of gas in Republic of Azerbaijan is already 6158.8 million m^3 ○ In 2010 the production of gas in Republic of Azerbaijan is expected to be no less than 16,000 million m^3 This when compared with the annual gas requirement of Sumgayit Power Plant (pegged at 630.04 million m^3@) is less than 4% of the expected annual gas production in 2010. Thus, the Sumgayit	CL 54 The presented data, which have been cross-checked with other sources, have convincingly demonstrated, that natural gas is sufficiently available in the country and future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in this project activity. CL 54 is resolved and closed. OK

[7] http://socar.az/uploads/03-2006nqhen.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version
[8] http://socar.az/uploads/11-2007en.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version
[9] http://socar.az/uploads/07-2008.htm (in the attachment the relevant cell is highlighted in pink) – Azeri version only

					plant is likely to get the gas demand to meet its production target of 72% capacity factor. @: The annual gas demand of 630.04 million m^3 for the Sumgayit power plant has been calculated based on the annual capacity factor of 72%, and the plant efficiency of 51.27% through the year. Update 20 November 2008: The production of natural gas in Azerbaijan is increased year by year; every year the overall production target (based on the production capacity (gas recovery) is envisaged – and subsequently depending upon the demand of natural gas production is carried out). ○ In 2006[7] the production capacity of natural gas in Republic of Azerbaijan from all the sources was 7,300.00 million m^3 ○ In 2007[8] the production capacity of natural gas in Republic of Azerbaijan from all the sources was 10,135.00 million m^3 ○ In 2008[9] the production capacity of natural gas in Republic of Azerbaijan from all the sources was 11,287.00 million m^3. *//The source of information is SOCAR,*	

					the state Oil and Gas Company [1] http://socar.az/uploads/03-2006nqhen.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version [1] http://socar.az/uploads/11-2007en.xls (in the attachment the relevant cell is highlighted in pink) – Eng Version [1] http://socar.az/uploads/07-2008.htm (in the attachment the relevant cell is highlighted in pink) – Azeri version only The annual gas requirement of Sumgayit Power Plant (pegged at 631.7 million m^3) is less than 6% of the gas production target in 2008. The gas demand of Sumgayit Power Plant vis-à-vis the expected gas recovery target in Azerbaijan is likely to reduce further with increased gas production in future. Thus, the Sumgayit plant is likely to get the gas demand to meet its production target of 72.2% capacity factor. The annual gas demand of 631.7 million m^3 for the Sumgayit power plant has been calculated based on the annual capacity factor of 72.2%, and the plant efficiency of 51.27% through the year It can therefore be concluded that natural gas is sufficiently available in the country and future natural gas based	

					power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in this project activity.	
93		X	CL 55 The assumed efficiency in the power plant is 51%. It has to be demonstrated, how this efficiency can be continuously achieved during course of the whole crediting period, considering different loads and maintenance and shut-down periods.	VP : 7.3.4 PDD : B.5	The assumed efficiency of the plant is indeed 51%, however with the passage of time the performance is likely to deteriorate. Siemens has provided the heat rate deterioration curve for the plant operation (after certain number of hours of operation). The same has been incorporated in the estimation of power generation from the plant and so in the emission reduction calculation. The performance deterioration curve has been provided with this submission. The performance tests could not be completed in April 2008, and it is very likely that the CDM PDD would be submitted for registration with the UNFCCC prior to the performance test being conducted. The performance test results shall be made available at the time of first monitoring and verification of the project. _____	Efficiency of 52.71 %. The reference source is the performance test of the Sumgayit power plant /61/, where the net heat rate of 6829.0 kJ/kWh is equivalent to an efficiency of 52.7 %. It could be confirmed in additional interviews with the EPC contractor and other technical experts at the PowerGen 2009 and other background research that the plant configuration does not allow higher efficiencies of the CCGT plantCL 55 is closed. OK
94		X	CL 56 Further justification is required regarding the technological risk of the Sumgayit project, being	VP : 7.4.2 PDD : B.5	The technological barriers have not been presented from the point of view of establishing 'technological barriers'	CL 56 The following factors are of importance:

			the first project with multi-shaft-technology in Azerbaijan.		being faced by AzerEnerji, but from the context of establishing that another CCGT plant (Shimal), which was constructed from the support of a 'development bank' funding, and enjoyed exceptionally low interest rate credit line (0.75% for 40 years) was a single shaft technology, while the Sumgayit CCGT plant is a multi-shaft technology (which is an advanced, better, costlier but not a straight forward technology as ingle-shaft technology is). So, technologically Sumgayit CCGT is different from Shimal CCGT.	The Sumgayit CCGT does not enjoy the same financial incentive as Shimal CCGT did. Unlike Shimal CCGT (which had a single –shaft turbine), the Sumgayit CCGT has multi-shaft technology (three shafts), this is technically the first of its kind for AzerEnerji and for Azerbaijan, and hence adds to the technology risk faced by AzerEnerji. The multi-shaft technology is costlier than the single-shaft technology too. The technological barriers have not been presented from the point of view of establishing 'technological barriers'. The descrription and further explanation during a follow-up meeting in October 2008 is sufficient in order to close CL 56. OK
95		X	CL 57 It has to be clarified why it was referred in the PDD to "Revised IPCC Guidelines " and not to "2006 IPCC Guidelines" instead. (page 56)	PDD, B.7.1	Required changes have been made in the PDD and the relevant source for the guideline has also been provided.	CL 57 is resolved and closed. OK
96		X	CL 58 The PDD mentions strategy to ensure energy supply as i.a.: - "commissioning new generating capacities on the basis of combined cycle units"	VP: 7.4.6 PDD, B.4, B.5	1. The state strategy to incorporate more CCGT is based purely on the basis that Azerbaijan has significant availability of gas (and in becoming a	The CL is resolved and closed. OK

			- new hydropower plants The former is the project scenario, which may result in subsidies etc. Exclusion of hydropower project would be inconsistent with the official strategy.		net exporter of gas from a net importer of gas) No, the project does not receive any subsidies from the government. 2. There is no reason to believe that there is any exclusion or inclusion of hydro power project. Also, please note that the hydro plants were indeed considered at the time of baseline selection but they are not comparable to the project activity (hydro plants are peak load and Sumgayit is base load) - hydro plants are not included as a potential baseline option. Since, the identified statement by the validation team does not really affect in presenting any argument for PDD – it has now been excluded from the PDD.	
97		X	CL 59: Why would the efficiency of the baseline's condensing steam turbine vary with the season (it does not seem plausible), because there is not any seasonal heat extraction, e.g. for district heating systems announced ?	VP: 7.3.4 PDD, B.5	The efficiency of the baseline technology has now been made consistent and same value for both summers and winters, as there is no seasonal heat extraction allowed too. Both baseline and project activity are purely electricity production for transport of electricity to grid.	The baseline efficiency is 43%. Based on the observed efficiency for supercritical technologies from several technologies from 1990-2000. Average efficiency has been considered (http://nst.e-apbe.ru/book/6.1.4.pdf. The CL is resolved and closed. OK
98		X	CL 60: Common practice analysis: Most of the arguments are not conclusive: 1. Financial conditions of the "Shimal CCGT"	VP: 7.5.4 PDD: B.5	Please note that first of all CCGT is not at all a common practice in Azerbaijan. Generally for an activity to be common practice it is expected that it is at least	The revised common practice analysis in the final PDD is in line with the “Guidelines on Common Practice”, version 2.0.

			are anecdotal and not further substantiated. 2. Please clarify what impact on the overall financial viability the difference would have. 3. alleged technical risks of the projects multishaft technology are not further indicated and inconsistent with other parts of the PDD (e.g., p22: low reliability of single-shaft CCGT).		20% of the universal sample. However, in the case of Azerbaijan (as shown in section B.5. Step 3) - in 2005 CCGT formed only 7.2% of the overall generation capacity in the country. Thus, it is not appropriate to say that Sumgayit CCGT is a common practice in Azerbaijan. So, first of all CCGT is not common practice in Azerbaijan. Presence of another CCGT Shimal plant in the country build more than 10 years prior to the current project and on ODA funding does further indicate that Sumgayit is not common practice. 1: Contractual information on the Shimal CCGT and the loan document are available (in Russian) so this information is not anecdotal but based on documents that can be verified. Attached for your review 2. Please try to appreciate that a loan at 0.75% rate of interest available for 40 years is lot more attractive than another loan available at more than 3% for 10.5 years. Since the option of ODA funding (same as Shimal) is not even available for Sumgayit CCGT project study of its impact on Sumgayit financing will provide no realistic comparison. In any case since CCGT is not a common practice in Azerbaijan based on the	The CL is resolved and closed. OK

					installed capacity basis alone - establishing Shimal as different from Sumgayit does not even arise. Thus, common practice barrier section has just been established on the basis of installed capacity and elaborate discussion and justification on why Sumgayit is different from Shimal has been removed from the PDD. Elaborate explanation on Shimal in the common practice test section has now been removed from the PDD. 3. Multi-shaft technology is indeed complicated than single shaft technology albeit it does not offer prohibitive barrier to the project. Power sector people in Azerbaijan do realize that it requires their operation people to be especially trained to handle this plant. However, this technological barrier section has been removed from the PDD.	
99		X	CL 61: How was it substantiated that the project will not use LNG (plausible, but so far only stated and not substantiated).	VP: 5.6.1 PDD: B.6.1	The project is unlikely to ever use LNG, as there is not potential LNG link to Azerbaijan. Also please note that Azerbaijan is surplus in natural gas and exports natural gas that it produces. Hence, the gas to be used in the project activity is the gas being produced in the	The CL is resolved and closed. OK

					country, making the possibility of usage of gas from LNG for Sumgayit project activity, even more negligible. Reference that no LNG terminal is in use or planned in the Caspian sea has been provided /62/.	
100		X	CL 62: 1. What is the purpose of calculating a combined margin ex-post if the option 3 is selected for baseline emissions? 2. p37 bottom: position of gas meters inconsistent with description in B.7.1 3. How was compliance of the electricity meters' "accuracy class 0.2 or better" further substantiated?	VP: 8.4 PDD: B.7.2	1. The requirement of calculation of Combined Margin ex-post stems from the fact that baseline is build margin. 2. More explanation has been provided to further ensure that the gas meter picture and the description in B.7.1 are consistent. If the validation team feels that some information is inconsistent they may please let us know what is apparently not well explained. 3. The meter currently being used are of 0.2 class (the best available). The compliance and installation of 0.2 class meters or better in the national requirement within Azerbaijan. Thus, though currently a 0.2 class meters is being installed - in the course of the project activity if meters of Class 0.1 (0.1% inaccuracy) only are available and/or are required by the government of Azerbaijan that more accurate meters be used - higher accuracy meters would be adopted in the project activity. Additional information on a meter that would be installed as part of the project	The CL is resolved and closed. OK

					activity has also been provided to the validation team.	

Appendix B

Certificates of Competence

Qualification

Seidel, Kurt Friedrich /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.: (AuditorenRegNr)			
Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☒ yes
EAC Scopes: (EAC Branchen)	CDM 13 - Waste handling and disposal CDM 01 - Energy industries (renewable - / non-renewable sources) CDM 02 - Energy distribution CDM 03 - Energy demand CDM 04 - Manufacturing industries		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	05.03.2004	Valid to: (Gültig bis)	03.03.2013

Remarks:	Valid for TA 1.1, 1.2, 2.1, 2.2, 3.1, 4.5, 13.1
Languages:	German English Russian

Qualification

Cui, You /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☒ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources) CDM 13 - Waste handling and disposal		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	04.09.2009	Valid to: (Gültig bis)	02.08.2015

Remarks:	Valid for TA 1.2, 13.1 + Part Time TR
Languages:	Chinese English German

Qualification

Li, Lixin /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.:
(AuditorenRegNr)

Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☒ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources) CDM 03 - Energy demand CDM 02 - Energy distribution CDM 04 - Manufacturing industries		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	09/06/2010	Valid to: (Gültig bis)	09/05/2013

Remarks:	Appointed as Technical Reviewer for TA 1.1, 1.2, 2.1, 2.2, 3.1 TA 4.5
Languages:	

Qualification

Schock, Günter /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.: (AuditorenRegNr)			
Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☒ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources) CDM 03 - Energy demand CDM 04 - Manufacturing industries CDM 05 - Chemical industry CDM 13 - Waste handling and disposal CDM 12 - Solvents use CDM 11 - Fugitive emissions from production and consumption of halocarbons and sulphur hexafluoride CDM 08 - Mining/Mineral production CDM 09 - Metal production CDM 10 - Fugitive emissions from fuels (solid; oil and gas)		
Add. qualification: (zus. Qualifikation)	EU-ETS		
First Appointment: (Erstberufung)	09.02.2004	Valid to: (Gültig bis)	07.02.2013

Remarks:	2011-05: Valid for TA 1.1, 1.2, 3.1, 4.5, 5.1/11.1/12.1, 13.1 2010-10 to 2011-05-23: TA 1.1, 1.2, 3.1, 4.1, 4.3, 4.4., 4.5, 5.1/11.1/12.1, 8.1, 9.1, 13.1 EU-ETS qualification for Germany, Italy, Spain, Luxembourg, Cyprus
Languages:	German English

Qualification

Kober, Ralf /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.: (AuditorenRegNr)			
Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Lead Auditor
External: (Externer)	☐ ja	Add. reviewer: (Zusätzlicher Prüfer)	☐ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources) CDM 07 - Transport CDM 13 - Waste handling and disposal		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	02.08.2007	Valid to: (Gültig bis)	01.08.2013

Remarks:	Valid for both CDM and JI; Valid for TA 1.2, 7.1, 13.1
Languages:	German English

Qualification

Wiesmann, Jürgen /

Emission Trading
United Nations Framework Convention on Climate Change

Auditor No.: (AuditorenRegNr)			
Appointed: (Zugelassen)	☒ ja	Qualification Level: (Qualifikationsstufe)	Auditor
External: (Externer)	☒ ja	Add. reviewer: (Zusätzlicher Prüfer)	☐ yes
EAC Scopes: (EAC Branchen)	CDM 01 - Energy industries (renewable - / non-renewable sources)		
Add. qualification: (zus. Qualifikation)			
First Appointment: (Erstberufung)	25.04.2011	Valid to: (Gültig bis)	24.04.2014

Remarks:	Valid for TA1.2
Languages:	German English French Chinese