TÜV Rheinland Energie
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DETERMINATION REPORT

DETERMINATION
OF
"COGENERATION AND UTILIZATION OF WASTE HEAT AT LLC "LUKOIL ENERGY AND GAS UKRAINE"
JI PROJECT, UKRAINE

REPORT NO. 21215058-1-DR

TÜV Rheinland Energie und Umwelt GmbH

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DETERMINATION REPORT NO. 21215058-1-DR

Date of first issue:	Project No.:
05.07.2011	JI 21215058
Client:	**Organisational unit:**
RWE Power Aktiengesellschaft	TÜV Rheinland Energie und Umwelt GmbH Am Grauen Stein 51105 Köln, Germany

Summary:

TÜV Rheinland Energie und Umwelt GmbH (TÜV Rheinland, the verifier) has been ordered by RWE Power Aktiengesellschaft to determine the „Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine" JI Track 1 Project, Ukraine on the basis of Marrakech Accords, JI rules and modalities and subsequent decisions of Joint Implementation Supervisory Committee (JISC), Host and Guest countries as applicable for JI Track 1 projects.

The determination of this project has been performed by document reviews, interviews and the audit at the location of the project (on-site inspection).

The determination team has reviewed the estimation of the projected emission reductions. TÜV Rheinland can confirm that the indicated amount of tons CO_{2e} of emission reductions (to be issued as ERUs) in the provided crediting period -years 2008 - 2012, first commitment period under the Kyoto Protocol and in the years 2013-2024 (prior to the decision of the Host Country and international treaties) planned to be achieved by the project activity is presented and calculated in an accurate and plausible manner.

On the opinion of verifier, the project does meet all relevant UNFCCC requirements for JI Track 1 project and all relevant host and guest country criteria prior to the start of the project activity.

Based on the information we have seen and evaluated, it can be confirmed, making conservative assumptions and with the reasonable, but not absolute, level of assurance, the estimation of the following emissions reductions planned to be achieved by the project activity „Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine" during the crediting period:

- 212.571 tCO_{2e} over the period of 2010-2012
- 922.697 tCO_{2e} over the period of 2013-2024 (subject to Host Country Approval and international treaties)

The determination team can recommend this project to be registered under JI Track 1 mechanism.

Report No.:	Subject Group:
21215058-1-DR	Ukraine
Report title: JI Determination Report "Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine".	
Work carried out by: Yuriy Lozynskyy, Team Leader Yevgen Groza, Local Expert	
Work verified by: Ralf Kober	

Date of this revision:	Rev. No.:	Number of pages:
05.07.2011	01	65

TÜV Rheinland Energie und Umwelt GmbH
Am Grauen Stein
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Indexing terms

- Climate Change
- Joint Implementation

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Abbreviations

Explain any abbreviations that have been used in the report here.

AM	Approved Methodology
ACM	Approved Consolidated Methodology
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emissions reduction
CHP	Combined Heat and Power Generation
CL	Clarification Request
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EA	Economic Analysis
EIA	Environmental Impact Assessment
ER	Emissions reduction
ERPA	Emissions reduction Purchase Agreement
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWh	Giga Watt Hours
GWP	Global Warming Potential
I	Interview
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
kW	Kilo Watt
kWh	Kilo Watt Hours
LoA	Letter of Approval
LoE	Letter of Endorsement
MoV	Means of Verification
MW	Mega Watt
MWh	Mega Watt Hours
NGO	Non Government Organisation
NPV	Net Present Value
OSV	On Site Visit
PDD	Project Design Document
QC	Quality Control
QA	Quality Assurance
t	Tonne
UNFCCC	United Nations Framework Convention on Climate Change
VP	Verification Protocol
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

RWE Power Aktiengesellschaft has commissioned TÜV Rheinland Energie und Umwelt GmbH (TEU), a subsidiary of the TÜV Rheinland Group, to make a determination for the JI Track 1 project „Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine" (hereafter called the project) with regard to the relevant requirements of the Marrakech Accords and Article 6 of the Kyoto Protocol and Host and Guest country requirements in relation to the JI Track 1 procedures. The Project Design Document (PDD) has to be assessed by an independent third party. The determination is one part of the work to clarify that the final version of PDD, version 2.4 /1/ including annexes with relevant project information (e.g. baseline, monitoring plan, calculations of emission reductions) corresponds to the relevant JI requirements. Determination is seen as a necessary tool to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions.

1.2 Scope

The determination scope 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 Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Project Description

The purpose of the project is the increase of the organic fuel use efficiency through combined heat and power generation using mainly on the visbroken atmospheric residue combustion, accompanied by greenhouse gases emission reductions. Project is realized by LLC "Lukoil Energy and Gas Ukraine" (LEGU) to improve the reliability of heat energy supply to the nearby JSC "Lukoil Odesskyi Oil Refining Plant" (LOORP).

Generated electricity is supplied to the national grid and substitutes electricity generated by power plants, but could also be used for covering electricity supply of LOORP. Generated heat energy is used for covering the heat energy demand of the LOORP.

LEGU realizes the project of the cogeneration unit construction (diesel engine power plant with 2 exhaust-boilers) with total electricity capacity of 17.8 MW and total heat energy capacity of 176.6 GJ per hour. Project is implemented at the project site of JSC "Lukoil-Odesskyi Oil-

Refining Plant" in 1\1, Shkodova Gora st., Odessa, Ukraine. The geographical coordinates of the project site are the following: 46°30'49"N, 30°41'3"E.

Expected results of the project:

Project activity aims to achieve the following results:

- greenhouse gases emission reductions in the amount of 1.135.268 tonnes of CO_{2e} for the period of 2010-2024,
- efficient utilization of Visbroken Atmospheric Residue (VAR),
- more efficient utilisation of energy resources due to introduction of cogeneration technology instead of separate generation of electricity and heat energy.

1.4 Determination team

Lead auditor: Yuriy Lozynskyy, JI lead auditor, TÜV Rheinland

Auditor (s): Yevgen Groza, Local expert
Ralf Kober, JI Auditor and Technical Reviewer, TÜV Rheinland

2 METHODOLOGY

The determination process consisted of the following phases:

- Desk review of the Project Design Documentation and other supplementary documentation (off-site)
- On-site audit and follow-up interviews with project participants
- Resolution of outstanding issues and the issuance of a draft determination report and opinion.

These phases are described in more details in the following sections.

The Determination is performed as a document review of the available Project Design Document for the project, calculations of the emission reductions planned to be achieved by the project activity and other supporting documentation (see Section 2.1 of this report). The information presented in the documentation is assessed and evaluated against the criteria for JI Track 1 projects.

On-site audit and interviews with project participants were hold in order to assess and evaluate the project performance against the information contained in PDD, including the assumptions, sources and data used and related to the establishment of a baseline for the project, additionality, monitoring plan and calculation of emission reductions for the project activity.

The document review and the overall assessment of the project agains JI Track 1 criteria was performed on the basis of JISC Determination and Verification Manual, Version 1 (JISC 19, Annex 4), as relevant to the project activities under JI Track 1 mechanism. The results of the assessment are presented in Annex 1 to this report.

Resolution of outstanding issues and the issuance of a draft determination report and opinion.

The objective of this determination phase was to resolve any outstanding issues which have been raised during desk review and on-site assessment and which were needed to be clarified prior to the verifier's conclusion on the project activity.

2.1 Review of Documents

As part of the scope the following available documents have been reviewed:

1.	Final Project Design Document (PDD) for JI project "Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine", dated 09.06.2011.
2.	Investment analysis calculation sheet "Lukoil_IRR V.2.4.xls".
3.	Project and baseline emissions and emission reductions calculation sheet "Lukoil_JI_SSC_ERU_Version V.2.4.xls".
4.	Calculation sheet: "N_2O and CH_4 emissions.xls" on N_2O and CH_4 emissions.
5.	LLC "Lukoil Energy and gas Ukraine": Organisational structure of LLC "Lukoil Energy and Gas Ukraine".
6.	Appendix 1 to the Additional Agreement No. 2 to the Contract № P06400289, July 23, 2007. Specification for the equipment: Wärtsilä Unit.
7.	Letter from LLC "Lukoil Energy and Gas Ukraine" № 7-677 dated 02.06.2011 on major repair costs of cogeneration unit.
8.	Letter from LLC "Lukoil Energy and Gas Ukraine" № 7-587 dated 20.05.2011 on natural gas and diesel consumption by cogeneration unit.
9.	Letter from LLC "Lukoil Energy and Gas Ukraine" № 7-565 dated 18.05.2011 on heat and electrical energy own consumption by cogeneration unit.
10.	Technical Specification № BTP-1.1.1-01-2010: Part 3: Description of technological

	process and production technological scheme.
11	Agreement № 10/298 dated 30.06.2010 on the movable property between LLC ”Lukoil Energy and Gas Ukraine” and JSC “Lukoil-Odesskyi Oil- Refining Plant”.
12	Letter from LLC “Lukoil Energy and Gas Ukraine” № 7-490 dated 22.04.2011 on the amount of consumed heat energy and the usage of appropriate amount of fuels in the years 2000-2010 .
13	Letter from Close Corporation “Kotloenergoproekt” № 258/6 dated 13.05.2009 on the fuel usage rates of boiler E-35-1, 4-250.
14	Letter from LLC “Lukoil Energy and Gas Ukraine” № 7-440 dated 12.04.2011 on the fuel usage rate of the cogeneration unit (2 engines Wartsila 20v32 and 2 boilers E-35-1, 4-25).
15	Scientific and production enterprise “Energoperspektiva” ltd.: Working project. № 8875-217/30-07-306- ОПЗ. Moscow 2008. Cogeneration Unit on combined electrical and heat energy production with the utilization of visbroken atmospheric residue.
16	Letter from LLC “Lukoil Energy and gas Ukraine” № 3-153 dated 03.02.2011 on the planned costs of main fuel used on the cogeneration unit as well as planned prices of heat and electrical energy produced.
17	National Electricity Regulatory Comission of Ukraine: List of companies possessing licenses on the heat energy generation on heat and power plants and the installations with the usage of renewable energy sources or combined heat and electrical energy generation as on 01.09.2010.
18.	State Statistics Committee of Ukraine: Consumer price indexes in 1991-2009 in Ukraine. http://ukrstat.gov.ua/operativ/operativ2006/ct/cn_rik/isc/isc_u/isc_m_u.htm.
19.	OOO “Ekotechnika”: Technical passport of the waste product № 9: GOST 17.9.0.2 – 99. Gipsum (incl. phosphogypsum) non-standard. 2653.3.1.01 – DK 005-96.
20	Technical conditions TU U 23.2-00152282-004:2009: visbroken atmospheric residue. Valid from 09.04.2009. JSC “Lukoil-Odesskyi Oil- Refining Plant”.
21	Development of the electricity carbon emission factors for Ukraine: Baseline Study for Ukraine, Final Report/EBRD, 14.10.2010. LI 260574.
22	TÜV SÜD Industrie Services GmbH: Assessment Report: „Assessment of the Grid Emission Factor Calculation Model for Ukraine“ dated 15.10.2010.
23	State enterprise Ukrmetrteststandart: Calibration certificate on Visbroken atmospheric residue consumption meter. № 24-1-1/451 dated 16.07.2010.
24	GPiA SUE: Calibration protocol of electricity meter № 53043936 dated 13.11.2009.
25	GPiA SUE: Calibration protocol of electricity meter № 53043938 dated 13.11.2009.
26	State enterprise “Odessa Regional Center of Standardization, Metrology and Certification”: Calibration certificate of Diesel fuel consumption meter № 549-MX dated 08.04.2010.
27	State enterprise “Odessa Regional Center of Standardization, Metrology and Certification”: Calibration certificate of natural gas flow meter. № 277-td dated 09.07.2010.
28	State enterprise Ukrmetrteststandart: Calibration certificate on Refinery gas consumption meter. № 24-1-1/551 dated 30.07.2010.
29.	State enterprise Ukrmetrteststandart: Calibration certificate on Residual fuel oil consumption meter. № 24-1-1/450 dated 16.07.2010.

30.	State enterprise “Odessa Regional Center of Standardization, Metrology and Certification”: Calibration certificate of heat energy meter № 08.09.1109. № 178-td dated 27.05.2010.
31	State enterprise “Odessa Regional Center of Standardization, Metrology and Certification”: Calibration certificate of heat energy meter № 11.09.1112. № 179-td, dated 27.05.2010.
32	State enterprise “Odessa Regional Center of Standardization, Metrology and Certification”: Calibration certificate of heat energy meter № 11.09.1110. № 180-td, dated 27.05.2010.
33	Protocol № 37/06-10 on the boilers operators training of LLC “Lukoil Energy and Gas Ukraine” on “Rules on the design and safe exploitation of steam boilers” dated 02.06.2010.
34	Protocol № 43/06-10 on the electricians training of LLC “Lukoil Energy and Gas Ukraine” dated 17.06.2010.
35	Wärtsila Land&Sea Academy. Training Certificate on Power Plant Introduction Courses of Wärtsila engines, № 00108284.
36	Wärtsila Land&Sea Academy. Training Certificate on power plant operation and maintenance course. № 00162189.
37	Wärtsila Land&Sea Academy. Training Certificate on power plant electrification course. № 00162290.
38	National Environmental Investment Agency of Ukraine: Letter of endorsement for JI Project “Cogeneration and Utilization of Waste Heat at LLC “Lukoil Energy and Gas Ukraine”. № 2254/23/7 dated 27.12.2010.
39	Anna Tsarenko. Overview of Heating Sector in Ukraine // Center for Social and Economic Research, Kyiv, 2007.
40	Joris Koornneef, Martin Junginger, Andre´ Faaij. Development of fluidized bed combustion—An overview of trends, performance and cost // Progress in Energy and Combustion Science 33 (2007).
41	Ukraine. Energy Policy Overview. Report published by International Energy Agency in 2006.
42	State Design Norms of Ukraine: DBN V.2.5-20-2001 “Gas supply”.
43	National Bank of Ukraine. Data for March 2007, rate for the loans in national currency for the period greater than 5 years.http://www.bank.gov.ua/Statist/Electronic%20bulletin/data/4-Financial%20markets(4.1).xls Spreadsheet 1.3.
44	NEK „Ukrenergo“: The Energy Strategy of Ukraine for the period up to 2030. http://www.ukrenergo.energy.gov.ua/ukrenergo/control/uk/archive/docview?typeId=44577.
45	Decree of Cabinet of Ministers of Ukraine № 256 –p “On Immediate Actions for Decrease of Natural Gas Consumption for the Period up to 2010. Dated 19.02.2009. http://zakon1.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=256-2009-%F0.
46	The European Association for the Promotion of Cogeneration: A Guide to Cogeneration, 2001. http://www.cogeneurope.eu/wp content/uploads//2009/02/educogen_cogen_guide.pdf.
47	Cogeneration Act of Ukraine, 2005 (З А К О Н У К Р А Ї Н И Про комбіноване виробництво теплової та електричної енергії (когенерацію) та використання скидного енергопотенціалу), dated 05.04.2005. http://zakon.rada.gov.ua/cgi-bin/laws/main.cgi?nreg=2509-15.
48	Herasimovich V. Ukrainian Gas Sector Review // Center for Social and Economic Research, Kyiv, 2008.

49	Volodymyr Smelik, Vladyslav Smelik and Dmytro Sakharuk. Investing in cogeneration for Ukraine – how to develop projects successfully. Cogeneration and On-Site Power Production. http://www.cospp.com/articles/print/volume-9/issue-6/features/investing-in-cogeneration-for-ukraine-mdash-how-to-develop-projects-successfully.html.
50	JISC, Guidelines for Users of the Join Implementation SSC Project Design Document Form.
51	JISC, Joint Implementation SSC Project Design Document Form.
52	JISC, Glossary of JI terms, Version 02.
53	JISC, Guidance on Criteria for Baseline Setting and Monitoring, Version 02.
54	CDM Methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", Version 02.1.
55	UNFCCC: AM0014 "Natural gas-based package cogeneration", Version 04.
56	JISC, Joint Implementation Determination and Verification Manual, Version 01.

Following documents were reviewed during on-site assessment:

57	Ministry of Housing and Communal Services of Ukraine: License № 500695 on the heat energy supply for LLC "Lukoil Energy and Gas Ukraine" dated 08.12.2009.
58	Newspaper "Dobryj Vecher" #45 (257) dated 13.11.2008. Information on the permit on the emissions in the atmosphere from the stationary sources of cogeneration unit LLC "Lukoil Energy and Gas Ukraine".
59	Odessa Oil Refinery named after 26 Congress of KPSS: Technical Passport of boiler DE-25-14 GM № 2. Registration №4635.
60	Odessa Oil Refinery named after 26 Congress of KPSS: Technical Passport of boiler E-25-14 GM. Registration №4511.
61	Odessa Oil Refinery named after 26 Congress of KPSS: Technical Passport of boiler DKVR 20-13-250. Registration №3670.
62	Passport №5, Registration № 3832 on Steam boiler DKVR 20-13-250.
63	Passport №6, Registration №4072 on Steam boiler DKVR 20-13-250.
64	Working draft: energy block-cogeneration unit with combined generation of electricity and heat with utilization of visbreaking residues. Part 16. Estimation of the influence on the atmosphere. Ecotechnica, Odessa, 2009.
65	General Plan of cogeneration Unit at LLC "Lukoil Energy and Gas Ukraine".
66	Working draft: Production techniques. Energy block-cogeneration unit with combined generation of electricity and heat with utilization of visbreaking residues. "Ukrgiprogazochistka". Zaporozhje, 2008.
67	ZAO HKP "Kotloenergoproekt": Passport of boiler № 6085, Type E-35-1, 4-250, made in 2008.
68	ZAO HKP "Kotloenergoproekt": Passport of boiler № 6084, Type E-35-1, 4-250,

	made in 2008.
69	OOO Chernomormontazh: Technical Report. Ecology-technical Setting up of steam boiler ДКВР-20-13-250 ст. 4. Odessa, 2008.
70	OOO Chernomormontazh: Technical Report. Ecology-technical Setting up of steam boiler ДКВР-20-13-250 ст. 5. Odessa, 2008.
71	OOO Chernomormontazh: Technical Report. Ecology-technical Setting up of steam boiler ДКВР-20-13-250 ст. 5. Odessa, 2008.
72	LLC "Lukoil Energy and Gas Ukraine": Resultant List of technological parameters of boiler room performance №3670. Steam boiler ДКВР-20-13-250 ст. 4.
73	Working Conditions Chart of steam boiler ДКВР-20-13-250 ст. 4, 2008.
74	Working Conditions Chart of steam boiler ДКВР-20-13-250 ст. 6, 2008.
75	Contract № 90318-5r dated 17.02.2010: on the manufacturing and delivery of ozone plant between LLC „Lukoil Energy and Gas Ukraine" and Degremont Technologies ltd.
76	Contract № P0600289 dated 23.07.2007 between LLC „Lukoil Energy and Gas Ukraine" and Wärtsilä Finland OY on delivery of diesel engine plant.
77	Contract № 15/01 dated 15.01.2010 between closed corporation "Technika" and LLC „Lukoil Energy and Gas Ukraine"
78	Contract № 600-08 dated 06.11.2008 between "Ukrventsistemy ltd" and LLC „Lukoil Energy and Gas Ukraine".
79	Contract № 8805 dated 06.02.2008 between "Koltloenergoproekt closed corporation" and LLC „Lukoil Energy and Gas Ukraine" on two steam boilers E-35-1.4-250.
80	Extract from the protocol: Meeting on the planning and construction of power unit, dated 25.04.2007.
81	Extract from business plan for power unit. OOO "LokOil-Energogaz", OOO "NPP Energoperspektyva". Moscow, 2007.
82	Ministry of environmental Protection of Ukraine: Permit № 5110137600-148 on the pollutants emissions in the atmosphere from stationary sources for LLC „Lukoil Energy and Gas Ukraine". Dated 01.06.2009.
83	Inspection of state architectural-construction control in Odesska oblast: Certificate on the completion of construction of cogeneration unit. № 15000661 dated 25.06.2010.
84	National Electricity Regulatory Comission of Ukraine (NKRE): Decision № 741 dated 24.06.2010 on the approval of tariffs for heat energy at LLC "Lukoil Energy and Gas Ukraine".
85	National Electricity Regulatory Comission of Ukraine (NKRE): Decision № 740 dated 24.06.2010 on the approval of tariffs for electricity at LLC "Lukoil Energy and Gas Ukraine".
86	National Agency of Ukraine on the effective usage of energy resources (HAEP): Confirmation of certification № 537-02/14/3-10 dated 16.06.2010 on two Wartsila engines 20V32 and two boilers E-35-1.4-250.
87	National Commission of power industry regulation of Ukraine: License on the combined electricity and heat generation for LLC "Lukoil Energy and Gas Ukraine". №147994 dated 09.09.2009.

88	JSC "Lukoil-Odesskyi Oil- Refining Plant" (LOORP): Certificate of quality № 1824 dated 24.09.2010 according to ДСТУ 4058-2001 on mazut 100. Issued by Central Plant Laboratory.
89	Certificate № 399: results of test on the composition of dry gas, on 10.10.2010, Central Plant Laboratory.
90	JSC "Lukoi Odesskyi Oil Refining Plant" (LOORP): Certificate of quality № 1740 dated 16.09.2010 according to ТУ У 23.2-00152282-004:2009 on visbreaking residue. Issed by Central Plant Laboratory.
91	Act on the controlling of the amount of electricity produced in the network produced by LLC "Lukoil Energy and Gas Ukraine" for August 2010, Attachment to the letter to Odessaoblenergy ltd № 153-13/02 dated 24.06.2010.
92	Additional agreement № Ц-10/2010 to the agreement № 09/630 dated 28.09.2010.
93	Act of the working commission on the acceptance in operation of the finished of power unit at LLC "Lukoil Energy and Gas Ukraine" dated 18.06.2010.

2.2 On-site assessment of the project

On 26/10/2010 the determination team has conducted a visit to the project site (LLC "„Lukoil Energy and Gas Ukraine"). Onsite interviews were hold with the project participant LLC „Lukoil Energy and Gas Ukraine" and the PDD developer LLC "KT-Energy" in order to confirm the selected information and to confirm the information related to the following topics:

Interviewee	**Interview topics**
LLC "Lukoil Energy and Gas Ukraine"	• Project history • Project boundary • Implementation schedule • Organizational structure • Responsibilities and authorities • Training of personnel • Quality management procedures and technology • Implementation of equipment (records) • Metering equipment control • Metering record keeping system, database • Technical documentation • Monitoring plan and procedures • Permits and licenses • Environmental Impact Assessment • Local stakeholder's response.
LLC „KT-Energy"	• Baseline scenario and calculation of baseline emissions • Calculation of project emissions • Monitoring plan • Proofs of additionality • Calculation of emission reductions

Following persons were interviewed during on-site assessment:

LLC "Lukoil Energy and Gas Ukraine"

1. Vasilij Nikolaevich Zaremba
Deputy Director on economic and finance-the treasurer

2. Prokopenko Arina Nikolayevna
Environmental engineer

3. Zaikov Sergej Aleksandrovich
Main Engineer

4. Berlizov Nikolaj Nikolajevich
Head of the energy department

5. Iryna Lorentsovna Nemets
Procurement department, Engineer

LLC KT Energy:

Mykola Shlapak, Project manager

Kateryna Levyk, Project manager

2.3 Resolution of outstanding issues

The objective of this determination phase was to resolve any outstanding issues which have been raised during desk review and on-site assessment and which were needed to be clarified prior to the verifier's conclusion on the project activity.

In order to ensure the transparency, a list of open issues in the form of CARs, CLs and FARs was customised for the project (see Annex 1), summarizing the status of the resolution of outstanding issues.

During the determination process a Corrective Action Requests (CARs) has been issued where:

1 Mistakes have been made in assumptions, application of the methodology and/or methodological tools or in the project documentation (PDD) which directly will influence project results;

2 The JI-specific requirements deemed relevant for determination of a project with certain characteristics have not been met;

3 There is a risk that emission reductions cannot be verified and certified.

A Clarification Requests (CLs) has been issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A Forward Action Requests (FARs) has been raised in the context of determination where the certain issues related to project implementation should be reviewed during the first verification.

3 DETERMINATION FINDINGS

The Determination findings against the JI criteria as relevant to JI Track 1 projects are provided in details in the Determination Protocol (Annex 1). The conclusions regarding the findings of the determination are summarised in the following section.

3.1 Project design

The purpose of the project is the increase of the organic fuel use efficiency through combined heat and power generation based mainly on the visbroken atmospheric residue combustion, accompanied by greenhouse gases emission reductions. Project is realized by LLC "Lukoil Energy and Gas Ukraine" (LEGU) in order to improve the reliability of heat energy supply to the nearby JSC "Lukoil Odesskyi Oil Refining Plant" (LOORP).

Generated electricity is supplied to the national grid to substitute electricity generated by power plants, but could also be used for covering electricity supply of LOORP. Generated heat energy is used for covering the heat energy demand of the LOORP.

LEGU realizes the project of the cogeneration unit construction (diesel engine power plant with 2 exhaust-boilers) with total electricity capacity of 17.8 MW and total heat energy capacity of 176.6 GJ per hour. Generated electricity is supplied to the national grid to substitute electricity generated by power plants and heat energy is used for covering heat energy demand of JSC "Lukoil-Odesskyi Oil Refining Plant" substituting heat energy produced by steam boilers with residual fuel oil, refinery and natural gas combustion.

Project implementation start date (beginning of the investment stage) was 23.07.2007, when the contract on purchasing the cogeneration unit's diesel engine power plant equipment was concluded. Cogeneration unit's diesel engine power plant equipment was installed in September 2008 and exhaust boilers were installed in April, 2010. The operation of cogeneration unit started on 01.07.2010.

First crediting period for the project stretched from 01.07.2010 till 31.12.2012. In the period 01.01.2013 till 31.12.2024 (second crediting period) project proponent can claim emission reductions achieved under JI mechanism prior to Host Country Approval and subject to international treaties in respect to JI mechanism in the future.

The verifier recognizes that the present project is helping the host country to fulfill its goals to promote sustainable development. The project is expected to be in line with the current specific host-country JI requirements.

National Environmental Investment Agency of Ukraine issued a Letter of Endorsement for the project № 2254/23/7 dated 27.12.2010 providing its support for further development of proposed joint implementation project. However, LoA from Host Country (Ukraine) and Guest Country (Germany) were not available for the project at the time of project's determination. In this regard CAR 1 (See Annex 1, p.2) was issued. CAR 1 remains open at the time of issuance of this determination report. Since this determination report is the prerequisite for the application by the project proponent for the issuance of LoA in Host and Guest countries the verifier accept the pending status of CAR 1 as acceptable for the issuance of this determination report and opinion.

3.2 Baseline and additionality

JI specific approach with the application of some elements of CDM Methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality" Version 02.1 has been chosen for the justification of baseline scenario. Project participants established the baseline using JI specific approach by identifying and listing possible alternatives on the basis of conservative assumptions and identifying the most plausible one.

According to the information provided in the PDD /1/, JI specific approach was developed based partly on CDM approved methodology AM0014 "Natural gas-based packaged cogeneration" version 4. Namely, the approaches for estimation of energy (fuel) consumptions for heat energy generation under the baseline scenario and associated baseline emissions as well as the approach for estimation of baseline emissions from electricity generation that is offset by the electricity supplied from the cogeneration units have been used. The mentioned CDM methodology is not applicable to this JI project to be used as a whole, because natural gas is not a main fuel type for project cogeneration unit and the project does not meet in full the applicability criteria of the methodology, namely the criterion that no excess heat from the cogeneration system is provided to another user and no excess of electricity is supplied to the power grid. Electricity generated within the project is supplied to the national grid.

The alternatives considered for determination of the baseline scenario in the context of the project activity were defined by project participants based on the existing practice analysis, existing technologies, national and sectoral policies and project specific circumstances.

The possible alternatives were identified as follows /1/:

- Alternative 1. The proposed project activity without being registered as a JI project. It implies combined heat and electricity generation using VAR and natural gas as the main fuel types. The alternative foresees all the same measures and use of the same equipment as the project scenario, but does not lead to additional revenues from emission reduction units' sale and thus is less financially attractive.

Alternative 2. Further exploitation of the existing boilers with their graduate replacement with the new boilers utilizing residual fuel oil, natural and refinery gas as fuels; no on site electricity generation.

Alternative 3. Further exploitation of the existing boilers with their graduate replacement with the new boilers utilizing natural gas as the main fuel; electricity generation is absent on site.

Alternative 4. Installation of steam plant equipment with turbines for heat and electricity generation with VAR and refinery gas combustion.

Alternative 5. Installation of gas turbine equipment for heat and electricity generation.

Alternative 6. Installation VAR gasification equipment.

Alternative 7. Installation of boilers circulating fluidized bed technology.

Alternative 2 is selected as being the baseline scenario to project activity - Further exploitation of the existing boilers with their graduate replacement with the new boilers utilizing residual fuel oil, natural and refinery gas as fuels; no on site electricity generation. It is not expected that baseline scenario would have any prohibitive barriers that could prevent it from realization.

Greenhouse gases' emissions sources in baseline scenario include the following:

- Heat power generation by boilers with residual fuel oil, natural and refinery gas combustion in the amount that will be supplied by the cogeneration unit within the project activity;

- Electricity generation by fossil fuels power plants of the national grid in the amount that will be supplied by the cogeneration unit within the project activity.

Investment analysis, barrier analysis and common practice analysis were used by project participants to demonstrate the project's additionality.

The Internal Rate of Return (IRR) is used as a most suitable financial indicator in order to evaluate the project's attractiveness. IRR was applied to measure the profitability of the investments in the proposed project activity without revenues from ERUs sale and its comparison with a benchmark in order to determine whether the proposed project activity is financially/economically feasible, without the revenue from the sale of carbon credits. Sensitivity

analysis was also conducted for the project taking into account 10% fluctuation of key parameters (VAR price, natural gas price, electricity price, heat energy price and operating expenses). The verifier can confirm by means of examination of IRR calculation sheet and other supporting evidences, summarized in Section 2.1 that the project activity has less favourable indicator (lower IRR) than the benchmark and thus the project activity cannot be considered as financially attractive and that the sensitivity analysis was provided in an accurate and transparent manner. The application of the flexible mechanisms of Kyoto Protocol and additional revenues from emission reduction units' sales improves the economic feasibility of the project and triggers project implementation.

Verifier's opinion is also that the project faced technological, prevailing practice and other barriers. Baseline scenario (heat energy generation by the gradually replaced boilers utilizing residual fuel oil and refinery gas as their major fuels and natural gas as an additional fuel and no electricity generation on the site) would not have been affected by high technological risks as before project implementation the boilers with similar technical characteristics had been in operation for long period of time. The fuel for the boilers (residual fuel oil and refinery gas) is ensured by the nearby LOORP. Besides, the staff of the LOORP is experienced with operating of such equipment.

On the verifier's opinion, the performed analysis of the alternatives to the project activity, project's additionality and identification of project's baseline, as described in PDD, was conducted in an appropriate manner and was supported with appropriate documents and evidences, as summarized in Section 2.1. The proposed approach to additionality demonstration and assessment provides traceable and transparent information showing that the baseline was identified on the basis of plausible assumptions and that the project scenario is not part of the identified baseline scenario. The Project scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Emissions Reductions Units (ERUs) under the JI mechanism.

3.3 Monitoring Plan

JI specific approach with elements of the approved baseline and monitoring methodology AM0014 "Natural gas-based package cogeneration" (Version 04) was chosen for monitoring of greenhouse emission reductions. Monitoring plan is established in accordance with Host Party regulations, namely in accordance with the Decree of Cabinet of Ministers of Ukraine № 206 dated 22.02.2006 "On Approval of the Procedure of Drafting, Review, Approval and Implementation of Projects Aimed at Reduction of Anthropogenic Emissions of Greenhouse Gases" and "Requirements for the Joint Implementation Projects preparation" approved by National Environmental Investment Agency of Ukraine (Order № 33 from 25th of June, 2008). On the verifier's opinion, presented in the PDD monitoring plan ensures the collection and archiving of all relevant data necessary for measuring anthropogenic emissions and calculation of GHGs emission reductions occurring within the project boundary during the crediting period. Monitoring plan of the project provides also quality assurance and control procedures for the

monitoring process and procedures for the periodic calculation of the reductions of anthropogenic emissions by sources of the proposed JI project.

Monitoring plan has also been established in accordance with Appendix B of the JI guidelines and taking into account "Guidance on criteria for baseline setting and monitoring" developed by JISC. The formulae applied correspond to those proposed by the approved baseline and monitoring methodology AM0014 "Natural gas-based package cogeneration" (Version 04) and "Tool to calculate project or leakage CO_2 emissions from fossil fuels combustion" (Version 02), as applicable.

Detailed theoretical description, assumptions, formulae, data sources and key factors used in the monitoring plan are appropriately and in an accurate manner described in the project design document /1/. The verifier has verified these by the means of the analysis and cross-check of the information provided in PDD with the documents submitted (see Section 2.1) and internationally recognized default factors, as e.g. from IPCC Guidelines for National Greenhouse Gas Inventories, 1996. Detailed information in relation to the organisation of project monitoring, collection and archiving of monitoring data, monitoring equipment used for the estimation of baseline and project emissions as well as information on the quality assurance procedures is provided in the sated monitoring plan in the PDD /1/, Section D.

Monitoring plan is established in accordance with the list of Host Party regulations that is indicated in the PDD. All roles and responsibilities connected with monitoring plan implementation, frequency of data monitoring are provided in PDD /1/ in transparent and accurate manner.

On the opinion of verifier, the monitoring plan for the project is established in an accurate and complete manner, covering all significant GHG emissions attributable to project activity and applying correct formulae and monitoring parameters, as applicable.

3.4 Calculation of GHG Emissions

Estimation of emission reductions attributable to the project activity was made ex-ante and described in PDD in section E. The monitoring of emission reduction will take place ex-post. Reductions of anthropogenic emissions by sources of greenhouse gases (GHGs) generated by joint implementation (JI) projects are estimated/calculated by comparing the quantified anthropogenic emissions by sources within the project boundary in the baseline scenario with those in the project scenario.

Greenhouse gases emissions sources in baseline scenario of the project include several components: baseline GHGs emissions due to heat energy supply by boilers using residual fuel oil, natural and refinery gas under the baseline scenario in the amount which will be substituted with heat energy supplied by the cogeneration unit under the project scenario; and GHG emissions due to electricity consumption from the national grid under the baseline scenario in the amount which will be substituted with electricity supplied by the cogeneration unit under the project scenario. The detailed algorithms are described in sections E.4 of the PDD.

According to the estimated data in the PDD, total amount of baseline emissions for the crediting period of 2010-2024 within the project boundaries is equal to 3.032.553 tonnes CO_{2e}.

Project GHGs emissions include emissions due to organic fuel combustion by the cogeneration unit– project GHG emissions due to natural gas consumption by the cogeneration unit in tonnes CO_{2e}/year, GHG project emissions due to VAR consumption by the cogeneration unit in tonnes CO_{2e}/year and GHG project emissions due to diesel fuel consumption by the cogeneration unit, in tonnes CO_{2e}/year. As a result of calculations presented by PPs, total amount of project emissions for the crediting period 2010-2024 within the project boundaries is estimated to be equal to 1.897.285 tonnes CO_{2e}.

With the reference to this JI specific approach, project does not lead to any significant leakages. These were not taken into account within the calculation of greenhouse gases emission reductions and assumed to be zero.
The estimation of the following emissions reductions planned ex-ante to be achieved by the project activity „Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine" during the crediting period is presented as follows (PDD /1/, Section E.6):

- 212.571 tCO_{2e} over the period of 2010-2012
- 922.697 tCO_{2e} over the period of 2013-2024 (subject to Host Country Approval)

The verifier has analysed the methodology, key monitored parameters and verified the ex-ante calculation of emission reductions attributable to the project activity, presented by the project proponent in ERU calculation spreadsheet and PDD /1/. On the opinion of the verifier, the methodology applied for the estimation of emission reductions is used in an appropriate way; and calculations of baseline emissions, project emissions and emission reductions are made in correct, accurate and transparent manner and formulae presented in PDD for the estimation of baseline and project emissions attributable to the project activity, as applicable.

3.5 Environmental Impacts

Implementation of „Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine" JI Track 1 project will have positive environmental effects due to the more efficient fossil fuel consumption and greenhouse gases emission reductions. Modern cogeneration technology will be employed within the project and the produced power will substitute electricity from national grid (which have high CO_2 emission factor) and, in addition, produced heat will particular substitute heat energy currently being produced by boilers that combust residual fuel oil and refinery gas mainly.

The project has been subject to a formal environmental impact assessment (EIA) undertaken in an accordance with the applicable legislation and regulations of Ukraine. No considerable impact on the air is foreseen. Project does not have significant impact on biotic and water mediums. In general, project realization has positive environmental impact. Permit № 5110137600-148 on Polluting Substances' Emissions into the Atmospheric Air by Stationary Sources has been issued

to LLC "Lukoil Energy and Gas Ukraine" by State Department for Environmental Protection in Odesska Oblast. It is valid from 01.06.2009 until 01.06.2014.

Expected concentrations of pollutants will be in compliance with the requirements of the plant's operational license and local environmental regulations. Additionally to greenhouse gases emissions, the substitution of electricity from national grid will lead to nitrous and sulphur oxide emission reductions.

By means of interviews made on-site and check of documents checked as listed in Section 2.1 of this report, the verifier can confirm that the implementation of the project activity has in general positive impact on the environment and more specifically on the atmosphere and is in accordance to the current legislation of Host country.

3.6. Comments by Parties, Stakeholders and NGOs

Ukrainian legislation on conducting the environmental impact assessment stipulates that for every Environmental Impact Assessment (EIA), a public stakeholder consultation process shall be conducted, during which the affected public is informed of the proposed and invited to provide comments.

In accordance to Ukrainian legislation, an Environmental Impact Assessment, as a part of the project design documents, has been completed for the proposed project and approved by local authority. According to PDD /1/ the statement about emissions from the cogeneration unit operation has been published in the local newspaper "Dobryj Vecher" №45 (257) on 13/11/2008. No negative comments were received. The verifier has assessed the reference published against original version during on-site assessment and can confirm the statement made in PDD.

Global stakeholder consultation process have been conducted by the means of PDD publication online on the TÜV Rhineland's web-site at http://www.tuv.com for thirty days in the period from 21.09.2010 till 21.10.2010 for public comments. No comments were received.

4 DETERMINATION OPINION

TÜV Rheinalnd has performed a determination of the JI Track 1 project „Cogeneration and Utilization of Waste Heat at LLC "Lukoil Energy and Gas Ukraine" in Ukraine against criteria of JISC, Host and guest countries requirements as applicable for JI Track 1 projects. The determination is based on the information made available to the determination team and the conditions detailed in this report.

The determination consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) interviews with project stakeholders; iii) the resolution of outstanding issues (Annex 1 to the current report) and the issuance of the final determination report and opinion.

The review of the project design documentation and other relevant documents (Section 2.1), interviews, and the resolution of the Corrective Action Requests and Clarification Requests have provided TÜV Rheinland's determination team with the sufficient evidences to determine the fulfilment of the above stated criteria and to demonstrate that the project is additional. Baseline scenario for the project is identified in correct manner. The monitoring plan for the project is developed correctly and transparently, appropriate training of the project's staff have been made, the procedures for the collecting and archiving of the information to be monitored are in place. The ex-ante estimation of baseline emissions and project emissions were made accordingly to the appropriate formulae in an accurate and acceptable manner. The project is expected to have positive impact on the environment.

Emission reductions attributable to the project are additional to any that would otherwise occur in the absence of the project activity. Given that the project is implemented and maintained as designed in PDD and based on the information which have been seen and evaluated it can be confirmed, making conservative assumptions and with the reasonable, but not absolute, level of assurance that the project is likely to achieve the estimated amount of emission reductions stated in PDD /1/as follows:

- 212.571 tCO_{2e} over the period of 2010-2012
- 922.697 tCO_{2e} over the period of 2013-2024 (subject to Host Country Approval and international treaties)

In conclusion, the determination team can recommend this project to be registered under JI Track 1 mechanism.

Annex 1

JI Determination Protocol

(developed based on Joint Implementation Determination and Verification Manual

Version 01, Table 2 "Check list for determination")

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
Project approvals by Parties involved					
19	Have the DFPs of all Parties listed as „Parties involved“ in the PDD provided written project approvals?	LoE /38/ from Ukraine is available; LoA from Germany and Ukraine might be issued prior to the issuanve of positive determination report.	CAR 1: There is no evidence of written project approvals from the Parties involved available to the determination team – please provide Letter of Endorsement.	National Environmental Investment Agency of Ukraine issued a Letter of Endorsement # 2254/23/7 dated 27th of December, 2010 for the project providing its support for further development of proposed joint implementation project.	LoE is provided. LoAs are not available. **Open**
19	Does the PDD identify at least the host Party as a „Party involved“?	Ukraine is identified as the Host Party for the project	CAR 2 (PDD, Section A.3): Please clearly indicate Guest country for the project in Section A.3 of PDD.	Germany as a Guest country has been indicated in the Section A.3 of the PDD.	CAR 2 is closed **OK**
19	Has the DFP of the host Party issued a written project approval?	LoA from Ukraine might be issued prior to the determination report issued for the project.	-	-	**OK**
20	Are all the written project approvals by Parties involved unconditional?	vs. § 19	-	-	**OK**
Authorization of project participants by Parties involved					
21	Is each of the legal entities listed as project participants in the PDD authorized by a Party involved, which is also listed in the PDD, through: – A written project approval by a Party involved, explicitly indicating the name of the legal entity? Or – Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity?	LoE /38/ from Ukraine indicates LLC „LukOil Energy and Gas Ukraine“ as party involved.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
Baseline setting					
22	Does the PDD explicitly indicate which of the following approaches is used for identifying the baseline? - JI specific approach - Approved CDM methodology approach	PDD does not explicitly indicate that JI specific approach is used for identifying the baseline. CAR 3 was issued in this regard.	CAR 3 (Ref.: PDD, p.14): Please explicitly specify that „JI specific approach is used for demonstration of additionality of the project in accordance with the paragraph 2(a) of the Annex I to the "Guidance on criteria for baseline setting and monitoring" (Version 02).	Has been specified in the PDD.	CAR 3 is closed **OK**
	JI specific approach only				
23	Does the PDD provide a detailed theoretical description in a complete and transparent manner?	In general, PDD provide a detailed theoretical description of the baseline in a complete and transparent manner. However, in regard to the estimation of baseline emissions, there was absent clear description of sources for the formulas for the estimation of baseline emissions and emission reductions in PDD. CAR 4 was issued in this regard.	CAR 4: Formulas for the estimation of baseline emissions and emission reductions in PDD: please clearly indicate from which methodology each formula was taken, and for which calculations steps JI specific-based approach was applied (in this case, please indicate the source of formula).	The sources of applied formulas have been indicated. See section D.1 of the PDD.	CAR 4 is closed. **OK**
23	Does the PDD provide justification that the baseline is established: (a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one?	PDD in general provide justification that the baseline is established by listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one. However, the decription of alternatives to the project activity was indicated not in an appropriate section in PDD. CAR 5 was issued.	CAR 5 (Ref.: PDD, Sections B1 and B.2.): Please integrate Step 1 text from Section B1 to section B2 in the PDD, since the information related to the identification of alternatives is more appropriate here, as due to Guidelines for users of JI PDD Form, Version 04. Please follow the provisions of the Guidelines.	The text of Step 1 has been integrated to section B2. See section B2 of the PDD.	CAR 5 is closed. **OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	(b) Taking into account relevant national and/or sectoral policies and circumstance? – Are key factors that affect a baseline taken into account?	The description of national policies and circumstances relevant to the baseline of the proposed project activity was not given appropriately in PDD. CAR 6 was issued.	CAR 6 (Ref.: PDD, Section B): Please provide a summary of national policies and circumstances relevant to the baseline of the proposed project activity.	A summary of national and sectoral policies and circumstances has been provided. See section B.1 of the PDD.	Section B.1 of the PDD was revised appropriately. CAR 6 is closed. **OK**
	(c) In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors?	PDD provide a detailed theoretical description of the baseline in a complete and transparent manner, but some inconsistences were discovered in respect to the decription in PDD of the installation dates of boilers attributale to the baseline scenario, description of fuels used in baseline scenario, as well as in the calculations of heat energy produced in the baseline scenario. Also evidences on baseline boiler efficiency were requested. CAR 7, CAR 8, CL 2 and CL 1 were issued.	CAR 7: Please correct the inconsistencies in PDD in respect to baseline boilers installation dates: "the boilers are old (installed in 1971-1976 years)" (PDD p. 11) and "The boilers were installed in 1972-1986" (PDD p. 2).	Has been corrected. See sections A and B of the PDD.	PDD was revised in the sections A and B as appropriate. CAR 7 is closed. **OK**
			CAR 8 (Ref.: PDD, p. 27): baseline scenario emissions: „Baseline scenario of the proposed joint implementation project foresees the continuation of the steam boilers exploitation with their gradual replacement with the similar types of the boilers combusting residual fuel oil and refinery gas". Natural gas is not mentioned+further on p.28. Please comment/correct.	Has been corrected.	Corrected in PDD. CAR 8 is closed. **OK**
			CL 1 (Ref.: PDD, p.16): Please provide: operational tests of the boilers indicated in parameter charts of the boiler installed at JSC	-	Copies of boilers passports

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
			„Lukoil- Odessa oil refining plant in order to demonstrate baseline boiler efficiency of 90%.		were evaluated during on-site assessment. CL 1 is closed. **OK**
			CL 2 (Ref.: PDD p.40): „BE_{th}– baseline emissions due to heat energy generation by the boilers operated on the residual fuel oil under the baseline scenario in the amount which will be substituted with heat energy supplied by the cogeneration unit under the project scenario". Based on PDD, heat energy produced in the baseline scenario must be equal to the heat energy supplied to the plant in the project scenario, in GJ. Please clarify whether all heat energy produced by project activity (in cogeneration unit) will be produced by the residual oil boilers in the baseline scenario and supplied to the plant; in the ERUs calculation sheet heat supply by CHP units is higher than baseline heat generation (what means value 0,85957 used in the calculations?)	All heat energy produced within project activity by the cogeneration unit will be produced by the residual oil boilers in the baseline scenario. Data in ERU calculation file has been corrected. Heat energy produced in the baseline scenario is equal to the heat energy supplied to the plant in the project scenario.	CL 2 is closed. **OK**
	(d) Taking into account of uncertainties and using conservative assumptions?	PDD provides a detailed theoretical description of the baseline in a complete and transparent manner taking into account of uncertainties and using conservative assumptions.	-	-	**OK**
	(e) In such a way that ERUs cannot be earned for	PDD provides a detailed theoretical description of the	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	decreases in activity levels outside the project activity or due to force majeure?	baseline in a complete and transparent manner in such a way that ERUs cannot be earned for decreases in activity levels outside the project activity or due to force majeure.			
	(f) By drawing on the list of standard variables contained in appendix B to „Guidance on criteria for baseline setting and monitoring“, as appropriate	PDD do provides correctly a detailed theoretical description of the baseline in a complete and transparent manner by drawing on the list of standard variables contained in appendix B to „Guidance on criteria for baseline setting and monitoring“and accordingly to the applied CDM approved methodology AM0014 “Natural gas-based packaged cogeneration” Version 04, as applicable.	-	-	**OK**
24	*If selected elements or combinations of approved CDM methodologies or methodological tools for baseline setting are used,* are the selected elements or combinations together with the elements supplementary developed by the project participants in line with 23 above?	JI specific approach with the application of some elements of CDM Methodological tool “Combined tool to identify the baseline scenario and demonstrate additionality” Version 02.1 has been chosen for justification of baseline scenario, as well as CDM approved methodology AM0014 “Natural gas-based packaged cogeneration” Version 04. The PDD provide sufficent justification that the baseline is established in accordance with	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
		23 above.			
25	*If a multi-project emission factor is used,* does the PDD provide appropriate justification?	N/A	-	-	**N/A**
Additionality					
	JI specific approach only				
28	Does the PDD indicate which of the following approaches for demonstrating additionality is used? (a) Provision of traceable and transparent information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of removals; (b) Provision of traceable and transparent information that an AIE has already positively determined that a comparable	In the PDD approach (a) is used for the demonstration of additionality of the project. JI specific approach is used for demonstration of additionality of the project in accordance with the paragraph 2(a) of the Annex I to the "Guidance on criteria for baseline setting and monitoring" (Version 02)". The latest version of the CDM Executive Board approved "Tool for the demonstration and assessment of additionality" Version 05.2 has been applied to show that the reductions of anthropogenic emissions of the greenhouse gases are reduced below those that would have otherwise	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	project (to be) implemented under comparable circumstances has additionality; (c) Application of the most recent version of the „Tool for the demonstration and assessment of additionality“ (allowing for a two-month grace period) or any other method for proving additionality approved by the CDM Executive Board.	occurred. Partly, “Tool to determine the remaining time of the equipment” Version 01 has been used to estimate technical lifetime of the equipment and “Combined tool to identify the baseline scenario and demonstrate additionality” Version 02.1 was used to determine conservative assessment period for the investment analysis. Alternatives for the proposed project activity have been defined on the project specific basis.			
29 (a)	Does the PDD provide a justification of the applicability of the approach with a clear and transparent description?	In general, PDD provides a justification of the applicability of the additionality approach with a clear and transparent description. However, some correctictions to PDD and clarifications to alternatives to the project scenario were requested. CAR 9, CAR 10, CL 3 were issued.	CAR 9. PDD, Section B.2. Please use the title of Step 1 in consistence with the latest version of the “Tool for the demonstration and assessment of additionality”.	The title of Step 1 has been corrected as due to the “Tool for the demonstration and assessment of additionality”. See section B.2 of the PDD.	PDD was corrected. CAR 9 is closed. **OK**
			CAR 10. Please confirm if all the costs for fuel and power were taken as of the time of the investment decision (2007). Please confirm that capital expenses for project equipment, works and services are quoted using 2007 prices (time of investment decision).	All the costs for fuel and power as well as capital expenditures were taken as expected values at the time of the investment decision.	Section B.2. was updated. CAR 10 is closed. **OK**
			CL 3: What is the reason that in the alternative 2 the generation of electricity is not before seen at all (PDD, p. 11)?	Alternative 2 presumes further exploitation of the existing boilers with their graduate replacement with the new boilers utilizing	PDD was updated appropriatel y.

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
				residual fuel oil as the main fuel and no on site electricity generation. Boilers, which were used for heat energy generation before project implementation, produce steam with a pressure of 13-14 kg·s/sm2 and the temperature of 225-250 degrees Celsius, which are further used for technological purposes. The steam with such energy characteristics is problematic to be used for electricity generation as it can be used for electricity generation only with the low revolution turbine installation and specific generators capable to work in conjunction with such turbine. Moreover, use of the steam for electricity generation would have lead to lowering of steam energy content, which is not reasonable in light of reliable satisfaction of heat demand for technology purposes. Therefore, the alternative envisages no generation of electricity. Has been added to the section B.2 of the PDD.	CL 3 is closed. **OK**
29 (b)	Are additionality proofs provided?	In order to demonstrate the additionality of the project, project proponent conducted Identification of alternatives to the project activity consistent with current laws and regulations, investment analysis,	CAR 11 (Ref.: PDD p.13): Please provide estimated CAPEX for Alternative 7.	The description of the alternative 7 has been amended and the information about estimated capital expenditures for fluidized bed technology introduction and the role of scale factor has been added. See section B.2 of the PDD.	Section B.2 of the PDD was revised appropriately.

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
		barrier analysis and common practise analysis. Validation team has reviewed the PDD in this context and reviwed supporting evidences as appropriate and indicated in PDD. The additionality analysis was conducted in transparent way and additionality proofs were provided. However, in this respect CL 4, CL 5, CL 6, CL 7, CL 8, CAR 11, CAR 12 were issued during determination process.			CAR 11 is closed. **OK**
			CL 4: Please provide the documentation supporting key data used in the investment analysis, as on p. 19 of PDD.	Documentation to be provided.	CL 4 is closed. **OK**
			CL 5: Please provide supporting evidences on the growth of the inflation rate of 8,6% (p.17 of PDD).	Expected inflation rate was derived as a projection of the average inflation index during 2002-2006 period, which was 8.36%. Taking into account, that expected inflation rate under the budget of Ukraine for 2007 was primarily set at the level of 7.5%, the value of 8.36% is to be conservative forecast. The copy of the referenced web page is provided to the determination team.	CL 5 is closed. **OK**
			CL 6 (Ref.: PDD, Section A): Please provide evidences of the consideration of Kyoto mechanisms prior to projects start date.	Copy of extract from the minutes of meeting regarding designing and construction of power-generating unit on Odessa Refinery plant dated 25.04.2007. Copy of extract from business plan	Documents were reviewed. CL 6 is

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
				on the construction of power-generating unit on Odessa Oil Refinery 2007	closed. OK
			CL 7: Please provide the evidence on ERUs price of 10 Euro.	Price of 10 Euros is estimation only, provided document: Copy of extract from business plan on the construction of power-generating unit on Odessa Oil Refinery, 2007.	CL 7 is closed. **OK**
			CL 8: PDD, p.3. Preliminary exploitation lifetime of the installed equipment is 15 years- please clarify whether this figure is applicable to both boilers and electricity generation units? Please explain why 15 years are taken as operational lifetime?	When estimating the lifetime of Wartsila engines, technical characteristics of the equipment, the fact of combustion of non-common fuel and default values under the Tool to determine the remaining time of the equipment, Version 01, were taking into account. Since Wartsila engines need major repairs every 48 000 hours of the operation and consume visbroken atmospheric residue, which is not typical fuel and high risks of equipment disrepair exist, expected operational time of Wartsila engines was set at the level of 15 years. The conservativeness of the estimated lifetime of the engines is confirmed by the default value for technical lifetime of diesel/oil/gas fired generator sets as per "Tool to determine the remaining time of the equipment", Version 01, which is equal to 50 000 hours.	Explanation is sufficent. CL 8 is closed. **OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
				According to the to the Annex: Guidelines on the Assessment of Investment Analysis (Version 03.1) of *"Combined tool to identify the baseline scenario and demonstrate additionality" Version 3.0.0* a minimum period of 10 years and a maximum period of 20 years for the assessment in the investment analysis is appropriate. Although the operational lifetime of exhaust-boilers exceeds the period of the assessment, the fare liquidation value of exhaust boilers has been added to the cash flow. What is more, project lifetime by the project owners is also assumed as 15 years that is confirmed by the rent agreement between LLC "Lukoil Energy and Gas Ukraine" and JSC "Lukoil-Odessa Oil-Refining Plant".	
			CAR 12 (Ref.: PDD, p.17) : Please indicate exact location (month or row number) of the figure on the loan interest rate for non-financial corporations of 15.19% for 2007, sited as to be located in http://www.bank.gov.ua/Statist/Electronic%20bulletin/data/4-Financial%20markets (4.1).xls Spreadsheet 1.3. Data for 2007, rate for the loans in national currency for the period greater than 5 years.	Loan interest rate for non-financial corporations for the period greater than 5 years has been revised and the value of 16.6% as for the time of decision-making has been used. See cell M31 of Spreadsheet 1.3. http://www.bank.gov.ua/Statist/Electronic%20bulletin/data/4-Financial%20markets (4.1).xls	CAR 12 is closed. **OK**
29 (c)	Is the additionality demonstrated	As result of the projects additionality analysis, as	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	appropriately as a result?	presented in PDD, the additionality of the project is demonstrated in a plausible and transparent way.			
30	*If the approach 28 (c) is chosen,* are all explanations, descriptions and analyses made in accordance with the selected tool or method?	N/A	-	-	**N/A**
Project boundary (applicable except for JI LULUCF projects)					
	JI specific approach only				
32 (a)	Does the project boundary defined in the PDD encompass all anthropogenic emissions by sources of GHGs that are: (i) Under the control of the project participants?	The project boundary defined in the PDD encompasses all anthropogenic emissions by sources of GHGs that are under the control of the project participants. Project boundaries include existing boiler workshop of JSC "Lukoil-Odesskyi oil-refining plant" (being currently under the operation of Lukoil Energy and Gas Ukraine based on the rent agreement) and equipment installed within the project activity (cogeneration unit with engines, exhaust-boilers and purification systems).	-	-	**OK**
	(ii) Reasonably attributable to the project?	The project boundary defined in the PDD encompass all anthropogenic emissions by sources of GHGs that are reasonably attributable to the project	-	-	**OK**
	(iii) Significant?	Table B 3-1. "Sources of	CAR 13: PDD, Section B.3. Please provide	CH_4 and N_2O emissions from the	CAR 13 is

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
		emissions included in consideration or excluded of it" in PDD summarizes GHGs emissions considered to be significant. Validation team has issued CAR 13 in order to prove this statement. The project boundary defined in the PDD encompasses all anthropogenic emissions by sources of GHGs that are significant.	justification for exclusion of greenhouse gases other than CO_2 from the project boundary, specifically CH_4 and N_2O- Section B3, PDD. Please indicate the sources of information on the amount of N_2O and CO_2 emissions expected/calculated and provide these evidences to the determination team	combustion of fuel were considered negligible as they do not exceed 1 per cent of the annual average anthropogenic emissions by sources of GHGs, or an amount of 2,000 tonnes of CO_2 equivalent. Thus, average annual project CH_4 and N_2O emissions were estimated as 0.16% of average annual project emissions, and average annual baseline CH_4 and N_2O emissions were estimated as 0.05% of average annual baseline emissions Has been indicated in section B.3 of the PDD. The amount of N_2O and CH_4 emissions has been calculated based on the approaches used in the methodology AM0014 "Natural gas-based packaged cogeneration" Version 04. Calculations have been provided to the determination team.	closed. **OK**
32 (b)	Is the project boundary defined on the basis of a case-by-case assessment with regard to the criteria referred to in 32 (a) above?	The project boundary is defined on the basis of a case-by-case assessment with regard to the criteria referred to in 32 (a) above.	-	-	**OK**
32 (c)	Are the delineation of the project boundary and the gases and sources included appropriately described and justified in the PDD by using a figure or flow chart as appropriate?	In PDD Fig. B-3.1 "The scheme of project and baseline boundaries" illustrates project boundary and baseline scenario boundary.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
32 (d)	Are all gases and sources included explicitly stated, and the exclusions of any sources related to the baseline or the project are appropriately justified?	PDD provide in general clear description of project activity and baseline scenario - the cogeneration unit for combined heat and power generation with visbroken atmospheric residue, diesel fuel and natural gas combustion is installed instead of boilers, which combust organic fuel and generate heat power in the baseline scenario. However, it was not clear whether any reserve boilers will be included in the project scenario and in the monitoring plan. CL 9 was issued.	CL 9. Please explain whether it is envisaged to include reserve baseline boiler(s) emissions into project emissions? If yes, please explain how and for which period of time this will be made, how the monitoring will looks like?	The inclusion of the boilers in the monitoring plan is not foreseen. The boilers are not supposed to operate within the project and thus will not contribute to the project emissions. At the time of determination site visit the cogeneration unit has been tested for its readiness to operate in winter, and one of reserve boilers was put in "hot mode" to ensure heat energy generation and supply to the consumers in the case of any accidents on the CHP. "Hot mode" foresees a readiness of a boiler to start heat energy generation without delay. However, during testing no accidents happened and all boilers are taken out from operation.	Explanation is sufficient. CL 9 is closed. **OK**
	Approved CDM methodology approach only				
33 (c)	Is the project boundary defined in accordance with the approved CDM methodology?	N/A	-	-	**N/A**
Crediting Period					
34 (a)	Does the PDD state the starting date of the project as the date on which the implementation or construction or real action of the project will begin or began?	Project implementation starting date (beginning of the investment stage) was 23.07.2007, when the contract on purchasing engines for cogeneration unit has been concluded. However, start of the crediting period for proposed project activity is 01.07.2010,	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
		when the cogeneration unit was installed.			
34 (a)	Is the starting date after the beginning of 2000?	The starting date of the project is after the beginning of 2000 (start of the crediting period on 01.07.2010).	-	-	**OK**
34 (b)	Does the PDD state the expected operational lifetime of the project in years and months?	Expected operational lifetime of the project was not set in the years and months (Section C.2). CAR 14 was issued.	CAR 14: PDD, p.22: Please set expected operational lifetime of the project in years and months (JI DVM, Paragraph 34b).	Expected operational lifetime of the exhaust-boilers is 30 years. Operational life time of the Wartsila diesel engines is not set in the technical documentation, although it is indicated that every 48 000 hours of the operation they need major repairs. Taking into account operational lifetime of the exhaust-boilers (30 years) and major repairs of diesel engines (every 6 years), expected operational lifetime of the project has been assumed as 15 years (or 180 months). Has been indicated in section C.2 of the PDD.	Section C.2. of PDD V.2.1. was updated. CAR 14 is closed. **OK**
34 (c)	Does the PDD state the length of the crediting period in years and months?	In PDD in Section C.3 length of the crediting period was set correctly to 2 years and 6 months (30 months). Further 12 years or 144 months are expected to be within the project's crediting period (subject to Host Party approval).	-	-	**OK**
34 (c)	Is the starting date of the crediting period on or after the date of the first emission reductions or enhancements of net removals generated by	The starting date of the crediting period is after the date of the first emission reductions generated by the project activity (see also 34 (a))	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	the project?				
34 (d)	Does the PDD state that the crediting period for issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project?	In PDD, Section C.3 is stated:" Start of the crediting period for proposed project activity is 1st of July, 2010". Further in Section C.3 is stated "The length of the second commitment period is expected to be 12 years or 144 months. The second commitment period does not extend beyond the operational lifetime of the project and is a subject to the Host Party approval".	-	-	**OK**
34 (d)	If the crediting period extends beyond 2012, does the PDD state that the extension is subject to the host Party approval?	In PDD, in Section C.3 is stated that the extention of the crediting period beyond 2012 is a subject to the Host Party approval.	-	-	**OK**
	Are the estimates of emission reductions or enhancements of net removals presented separately for those until 2012 and those after 2012?	Yes, throughout PDD emissions reductions attributable to the project activity are separately calculated for those until 2012 and those after 2012.	-	-	**OK**
Monitoring plan					
35	Does the PDD explicitly indicate which of the following approaches is used? - JI specific approach - Approved CDM methodology approach	PDD, Section D.1 states: JI specific approach with elements of the approved baseline and monitoring methodology AM0014 "Natural gas-based package cogeneration" (Version 04) was chosen for monitoring of greenhouse emission reductions.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	JI specific approach only				
36 (a)	Does the monitoring plan describe: – All relevant factors and key characteristics that will be monitored? – The period in which they will be monitored? – All decisive factors for the control and reporting of project performance?	The monitoring plan section (Section D.2 in PDD) provide a list of data to be monitored. Section D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored provides a summary on how oft the parameters will be measured and describe appropriate QA/QC procedures. In general monitoring plan is developed in transparent and consistent manner, however in respect to the monitoring of the data on calorific value for oil gas, mazut, VAR and Natural gas the information was missing. Also, PDD has not provided the information on how the monitored data will be kept (archived) and who will be responsible for monitoring. Appropriatly, CL 10 and CAR 15 were issued.	CL 10: How it was envisaged to organize and provide monitoring of the calorific value for oil gas, mazut, VAR and Natural gas (see pp. 27-28 of PDD)? Please describe and revise PDD accordingly.	Monitoring data on net calorific value of fuels used will be collected monthly according to the Certificates of quality of fuels, which are provided by fuel suppliers. Has been indicated in section D.3 of the PDD.	Primary information is collected; PDD shall be corrected with this additional information. CL 10 is closed. **OK**
			CAR 15: Information on how the monitored data will be kept (archived) and who will be responsible for monitoring, how it will be organized is missing (Section D.3, PDD). Please revise PDD appropriately.	Information on monitoring and archiving of data has been added to the section D.3 of the PDD.	CAR 15 is closed. **OK**
36 (b)	Does the monitoring plan specify the indicators, constants and variables used that are reliable, valid and provide transparent picture of the emission reductions or enhancements of net removals to be monitored?	All ex-ante and ex-post defined indicators, constants and variables used in the monitoing plan are reliable, valid and provide transparent picture of the emission reductions to be monitored.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
36 (b)	*If default values are used,* – Are accuracy and reasonableness carefully balanced in their selection?	Ex-ante default factors for the fuels used in the cogeneration unit in the project scenario for the calculation of project emissions are used accruratly from the recognized source - from Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook, Module 1: Energy, Table 1-2 Carbon emission factors. For the estimation of baseline emissions, default factors such as average efficiency of residual fuel oil/gas fired boilers under the baseline scenario; weighted emission factor for baseline fuel mix and emission factor for electricity of Ukrainian grid were also estimated accurately and reasonable.	-	-	**OK**
	– Do the default values originate from recognized sources?	Ex-ante default factors for the fuels used in the cogeneration unit in the project scenario for the calculation of project emissions are used from the recognized source - from Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Workbook, Module 1: Energy, Table 1-2 Carbon emission factors.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
		Average efficiency of residual fuel oil/gas fired boilers under the baseline scenario was defined according to operational tests of the boilers indicated in parameter charts of the boiler installed at JSC "Lukoil-Odessa oil refining plant". Weighted emission factor for baseline fuel mix was estimated on a project-specific basis based on the average fuel mix consumption over the period of 2000-2009. Emission factor for electricity of Ukrainian grid is based on the data from "Development of the electricity carbon emission factors for Ukraine: Baseline Study for Ukraine" Final Report (EBRD,14.10.2010)			
	– Are the default values supported by statistical analyses providing reasonable confidence levels?	See above	-	-	**OK**
	– Are the default values presented in a transparent manner?	All default values provided in the monitoring plan are used in transparent manner.	-	-	**OK**
36 (b) (i)	For those values that are to be provided by the project participants, does the monitoring plan clearly indicate how the values are	vs. 36 (a)	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	to be selected and justified?				
36 (b) (ii)	For other values, – Does the monitoring plan clearly indicate the precise references from which these values are taken?	vs. 36 (b).	-	-	**OK**
	– Is the conservativeness of the values provided justified?	All the values provided in the monitoring plan are established in an accurate maner and are based on the recognized sources. The conservativeness of the data used can be justified.	-	-	**OK**
36 (b) (iii)	For all data sources, does the monitoring plan specify the procedures to be followed if expected data are unavailable?	The monitoring plan do not specify the procedures to be followed if expected data needed for the monitoring of project activity will be not available. Validation team reviwed the monitoring plan and concludes that this situation is unlikely to occur. But in case of such situation, the monitoring plan should be appropriately changed during the verification phase of the project.	-	-	**OK**
36 (b) (iv)	Are International System Unit (SI units) used?	International System Unit (SI units) are used.	-	-	**OK**
36 (b) (v)	Does the monitoring plan note any parameters, coefficients, variables, etc. that are used to calculate baseline emissions or net removals but are obtained	The monitoring plan envisages that such parameters as annual heat output from the cogeneration unit that is supplied to the consumer in GJ and the amount of electricity	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	through monitoring?	supplied to the national grid in MWh as result of the project activity performance will be monitored for the calculation of baseline emissions.			
36 (b) (v)	Is the use of parameters, coefficients, variables, etc. consistent between the baseline and monitoring plan?	The usage of parameters, coefficients and variables, is consistent between the baseline and monitoring plan.	-	-	**OK**
36 (c)	Does the monitoring plan draw on the list of standard variables contained in appendix B of „Guidance on criteria for baseline setting and monitoring“?	The monitoring plan list standard variables in accordance with Appendix B of „Guidance on criteria for baseline setting and monitoring“, where applicable.	-	-	**OK**
36 (d)	Does the monitoring plan explicitly and clearly distinguish: (i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination?	The monitoring plan explicitly and clearly distinguishes the data and parameters that are established ex-ante and that are available already at the stage of determination. vs. 36 (b)	-	-	**OK**
	(ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that	Such parameters and data are not included in the monitoring plan.	-	-	**N/A**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	are not already available at the stage of determination?				
	(iii) Data and parameters that are monitored throughout the crediting period?	The monitoring plan in Section D.2. explicitly and clearly distinguishes the data and parameters that have to be monitored throughout the crediting period.	-	-	**OK**
36 (e)	Does the monitoring plan describe the methods employed for data monitoring (including its frequency) and recording?	The monitoring plan section (Section D.2 in PDD) provide a list of data to be monitored. Section D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data monitored provides a summary on the methods employed for data monitoring. The description of the methods is in general complete, however information on how the monitored data will be kept (archived) and who will be responsible for monitoring, how it will be organized (including storage of data monitored) is missing . Appropriatly, CAR 16 and CAR 17 were issued. vs. also 36 (a).	CAR 16: Information on how the monitored data will be kept (archived) and who will be responsible for monitoring, how it will be organized is missing (Section D.3, PDD). Please revise PDD appropriately.	Information on monitoring and archiving of data has been added to the section D.3 of the PDD.	Information on monitoring and archiving of data has been added to the section D.3 of the PDD. CAR 16 is closed. **OK**
			CAR 17, PDD Section D: Data monitored and required for verification are to be kept	Has been added to the section D.3 of the PDD.	Information on

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
			for two years after the last transfer of ERUs for the project. Please revise the PDD in the Monitoring Plan Section.		monitoring of the data has been added to the section D.3 of the PDD. CAR 17 is closed. **OK**
36 (f)	Does the monitoring plan elaborate all algorithms and formulae used for the estimation/calculation of baseline emissions/removals and project emissions/removals or direct monitoring of emission reductions from the project, leakage, as appropriate?	All algorithms and formulae used for the estimation and calculation of baseline emissions and project emissions are elaborated in transparent and plausible manner and are suffieciently described in PDD.	-	-	**OK**
36 (f) (i)	Is the underlying rationale for the algorithms/formulae explained?	Underlying rationale for the algorithms/formulae used in the monitoring plan are explained transparantly and complete in PDD, the meaning of algorithms/formulae is explained.	-	-	**OK**
36 (f) (ii)	Are consistent variables, equation formats, subscripts etc. used?	In the monitoring plan algorithms/formulae and minotored parameters are described in consistent manner with correct equation formats and subscripts, as applicable.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
36 (f) (iii)	Are all equations numbered?	Equations are numbered throughout the PDD.	-	-	**OK**
36 (f) (iv)	Are all variables, with units indicated defined?	In PDD, Section D.2. all variables in monitoring plan are indicated with appropriate units.	-	-	**OK**
36 (f) (v)	Is the conservativeness of the algorithms/procedures justified?	Algorithms and procedures used in the monitoring plan are used corectly and deemed to be applied in conservative manner.	-	-	**OK**
36 (f) (v)	To the extent possible, are methods to quantitatively account for uncertainty in key parameters included?	Key aparameters in monitoring plan are estimated ex-ante or will be estimated ex-post using recognizable sources of information and, thus, no significant uncertainty of key parameters is beforeseen.	-	-	**OK**
36 (f) (vi)	Is consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions or net removals of the baseline ensured?	Consistency between the elaboration of the baseline scenario and the procedure for calculating the baseline emissions is ensured. Baseline emissions are calculated based on assumption that heat supply by the boilers operated on the residual fuel oil, natural and refinery gas under the baseline scenario will be substituted with heat energy supplied by the cogeneration unit under the project scenario during the year y, tonnes CO_{2e}. Baseline emissions due to electricity generation by power plants of the national grid under the baseline scenario are	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
		calculated based on the assumption that the amount of electricity consumed in the baseline scenarion will be equal to the amount of electricity which will be supplied by the cogeneration unit under the project scenario. Baseline and project emissions are calculated in consistent manner.			
36 (f) (vii)	Are any parts of the algorithms or formulae that are not self-evident explained?	vs. 36 (f). All algorithms or formulae are sufficently explained.	-	-	**OK**
36 (f) (vii)	Is it justified that the procedure is consistent with standard technical procedures in the relevant sector?	Monitoring plan was established using JI specific approach with elements of the approved baseline and monitoring methodology *AM0014 "Natural gas-based package cogeneration" (Version 04)* was chosen for monitoring of greenhouse emission reductions. Monitoring plan is established in accordance with Host Party regulations, namely in accordance with Decree of Cabinet of Ministers of Ukraine #206 dated 22.02.2006 'On Approval of the Procedure of Drafting, Review, Approval and Implementation of Projects Aimed at Reduction of	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
		Anthropogenic Emissions of Greenhouse Gases' and "Requirements for the Joint Implementation Projects preparation" approved by National Environmental Investment Agency of Ukraine (Order #33 dated 25th of June, 2008).			
36 (f) (vii)	Are references provided as necessary?	In PDD references to the statements (incl. parameters) were provided correctly in most cases. However, CAR 18, CAR 19, CAR 20, CAR 21, CAR 22 were issued in order to complete the list of references or to correct the references.	CAR 18: Please indicate in PDD for all sited documents and decisions of JISC and CDM EB a version numbers in PDD, e.g. for the AM0014 on PDD p.10	A version number of all documents and decisions of JISC and CDM EB has been indicated throughout the PDD.	CAR 18 is closed. **OK**
			CAR 19 (Ref.: PDD, Section A.4): Please use the full company's name instead of 'Enterprise' when explaining the heat supply. Please revise PDD accordingly.	JSC "Lukoil-Oil Refining Plant" has been used for the company's name. PDD has been revised accordingly.	CAR 19 is closed. **OK**
			CAR 20 (ref.: PDD p.11): Please provide full reference in PDD for the Energy Strategy of Ukraine until 2030 (Ref. 2, p.11 in PDD).	Full reference for the Energy Strategy of Ukraine until 2030 has been provided. See section B.1 of the PDD.	CAR 20 is closed. **OK**
			CAR 21 (Ref.: PDD p.12): Please provide an external reference for this sentence under Alternative 4: 'low efficiency of energy generation cycle using steam turbine' in PDD.	The description of Alternative 4 has been amended. External reference has been provided. Please, see section B.2 of the PDD.	CAR 21 is closed. **OK**
			CAR 22 (Ref.: PDD, Section B.2): Please provide full reference for Cogeneration Act in PDD, Section B.2.	Full reference for Cogeneration Act has been provided. See section B.2 of the PDD.	CAR 22 is closed. **OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
36 (f) (vii)	Are implicit and explicit key assumptions explained in a transparent manner?	In the monitoring plan, implicit and explicit key assumptions are explained in a transparent manner.	-	-	**OK**
36 (f) (vii)	Is it clearly stated which assumptions and procedures have significant uncertainty associated with them, and how such uncertainty is to be addressed?	Section "D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data Monitored" of PDD indicates low uncertainty associated with all parameters monitored. Therefore, such uncertainty is not addressed in more details in PDD.	-	-	**OK**
36 (f) (vii)	Is the uncertainty of key parameters described and, where possible, is an uncertainty range at 95% confidence level for key parameters for the calculation of emission reductions or enhancements of net removals provided?	Section "D.3. Quality control (QC) and quality assurance (QA) procedures undertaken for data Monitored" of PDD indicates low uncertainty associated with all parameters monitored.	-	-	**OK**
36 (g)	Does the monitoring plan identify a national or international monitoring standard if such standard has to be and/or is applied to certain aspects of the project?	vs. 36 (f) (vii), p.27	-	-	**OK**
	Does the monitoring plan provide a reference as to where a detailed description of the standard can be found?	vs. 36 (f) (vii), p.27	-	-	**OK**
36 (h)	Does the monitoring plan	No special statistical techniques	-	-	**N/A**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	document statistical techniques, if used for monitoring, and that they are used in a conservative manner?	have to be used for monitoring.			
36 (i)	Does the monitoring plan present the quality assurance and control procedures for the monitoring process, including, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available upon request?	Section D.3. "Quality control (QC) and quality assurance (QA) procedures undertaken for data Monitored"of PDD presents the quality assurance and control procedures for the monitoring process, including, as appropriate, information on calibration of measuring equipment. Information on how records on data are kept is missing. CAR 16, CAR 17 (vs. 36 (e)), CAR 23 are issued.	CAR 23 (Ref.: PDD, Section D): Please describe in PDD how the training of personal was maid in respect to the operation of cogeneration unit incl. safety regulations? Provide supporting evidences.	Information on the trainings of the personal has been added to the section D.4 of the PDD. The supporting evidences have provided to the determination team.	Copies of the training certificates were provided. CAR 23 is closed. **OK**
36 (j)	Does the monitoring plan clearly identify the responsibilities and the authority regarding the monitoring activities?	In PDD, Section D.4 "Brief description of the operational and management structure that will be applied in implementing the monitoring plan" clearly provides the description of the responsibilities and the authority related to the the fulfillment of monitoring plan.	-	-	**OK**
36 (k)	Does the monitoring plan, on the whole, reflect good monitoring practices appropriate to the project type?	The monitoring plan, on the whole, reflects good monitoring practices appropriate to the project type.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	If it is a JI LULUCF project, is the good practice guidance developed by IPCC applied?	N/A	-	-	**N/A**
36 (l)	Does the monitoring plan provide, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources but not including data that are calculated with equations?	N/A. All data included in monitoring plan are either ex-post or ex-ante determined parameters summarized in the tabular format in Section D.2 of PDD and are used in the calculations.	-	-	**N/A**
36 (m)	Does the monitoring plan indicate that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project?	No, this information is missing in monitoring plan.	CAR 17 was issued. vs. 36 (e)	vs. 36 (e)	**OK**
37	If selected elements or combinations of approved CDM methodologies or methodological tools are used for establishing the monitoring plan, are the selected elements or combination, together with elements supplementary developed by the project	JI specific approach with elements of the approved baseline and monitoring methodology AM0014 "Natural gas-based package cogeneration" (Version 04) was chosen for the elaboration of monitoring plan in line with 36 above.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	participants in line with 36 above?				
	Applicable to both JI specific approach and approved CDM methodology approach				
39	*If the monitoring plan indicates overlapping monitoring periods during the crediting period,* (a) Is the underlying project composed of clearly identifiable components for which emission reductions or enhancements of removals can be calculated independently?	Monitoring plan do not indicates overlapping monitoring periods during the crediting period of the project. N/A.	-	-	**N/A**
	(b) Can monitoring be performed independently for each of these components (i.e. the data/parameters monitored for one component are not dependent on/effect data/parameters to be monitored for another component)?	N/A	-	-	**N/A**
	(c) Does the monitoring plan ensure that monitoring is performed for all components and that in these cases all the requirements of the JI guidelines and further guidance by the JISC regarding monitoring are	N/A	-	-	**N/A**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	met?				
	(d) Does the monitoring plan explicitly provide for overlapping monitoring periods of clearly defined project components, justify its need and state how the conditions mentioned in (a)-(c) are met?	N/A	-	-	**N/A**
Leakage					
	JI specific approach only				
40 (a)	Does the PDD appropriately describe an assessment of the potential leakage of the project and appropriately explain which sources of leakage are to be calculated and which can be neglected?	AM0014 states in this regard following: "Project emissions are those associated with natural gas consumption by the cogeneration system, including CO_2, CH_4, and N_2O emissions from natural gas combustion and CH4 emissions from natural gas production and pipeline leakage, associated with the gas consumption of the cogeneration system. No information on leakage expected during the project activity is given in PDD. In this regard, CAR 13 (vs. 32 (a)) and CAR 24 were issued.	CAR 24 (Ref.: PDD, Section D): Please provide an explanation whether leakage is expected under the Section D, PDD. CAR 13 (vs. 32 (a))	No leakage is expected under the project activity. vs. 32 (a)	PDD was revised accordingly. CAR 24 is closed CAR 13 is closed. **OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
40 (b)	Does the PDD provide a procedure for an ex-ante estimate of leakage?	Leakage emissions for the project were identified as negligible (vs. 32 (a)). No procedure was therefore needed for an ex-ante estimate of leakage in PDD.	-	-	**OK**
Estimation of emission reductions or enhancements of net removals					
42	Does the PDD indicate which of the following approaches it chooses? (a) Assessment of emissions or net removals in the baseline scenario and in the project scenario (b) Direct assessment of emission reductions	The PDD applies approach (a) (a) Assessment of emissions or net removals in the baseline scenario and in the project scenario.	-	-	**OK**
43	*If the approach (a) in 42 is chosen,* does the PDD provide ex ante estimates of: (a) Emissions or net removals for the project scenario (within the project boundary)?	Secton E of PDD provides ex-ante estimation of emission reductions.	-	-	**OK**
	(b) Leakage, as applicable?	vs. 40 (a) and 40 (b)	vs. 40 (a) and 40 (b)	vs. 40 (a) and 40 (b)	**OK**
	(c) Emissions or net removals for the baseline scenario (within the project boundary)?	Secton E of PDD provides ex-ante estimation of the baseline emissions.	-	-	**OK**
	(d) Emission reductions or enhancements of net removals adjusted by leakage?	Secton E of PDD provides ex-ante estimation of the emission reductions.	-	-	**OK**
44	*If the approach (b) in 42 is*	N/A	-	-	**N/A**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	chosen, does the PDD provide ex ante estimates of: (a) Emission reductions or enhancements of net removals (within the project boundary)?				
	(b) Leakage, as applicable?	N/A	-	-	**N/A**
	(c) Emission reductions or enhancements of net removals adjusted by leakage?	N/A	-	-	**N/A**
45	*For both approaches in 42* (a) Are the estimates in 43 or 44 given: (i) On a periodic basis?	PDD provides ex-ante estimation of emission reductions on a periodic basis (for each year of the crediting period).	-	-	**OK**
	(ii) At least from the beginning until the end of the crediting period?	PDD provides ex-ante estimation of the emission reductions from the beginning until the end of the crediting period. One correction in this regard was requested (CAR 25).	CAR 25 (PDD, Section A.2): "Expected results of the project". Please add the period when it is expected to reach the estimated amount of emission reductions.	Calculations of GHGs emissions for the project have been revised, and have been added to the section A.2 of the PDD.	CAR 25 is closed. **OK**
	(iii) On a source-by-source/sink-by-sink basis?	PDD provides ex-ante estimation of the emission reductions on a source-by-source/sink-by-sink basis.	-	-	**OK**
	(iv) For each GHG?	PDD provides ex-ante estimation of the CO_2 emission reductions, as applicable.	-	-	**OK**
	(v) In tones of CO_2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5	All emissions calculations in PDD are provided in tones of CO_2 equivalent, as applicable.	-	-	**OK**

DVM §	Check item	Initial finding	Action requested to project participants (incl. CAR, CL or FAR)	Review of project participants. action	Conclusion
	of the Kyoto Protocol?				
	(b) Are the formula used for calculating the estimates in 43 or 44 consistent throughout the PDD?	The formula used for calculating the emission reductions as result of project activity are consistent throughout the PDD.	-	-	**OK**
	(c) For calculating estimates in 43 or 44, are key factors influencing the baseline emissions or removals and the activity level of the project and the emissions or net removals as well as risks associated with the project taken into account, as appropriate?	In regard to key factors influencing baseline emissions and emission reductions calculations, as well as risks associated with the project following open issues were identified: CAR 26, CAR 27, CAR 28	CAR 26 (PDD, Section E): Please describe and explain how own consumption of heat and electricity by cogeneration unit was taken into account during calculation of project emissions.	Project emissions have been calculated as due to the Tool to calculate project or leakage CO_2 emissions from fossil fuels combustion (Version 2) by adding project emissions from combustion of all fuel types. Project emissions calculations are based on the amount of fuel combusted, net calorific value of the particular fuel type and its emission factor. Thus, all generated electricity and heat (including own consumption of heat and electricity by cogeneration unit) was taken into account. While baseline emissions calculations are based on heat and electricity supply by the cogeneration unit (thus, its own consumption of heat and electricity is excluded) with an adjustment to average boilers efficiency for heat energy.	Explanation is sufficient and in line with applied calculations procedures and methodologies. CAR 26 is closed. **OK**
			CAR 27 (Ref.: PDD, Section A.4.3): PDD: „Within the proposed project activity the cogeneration unit for combined heat and power generation with visbroken atmospheric residue and natural gas combustion is installed instead of boilers, which combust	Within the proposed project activity the cogeneration unit for combined heat and power generation with visbroken atmospheric residue, diesel fuel and natural gas combustion is installed instead of	Correction made in PDD. CAR 27 is closed.

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			organic fuel and generate heat power“ – diesel fuel, residual fuel oil gas and refinery gas are not mentioned. Please comment/correct.	boilers, which combust organic fuel and generate heat power. Residual fuel oil and refinery gas are reserve fuels and would be used in the absence of main fuels. Has been indicated in the PDD.	**OK**
			CAR 28 (ref.: PDD, p. 30): „QA / QC procedures (to be) applied“ is missing for FC (DF). Please correct.	Has been corrected.	Correction made in PDD. CAR 28 is closed. **OK**
	(d) Are data sources used for calculating the estimates in 43 or 44 clearly identified, reliable and transparent?	In general, data sources used for calculating the estimates in 43 or 44 are clearly identified, reliable and transparent. However, in some cases reference to the data sources was not established, or more detailed decription of parameters, data and assumptions used for the estimation of emission reductions was needed to be provided in PDD. Following CARs and CLs were issued: CAR 29 CAR 30 CAR 31 CAR 33 CAR 33 CL 11 CL 12 CL 13 CL 14	CAR 29 (Ref.: PDD, Section A): Please indicate and provide the source of information (reference) for the total heat capacity of 163,2 GJ/h	The value of total heat capacity has been corrected as due to the Passports of exhaust-boilers E-35-1.4/250, which were installed within the project activity. Has been corrected in the section A of the PDD.	Section A has been revised. CAR 29 is closed. **OK**
			CAR 30: Please provide reference to the data described in table A.4.3-3 of PDD.	Physicochemical characteristics of visbroken atmospheric residue (the data described in table A.4.3-3) are provided according to the Technical conditions TY Y 23.2-00152282-004:2009 on visbreaking residue dated 9th of April, 2009.	CAR 30 is closed. **OK**
			CAR 31 (Ref.: PDD p. 37, ERUs calculation sheet): What are the fuel consumption rates for cogeneration unit used in the calculations of project emissions? Please provide the data. Please describe into more details in which way the amount of consumed natural gas in m3 and diesel fuel in tons was calculated in the “ERU” calculation sheet, based on which	Fuel consumption rates for the cogeneration unit are the following: • VAR consumption is 1844 kg/hour, • Natural gas consumption is 2866.7 m^3/hour, • Diesel fuel consumption is	Letter from LukOil Nr. 7-587 dated 20.05.2011 on the amount of diesel fuel and natural

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			sources? Please indicate sources and provide references. Please indicate also the data sources for the calculations of the amount of heat and electricity produced in the project scenario.	*1650 kg/hour.* The volume of electricity generated was estimated by multiplying electricity output rate of the cogeneration unit by annual operating hours, and a volume of VAR used was calculated by multiplying VAR consumption rate by annual operating hours. Heat energy generation amount is assumed based on the data about forecasted heat energy demand obtained from the Enterprise. Natural gas consumption was calculated based on its consumption rates and forecasted heat energy demand. See section E for details. The amount of consumed natural gas and diesel is based on the production plan of the fuel consumption. Fuel consumption was estimated on the basis of fuel consumption rates and forecasted demand of Odessa-Lukoil Refinery in heat energy.	gas was provided. CAR 31 is closed.
			CAR 32: Table E.1-1. „Fuel consumption by the cogeneration unit: Natural gas consumption, 1000 m^3- please recheck total sum, also in Table E.1-2. Heat energy and electricity generation- total sum (exept „Electricity consumption for own needs of the cogeneration unit, MWh“).	Has been corrected.	CAR 32 is closed
			CAR 33: Please specify the sources for heat	Electricity consumption on own	Letter from

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			and electricity consumption for own needs of CHP units, Gkal.	needs of cogeneration units refers to the work of electric power gear of main and auxiliary equipment of the cogeneration unit, and its heating, ventilation and lightening. Heat energy consumption on own needs of the cogeneration unit refers to the consumption of steam on a fuel heating, chemically purified water, dearation etc.	LukOil Nr. 7-565 dated 18.05.2011 on the amount of electricity and heat for own consumption was provided. CAR 33 is closed. **OK**
			CL 11 (Ref.: PDD, p.18): "Visbroken atmospheric residue is a main by-product in goudrons visbreaking. This technology was implemented in 2008 and is first of its kind in Ukraine". Please indicate the sources of information that the project is first of its kind using VAR as a fuel in Ukraine: any feasibilities studies etc.? Please provide evidences to the validation team.	Interviews were made during on-site assessment. Utilization of VAR is not a widely used technology; examples exist in Canada and Russia, but not in Ukraine yet.	CL 11 is closed. **OK**
			CL 12: Please indicate in PDD the meaning of $PE_{VAR, CU}$ and $PE_{DF,CU}$ from Formula 1 on p.23 and p.30 of PDD.	Has been indicated in sections D and E of the PDD.	PDD was revised. CL 12 is closed. **OK**
			CL 13: Please provide the source of NCV VAR -38,97 GJ/t value.	The value of NCV=38.97 GJ/t for VAR has been used according to the Technical conditions TY Y 23.2-00152282-004:2009 on visbreaking residue dated 9th of April, 2009.	Technical conditions TY Y 23.2-00152282-004:2009 on

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					visbreaking residue dated 9th of April, 2009 has been provided. CL 13 is closed. **OK**
			CL 14: Formula 1.5 uses same abbreviation for project emissions from refinery gas consumption as for residual fuel oil consumption (formula 1.4). Please clarify.	Abbreviations for formula 1.5 have been corrected as per project emissions from refinery gas consumption.	CL 14 is closed. **OK**
	(e) Are emission factors (including default emission factors) if used for calculating the estimates in 43 or 44 selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice?	Emission factors (including default emission factors) used for calculating baseline and project emissions are chosen in general in transparent and accurate manner (despite emission factor for refinery gas, where CL 15 was issued).	CL 15 (Ref.: PDD V.2.1, p.27): Please describe the calculation of EF for refinery gas and indicate which Carbon Emission Factor was used for the calculations from the Table 1-2, IPCC 1999 Guidelines.	Carbon Emission Factor for refinery gas CEF=18.2 kg C/GJ has been used; CEF has been multiplied by oxidation factor 1 and 44/12 and the value for EF_{RG}=66.73 kg CO_2/GJ has been used. Has been corrected in the PDD.	CL 15 is closed. **OK**
	(f) Is the estimation in 43 or 44 based on conservative assumptions and the most plausible scenarios in a transparent manner?	Estimation of baseline emissions and project emissions was based on conservative assumptions, but the information on the state of the art of the technology (CAR 34), information on which fuels can be used by the exhaust boilers of the cogeneration units (CAR 35) was missing. It was also not clear to whom the energy produced in the project scenario will be provided (CL	CAR 34. Reference: PDD, Section A.4. Please provide brief explanation on whether the project uses state of the art technology(ies) or would the technology(ies) result in a significantly better performance than any commonly used technologies in Ukraine.	The project uses the state-of-the-art technologies, which will result in a significantly better performance than commonly used technologies in Ukraine (natural gas fired boilers for heat generation and generation of electricity by power stations of national grid). Has been indicated in section A.4 of the PDD.	PDD was revised appropriately. CAR 34 is closed. **OK**
			CAR 35, PDD, p. 7: Please incorporate information on which fuels can be used by the exhaust boilers of the cogeneration units	Information on fuel that can be used by the exhaust boilers of the cogeneration units has been added	CAR 35 is closed.

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		16), how VAR, as the main fuel, will be used (processed) in the product and technology processes in the baseline scenario (CL 17) and which liquid fuels are meant in Table A.4.3-2 in PDD (CL 18).	in the Table A.4.3-2. of PDD.	to the Table A.4.3-2 of the PDD.	**OK**
			CL 16: PDD, p. 2.: Please clarify „Generated heat energy is used for covering the heat energy demand of the LOORP and other customers“. Heat energy substitution cannot be claimed for consumers other than Oil Rafinery LOORP since the baseline emissions for such consumers is not defined. Please correct/comment.	Generated heat energy is used for covering the heat energy demand of the LOORP. Has been corrected in the PDD.	CL 16 is closed. **OK**
			CL 17: Please explain how VAR, as the main fuel, will be used (processed) in the product and technology processes in the baseline scenario? Please describe and revise PDD accordingly with this information.	In the absence of project activity VAR would be processed into residual fuel oil by adding gasoil to reduce its viscosity. Thus, VAR would meet all regulatory requirements and technical conditions for residual fuel oil and would be sold tot he customers. Has been added to the Section B.2 of the PDD.	CL 17 is closed. **OK**
			CL 18: Please explain and correct in PDD in the Table A.4.3-2, Row own consumption which liquid fuels are meant and from which source the data is used.	Under liquid fuels VAR and residual fuel oil are meant. The data is provided according to the Part 3 ”Описание технологического процесса и технологической схемы производства“ document, p.38.	CL 18 is closed. **OK**
	(g) Are the estimates in 43 or 44 consistent throughout the PDD?	The estimates of baseline and project emissions are in general provided correctly. However, some discrepancies were discovered in the calculations of total values in some cases. CAR 36, CAR 37 and CAR 38 were issued.	CAR 36 (Ref.: PDD, p.34): Data in tables in Sections E.5 and E.6. do not correspond to each other (e.g. estimated emission reductions for the year 2011). Please correct the PDD as appropriate.	Has been corrected. See sections E.5 and E.6 of the PDD.	CAR 36 is closed. **OK**
			CAR 37 (Ref.: PDD V.1.2, p. 43): Please recheck values on emissions in the fields “Estimated baseline Emissions (tonnes of	The values of estimated baseline emissions over the periods 2010-2012 and 2013-2024 in PDD have	CAR 37 is closed.

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			CO_2 Equivalent) subtotal over the period 2013-2024" and "Estimated Emission reductions (tonnes of CO_2 equivalent) total over the period of 2010-2024" on p. 43 with ERU calculation sheet.	been used according to the same values in ERU calculation sheet.	**OK**
			CAR 38: Calculation sheet „WAEF": „Heat energy consumption by the oil-refinery plant, Gkal" data in 2006-2009 do not matches with data in PDD, p 3, Table A-2.1.	Has been corrected.	CAR 38 is closed. **OK**
	(h) Is the annual average of estimated emission reductions or enhancements of net removals calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period and multiplying by twelve?	The annual average of estimated emission reductions is not calculated by dividing the total estimated emission reductions over the crediting period by the total months of the crediting period and multiplying by twelve. CAR 39 was issued	CAR 39 (Ref.: PDD, p.9): JI DVM, Paragraph 45 states: "The annual average of estimated emission reductions or enhancements of net removals over the crediting period is calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period, and multiplying by twelve". Please revise calculations of estimated annual average emission reductions accordingly.	Calculations of estimated annual average emissions have been revised. See section A.4.4.1 of the PDD.	CAR 39 is closed. **OK**
46	*If the calculation of the baseline emissions or net removals is to be performed ex post,* does the PDD include an illustrative ex ante emissions or net removals calculation?	The PDD include an illustrative ex ante calculation of emissions based on the assumptions and data provided in PDD.	-	-	**OK**
Environmental impacts					
48 (a)	Does the PDD list and attach documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with	In accordance to Ukrainian legislation, an Environmental Impact Assessment (EIA), as a part of the project design documents, has been completed for the proposed project and	CAR 40 (Ref.: PDD, Section F.1): Transboundary environmental impacts are not addressed in PDD, Section F 1. Please revise the PDD accordingly.	According to EIA, only local environmental impact can be stated, thus no transboundary environmental effects are expected. Has been added to the section F.1 of the PDD.	Section F1 has been revised. CAR 40 is closed.

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	procedures as determined by the host Party?	approved by local authority. The statement about emissions from the cogeneration unit operation has been published in the newspaper "Dobryj Vecher" #45 (257) on November 13th, 2008. No transboundary impacts of the project were mentioned in PDD. CAR 40 was issued.			**OK**
48 (b)	*If the analysis in 48 (a) indicates that the environmental impacts are considered significant by the project participants or the host Party,* does the PDD provide conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party?	PDD is missing the description of how Environmental Impact Assessment (EIA) was organized and the summary of EIA results. CAR 41 and CAR 42 were issued.	CAR 41: PDD Section F1 -"In accordance to Ukrainian legislation, an Environmental Impact Assessment (EIA), as a part of the project design documents, has been completed for the proposed project and approved by local authority". Please explain how EIA was organized and provide supporting evidences, as due to ДБН А.2.2-1-2003 standard, correct PDD accordingly.	Information on EIA of the project has been added to the section F1. See section F1 of the PDD.	PDD was revised in Section F1. CAR 41 is closed. **OK**
			CAR 42 (Ref.: PDD, Section F.2): Please provide a brief summary of the EIA results: reference feasibility studies made for the project – e.g. Report of "Ekotechnika" on the influence of project's activity on atmosphere (section F2, PDD).	According to the Report on the influence of the project's activity, all concentrations of polluting substances are below the maximum permissible concentrations. Thus, no considerable impact on the air is foreseen. Has been indicated in section F.2 of the PDD.	CAR 42 is closed. **OK**
Stakeholder consultations					
49	*If stakeholder consultation was undertaken in accordance with the procedure as required by the host Party,* does the PDD provide:	Ukrainian legislation on conducting the environmental impact assessment stipulates that for every EIA, a public stakeholder consultation process, during which the	CAR 43: PDD, Section G.1: please provide a description on how the local stakeholder process was undertaken as according to ДБН А.2.2-1-2003 standard, specifically section 1.6.	Information on the local stakeholder process has been added to the section G.1. See section G.1 of the PDD. The statement about emissions	Information on the local stakeholder process has been added to the

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	(a) A list of stakeholders from whom comments on the projects have been received, if any?	affected public is informed of the proposed project activity and invited to provide comments. No information on this subject is found in PDD. CAR 43 was issued.		from the cogeneration unit operation has been published in the newspaper "Dobryj Vecher" #45 (257) on November 13th, 2008. No negative comments were received.	section G.1. CAR 43 is closed. **OK**
	(b) The nature of the comments?	vs. 49 (a)	-	-	**OK**
	(c) A description on whether and how the comments have been addressed?	vs. 49 (a)	-	-	**OK**
Determination regarding small-scale projects (additional elements for assessment)					
50	Does the PDD appropriately specify and justify the SSC project type(s) and category(ies) that fall under: (a) One of the types and thresholds of JI SSC projects as defined in „Provisions for joint implementation small-scale projects? *If the project contains more than one JI SSC project type component,* does each component meet the relevant threshold criterion?	In section A.4.2. PDD states in relation to the type of the project activity: "The small scale project conforms to the type (ii): Energy efficiency improvement project activities and category F. Supply-side energy efficiency improvements – generation. cf. JISC "Provisions for Joint Implementation small-scale projects" Version 3, §§7-8.	-	-	**OK**
	(b) One of the SSC project categories defined in the most recent version of	cf. 50 a)	-	-	**OK**

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	appendix B of annex II to decision 4/CMP.1, or an additional project category approved by the JISC in accordance with the relevant provision in „Provisions for joint implementation small-scale projects“?				
51	Does the PDD confirm and show that the project JI SSC project is not a debundled component of a large project by explaining that there does not exist a JI (SSC) project with a publicly available determination in accordance with paragraph 34 of the JI guidelines: (a) Which has the same project participants?	In PDD, Section A.4.5 is stated “The proposed project is not a debundled component of a larger project. LEGU is not a project participant to any joint implementation or small-scale joint implementation project with a publicly available determination in accordance with paragraph 34 of the JI guidelines“.	-	-	**OK**
	(b) Which applies the same technology/measure and pertains to the same project category?	cf. 51 a)	-	-	**OK**
	(c) Whose determination has been made publicly available in accordance with paragraph 34 of the JI guidelines within the previous 2 years?	cf. 51 a)	-	-	**OK**
	(d) Whose project boundary is within 1 km of the project boundary of the proposed JI SSC project at the closest	cf. 51 a)	-	-	**OK**

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	point?				
	Applicable to all JI SSC projects				
57	Is the leakage only within the boundaries of non-Annex I Parties considered?	N/A	-	-	**N/A**