DETERMINATION REPORT

NATIONAL CARBON SEQUESTRATION FOUNDATION (NCSF)

DETERMINATION OF THE

"Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation"

BUREAU VERITAS CERTIFICATION

REPORT NO. RUSSIA/0016-2/2009, VERSION 01

Report No: RUSSIA/0016-2/2009 rev. 01

Draft Determination Report on JI project "Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation"

Date of first issue: 24/06/2009	Organizational unit: Bureau Veritas Certification Holding SAS
Client: NCSF	Client ref.: Mr. Marat Latypov

Summary:

Bureau Veritas Certification has made the determination of the project "Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation" on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI guidelines and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria. The determination is carried out under Track 1 as per Glossary of JI terms, in line with paragraph 23 of the JI guidelines.

The determination scope is defined as an independent and objective review of the project design document, the project's baseline, monitoring plan and other relevant documents, and consists of the following three phases: i) desk review of the project design document and particularly the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final determination report and opinion. The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the determination process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A, Table 4. Taking into account this output, the project proponent has revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project applies the appropriate baseline and monitoring methodology and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.: RUSSIA/0017-2/2009 Version1	Subject Group: JI			**Indexing terms:**
Project title: "Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation"				*Climate Change, Kyoto Protocol, JI, Emission Reductions, Verification,*
Work carried out by: Flavio Gomes – Team leader, Lead verifier Leonid Yaskin – Team member, verifier Alexander Osadchiev – Team member, verifier				☒ No distribution without permission from the Client or responsible organizational unit
Work verified by: Ashok Mammen - BVC Technical Manager for Climate Change, Internal reviewer				☐ Limited distribution
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Abbreviations

AIE	Accredited Independent Entity
APG	Associated petroleum Gas
BVC	Bureau Veritas Certification
C	Carbon
CAR	Corrective Action Request
CL	Clarification Request
CH4	Methane
CO2	Carbon Dioxide
DDR	Draft Determination Report
DR	Document Review
EIA	Environmental Impact Assessment
ERU	Emission Reduction Unit
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
I	Interview
IE	Independent Entity
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
MoV	Means of Verification
NPV	Net Present Value
OJSC	Open Joint Stock Company
PCF	Prototype Carbon Fund (World Bank Carbon Finance Unit)
PNOS	Permnefteorgsyntez LTD
PDD	Project Design Document
PP	Project Participant
UGSF	Yareiyu Underground Storage Facilities
UNFCCC	United Nations Framework Convention for Climate Change

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1 INTRODUCTION

National Carbon Sequestration Foundation (NCSF) has commissioned Bureau Veritas Certification to determine its JI project "Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation". NCSF coordinates the project and the determination process on behalf of the project participant OJSC "LUKOIL".

This report summarizes the findings of the determination of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The purpose of the determination is to provide an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host country criteria are determined in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Determination is a requirement for all JI projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

1.2 Scope

The determination scope is defined as an independent and objective review of the project design document (PDD), the project's baseline study (BLS) and monitoring plan (MP) and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements for Joint Implementation (JI) projects, the guidelines for the implementation of Article 6 of the Kyoto Protocol (Decision 16/CP.7) as agreed in the Marrakech Accords, in particular the verification procedure under the JI Supervisory Committee, and associated interpretations. Bureau Veritas Certification has, based on the recommendations in the Validation and Verification Manual (IETA/PCF), employed a risk based approach in the determination process, focusing on the identification of significant risks for project implementation and generation of ERUs.

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

1.3 GHG Project Description

The project's purpose is the upgrading of technological tube furnaces at "LUKOIL-Permnefteorgsyntez" LLC. The project is implemented at the production facilities of "LUKOIL-Permnefteorgsyntez" LLC (the LUKOIL's daughter enterprise).

The upgrading envisages both construction of new tube furnaces and refurbishment or the existing ones. Existent tube furnaces were put into operation in 1950-70s. Their average thermal efficiency is 65%. There are no restrictive laws for the use of such low efficient equipment.

New tube furnaces will have thermal efficiency up to 91-92% and hence will consume less fuel, combustion of which results in GHG emission. So, the project activity will result in reduction of GHG emissions.

The use of existent furnaces would have continued in the absence of the project activity. The upgrading under the project activity leads to GHG emissions reduction. The average reduction of GHG emissions of the project is 166589 tCO_2e per year or 832946 tCO_2e in the 2008-2012 crediting period.

The idea of the project (as a JI Project) was originated in 2005 in LUKOIL-Permnefteorgsyntez LLC. On July 2005 the company adopted the Programme "Upgrading of technological tube furnaces at the "LUKOIL-Permnefteorgsyntez" LLC up to the year of 2010". This Program aims at the reduction of GHG emissions and air pollutant emission. The most part of the capital financing and the building work was performed in 2008.

1.4 Determination team

The determination team consists of the following personnel:

Flavio Gomes
Bureau Veritas Certification - Team Leader, Lead verifier

Leonid Yaskin
Bureau Veritas Certification – Team member, verifier

Alexander Osadchiev
Bureau Veritas Certification – Team member, verifier

Ashok Mammen
Bureau Veritas Certification – Internal Technical Reviewer

2 METHODOLOGY

The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The determination consisted of the following three phases:

i) desk review of the project design document and the baseline and monitoring plan;
ii) on-site assessment (29 May 2009);
iii) resolution of outstanding issues (ref. to Annex A Table 5 with CAR's and CL's) and the issuance of the final determination report and opinion.

In order to ensure transparency, a determination protocol was customized for the project, based on the Determination and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

- it organizes, details and clarifies the requirements a JI project is expected to meet;
- it ensures a transparent determination process where the independent entity will document how a particular requirement has been validated and the result of the determination.

The original determination protocol consists of five tables. The different columns in these tables are described in Figure 1.The completed determination protocol is enclosed in Appendix A to this report. It consists of 4 tables: Table 3 Baseline and Monitoring Methodologies is skipped since an own methodology is used and the questions regarding the used methodology are presented in Table 2.

Determination Protocol Table 1: Mandatory Requirements			
Requirement	**Reference**	**Conclusion**	**Cross reference**
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** or a **Clarification Request (CL)** of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Determination Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is validated. This is to ensure a transparent determination process.

Determination Protocol Table 2: Requirements checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 3: Baseline and Monitoring Methodologies				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the determination team has identified a need for further clarification.

Determination Protocol Table 4: Legal requirements				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CL)** is used when the determination team has identified a need for further clarification.

Determination Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report corrective action and clarifications requests	**Ref. to checklist question in tables 1/2/3**	**Summary of project owner response**	**Determination conclusion**
If the conclusions from the Determination are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 1-4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the determination team should be summarized in this section.	This section should summarize the determination team's responses and final conclusions. The conclusions should also be included in Tables 1-4 under "Final Conclusion".

Figure 1 Determination protocol tables

2.1 Review of Documents

NCSF has submitted to Bureau Veritas Certification on 21 April 2009 the Project Design Document (PDD) Version 02 dated 20 April 2009. The PDD and additional background documents related to the project design, baseline, and monitoring plan, i.e. Kyoto Protocol, Host Country Laws, Guidelines for Users of the Joint Implementation Project Design Document Form, JISC Guidance on Criteria for Baseline Setting and Monitoring, Combined tool to identify the baseline scenario and demonstrate additionality (Version 02.2) and others were reviewed.

The deliverable of the document review was the Draft Determination Report Version 1 (the Determination Protocol with CAR's and CL's) dated 12 May 2009. Following the project site visit held on 29 May 2009 the Draft Determination Report Version 2 dated 02 June 2008 was issued.

The determination findings presented in this Determination Report Version 01 relate to the project as described in the PDD Version 02 dated 20 April 2009 and PDD Version

03 dated 23 June 2009, the latter included PDD Developer responses to CARs and CL's .

2.2 Follow-up Interviews

Bureau Veritas Certification verifier Leonid Yaskin conducted a visit to the project site on 29 May 2009. On-site interviews with the project operator LUKOIL-Permnefteorgsyntez LTD and the PDD developer NCSF were conducted to confirm the selected information and to resolve issues identified in the document review. The persons interviewed are listed in Section 6. The main topics of the interviews are summarized in Table 1.

Table 1. Interview topics

Interviewed organization	Date	Interview topics
"LUKOIL-Permnefteorgsyntez" LTD	29 May 2009	➢ History of the project ➢ Implementation schedule ➢ Design documentation ➢ State Expertise Opinion ➢ Investment issues ➢ Baseline scenario parameters ➢ Project scenario parameters ➢ Monitoring points and parameters ➢ Project management organization ➢ Environmental Impact Assessment ➢ Permits for Air Emissions ➢ Local stakeholder consultations ➢ Sample furnaces (visitation, parameters) ➢ Monitoring equipment(inspection, characteristics) ➢ Readiness to monitoring
NCSF	29 May 2009	CARs and CLs concerning, in particular: ➢ PDD contents and format ➢ Baseline definition and study ➢ Project scenario definition ➢ Additionality substantiation ➢ Monitoring plan ➢ Estimation of emission reductions

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be followed on by the project participants for Bureau Veritas Certification positive conclusion on the project design.

Corrective Actions Requests (CAR) are issued, where:

i) there is a clear deviation concerning the implementation of the project as defined in the PDD;
ii) requirements set by the Methodological Procedure or qualifications in a verification opinion have not been met; or
iii) there is a risk that the project would not be able to deliver high quality ERUs.

Clarification Requests (CL) are issued where

iv) additional information is needed to fully clarify an issue.

The Draft Determination Report Version 01 was provided to NCSF on 8 June 2009. The findings of the documents review have been 13 Corrective Action Requests and 2 Clarification Requests. The Draft Determination Report Version 02 was provided to NCSF on 14 June 2009 and contained 8 additional CARs, which reflected the site visit findings.

The PDD developer responded to the CARs and CL of the DDR Versions 1 and 2 and submitted to Bureau Veritas Certification the amended PDD Version 03 dated 23 June 2009. The amendments, corrections and additions made to the PDD and additional information and clarifications provided by the PDD developer satisfactorily addressed the verifiers' items of concern. As a result, the Determination Report Version 01 was issued on 24 June 2009. On the same day the Determination Report Version 01 and PDD Versions 02 and 03 were sent to Bureau Veritas Certification Internal Technical Reviewer (ITR) for review.

To guarantee the transparency of the determination process, the CAR's and CL raised in the Determination Report Version 01 are summarized in Appendix A Table 5.

3 DETERMINATION FINDINGS

In the following sections, the findings of the determination are presented for each determination subject as follows:

i) the findings from the desk review of the original project design document and the findings from interviews during the site visit are summarized. A more detailed record of these findings can be found in the Appendix A Determination Protocol.

ii) where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the determination protocol criteria or the project objectives, a Clarification or Corrective Action Request, respectively, has been issued. The Clarification and Corrective Action Requests are stated in the in Appendix A Determination Protocol.
iii) where Clarification and Corrective Action Requests have been issued, the response by the project participants to resolve these requests is summarized in Appendix A Table 5.
iv) the conclusions of the determination are presented consecutively.

3.1 Project Design

The project provides the reduction of GHG emissions by upgrading of technological tube furnaces at the oil refinery "LUKOIL-Permnefteorgsyntez" LLC. These furnaces were put into operation in 1950-70s and have a low thermal efficiency (65% on the average).

The upgrading includes both construction of new furnaces and refurbishment or the existing ones. Upgrading of furnaces provides the increase of thermal efficiency of the furnaces. The newly constructed furnaces have the thermal efficiency 90-91% owing to implementation of exhaust gas heat utilization.

The increased efficiency implies reduction of fuel consumption by furnaces and as a result reduction of GHG emissions compared to the scenario without furnace upgrading (baseline).

In PDD Version 02, the emission reductions were also attributed to the expected increase of gas fuel in the furnace fuel balance and accordingly the reduction of liquid fuel (mazut). However, these expectations did not come true and PDD version 03 provided the estimations showing that the heat proportion mazut/gas has even increased.

The project activity provides the following benefits:
- increase of the refinery energy efficiency;
- reduction of GHG emissions from fuel combustion in the furnaces;
- reduction of atmosphere pollution by exhaust gases.

It is estimated that the project will prevent emission of 166589 tCO_2e annually in 2008-2012.

Identified areas of concern as to Project Design, PP's responses and BV Certification's conclusions are described in Appendix A Table 5 (refer to CAR 02, CAR 03, CL 01).

The project has no approval by the Host Party involved, therefore CAR 01 remains pending. The project participant will be authorized by the Host Party involved through the project approval process.

3.2 Baseline and Additionality

Following Clause 20 (b) of JISC "Guidance for baseline setting and monitoring", the project participants established their own baseline methodology that is in accordance with appendix B of the JI guidelines.

To prove the project additionality, an approach was used similar to the provisions of the CDM "Combined tool to identify the baseline scenario and demonstrate additionality".

Two alternative scenarios were selected: Scenario 1 Continuing of practice of use and annual repairs of old furnaces; Scenario 2 Project activity without registration under JI. Both scenarios do not contradict with the mandatory legislation and regulations.

No particular barriers are shown to prevent the implementation of Scenario 1. The implementation of Scenario 2 is prevented by the financial (investment) barriers.

Investment analysis of Scenario 2 has shown that the fuel cost saving due to a higher furnace efficiency cannot compensate for high investment costs (19 MEuro) and, as a result, the project has negative NPV. Thus, the proposed project activity is not most economically or financially attractive alternative scenario. The sensitivity analysis supports this conclusion. Therefore, the Scenario 1 was taken as the baseline scenario.

In common practice analysis, PDD refers to two refineries (Ryazan and Moscow), where the scale of upgrading and CAPEX were considerably lower, and yet there was a governmental support. It is the verifiers' opinion that for the projects like this it is quite difficult if possible at all to correctly identify distinctions between the project and similar activities, for instance those related to individual furnace design or the origin of the fuel consumed by furnaces (market or own production). Also it should be noted that the projects on furnace upgrade/replacement are mostly unprofitable.

So, the project provides emission reductions that is additional to any that would otherwise occur, and yet it financially additional to the baseline scenario.

Identified areas of concern as to Baseline and Additionality, PP's responses and BV Certification's conclusions are described in Appendix A Table 5 (refer to CAR 04, CAR 05, CAR 06, CAR 07).

Identified areas of concern as to Project Duration / Crediting Period, PP's responses and BV Certification's conclusions are described in Appendix A Table 5 (refer to CAR 08, CAR 09).

3.3 Monitoring Plan

The monitoring plan is established based on own methodology, in accordance with JISC Guidance on criteria for baseline setting and monitoring, Part C.

Key parameters to be measured for estimation of GHG emissions reductions are: the consumption of liquid fuel and gaseous fuel by the furnace i, net calorific value of liquid fuel and gaseous fuel, quantity of net energy for the process in furnace i, volumetric composition of gaseous fuel. In addition to that, shares of liquid and gaseous fuel in furnace i heat balance in the baseline scenario are given.

As a response to CAR 15, formulae in the monitoring plan for estimation of baseline emissions were reasonably revised in PDD Version 03.

An operational and management structure that the project participant in order to monitor emission reduction is clearly described in the PDD. The site visit confirmed the availability and operationability of this structure.

Identified areas of concern as to Monitoring Plan, PP's responses and BV Certification's conclusions are described in Appendix A Table 5 (refer to CAR 10, CAR 11, CAR 12, CAR 14, CAR 15, CAR 16).

3.4 Calculation of GHG Emissions

The calculation method was corrected as a response on CAR 15 (refer to 3.3 above) and CAR 17. The verifiers checked the corrected spread sheet provided by NCSF and found the calculations accurate.

The calculated value of project emission reduction over the crediting period 2008 – 2012 is 832946 tCO_2e. Annual average emission reduction is 166589 tCO_2e.

Identified area of concern as to Calculation of GHG Emissions, PP's responses and BV Certification's conclusions is described in Appendix A Table 5 (refer to CAR 17).

3.5 Environmental Impacts

The environmental impact of the project was assessed in accordance with the procedures as required by the host Party. A positive conclusion on the project design including its environmental part is issued by the state expertise. Permits for air emissions are issued by the local environmental authority.

Identified areas of concern as to Environmental Impacts, PP's responses and BV Certification's conclusions are described in Appendix A Table 5 (refer to CAR 18, CAR 19, CAR 20, CL 02).

3.6 Comments by Local Stakeholders

No comments containing points of concern or expectations were received so far.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

Similar to the Verification procedure under the Article 6 Supervisory Committee, Bureau Veritas Certification published the PDD Version 1 on 21/04/2009 on the site www.bureau-veritas.ru and invited comments within 21/05/2009 by Parties, stakeholders and non-governmental organizations.

No comments from third parties have been received.

5 DETERMINATION OPINION

Bureau Veritas Certification has been engaged by National Carbon Sequestration Foundation (NCSF) to perform a determination of the JI project "Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation". The determination was performed on the basis of UNFCCC criteria for JI projects, in particular the verification procedure under the JI Supervisory Committee, as well as host country criteria and the criteria given to provide for consistent project operations, monitoring and reporting.

The determination was carried out under Track 1 as per Glossary of JI terms, in line with paragraph 23 of the JI guidelines.

The determination is based on the information made available to us and on the engagement conditions detailed in this report. The determination has been performed using a risk-based approach as described above. The only purpose of the report is its use for the formal approval of the project under JI mechanism. Hence, Bureau Veritas Certification cannot be held liable by any party for decisions made or not made based on the determination opinion, which will go beyond that purpose.

The determination consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the issuance of the determination report and opinion.

The review of the project design documentation, the subsequent follow-up interviews, and the resolution of the Corrective Action Requests and Clarification Request have provided Bureau Veritas Certification with the sufficient evidences to determine the fulfillment of the above stated criteria and to demonstrate that the project is additional.

An analysis of the investment and related barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project

activity. As the project is implemented and maintained as designed, it is most likely to achieve the estimated amount of emission reductions.

The determination revealed two pending issues related to the current determination stage of the project: the issue of the written approval of the project and the authorization of the project participant by the host Party (Russian Federation). If the written approval and the authorization by the host Party are awarded, it is our opinion that the project as described in the Project Design Document, Version 4 dated 19/06/2009 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

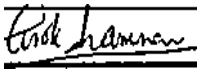
Bureau Veritas Certification thus recommends this project for the formal approval by the Russian Federation as the JI project in accordance with the RF Government Decree N 332 dated 28/05/2007.

Flavio Gomes – Team leader, Lead verifier

Leonid Yaskin – Team member, verifier

Alexander Osadchiev – Team member, verifier

Ashok Mammen – Technical Internal Reviewer



6 REFERENCES

Reviewed document or Type of Information referred to in Appendix A

1	PDD "Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation" Version 02, dated 20/04/2009.
2	Guidelines for Users of the Joint Implementation Project Design Document Form/Version 03, JISC.
3	"Methodology of calculation of emissions of hazardous substances into the atmosphere due to the flaring of the associated petroleum gas at flaring stacks". NII Atmosphere, Saint Petersburg, 1997.
4	Combined tool to identify the baseline scenario and demonstrate additionality, Version 02.2, CDM methodological Tool.
5	Programme "Upgrading and replacement of technological tube furnaces at the "LUKOIL-Permnefteorgsyntez" LLC up to the year of 2010". OJSC "LUKOIL", July 2005
6	"Tool to calculate project or leakage CO2 emissions from foccil fuel combustion", Version 02, dated 02/08/2008. CDM Methodological tool.
7	(1) On approval of methodological instructions for examination of project documentation. Order by the Ministry of Economic Development and Trade of the RF, dated 20 December 2007, N 444.
8	RF Government Decree No. 332, dated 28 May 2007, Procedure For Approval And Verification of Status of Projects Carried Out In Accordance With Article 6 Of The Kyoto Protocol to The United Nations Framework Convention On Climate Change.

Document or Type of Information obtained at the site visit
References in Appendix A are underlined

1	"Upgrading of technological furnaces at LUKOIL-Permnefteorgsyntez LLC up to 2010". Programme
2	Minutes of the meeting at LUKOIL-Permnefteorgsyntez LLC concerning implementation of the Programme "Upgrading of technological furnaces at LUKOIL-Permnefteorgsyntez LLC up to 2010". Dated 21/07/2005.
3	Letter of Information about the implementation of the Programme "Upgrading of technological furnaces at LUKOIL-Permnefteorgsyntez LLC up to 2010". 2009
4	Gas characteristics daily analysis for May 2009.
5	Mazut characteristics daily analysis for May 2009.
6	Project documentation for furnaces. Aliter-Aksi LTD. 2008.
7	Permits for Air Emissions granted to LUKOIL-Permnefteorgsyntez LLC by Territorial Direction of Rostekhnadzor # 52-ж dated 29/08/2007, # 211 dated 26/06/2008.
8	Presentation of LUKOIL Environmental Programme 2009-2013 for Privolzhsky federal okrug. Programme dated 10/10/2008

9	Opinions by stakeholders on LUKOIL Environmental Programme 2009-2013 for Privolzhsky federal okrug. November 2008. Rostekhnadzor, Rosprirodnadzor, Perm state university, NGO.

Persons interviewed:

1	M.B.Khodyashev – LUKOIL Permnefteorgsyntez LLC, Chief ecologist.
2	V.A.Krylov - LUKOIL Permnefteorgsyntez LLC, Chef technologist.
3	V.A.Senkevich - LUKOIL Permnefteorgsyntez LLC, Chief heat engineer.
4	O. Stepanov – LUKOIL Permnefteorgsyntez LLC, Forman of installations AVT-4, AVT-5, BDU-5.
5	A. Zhuravlev – LUKOIL Permnefteorgsyntez LLC, Chief specialist at installations AVT-4, AVT-5, BDU-5.
6	O. Stepanov – LUKOIL Permnefteorgsyntez LLC, Head of installation 24-6.
7	O. Stepanov – LUKOIL Permnefteorgsyntez LLC, Lead specialist of Environmental Department.
8	O. Stepanov – LUKOIL Permnefteorgsyntez LLC, Heat of Department for Technical Development and Invest Projects.
9	S.V.Volkov – LUKOIL Permnefteorgsyntez LLC, Lead specialist of Sector for Provision of Construction Technical Documentation.
10	A.V.Bugdaeva - NCSF, Senior expert.
11	D.M.Ukhanov - NCSF, Senior expert.

7. DISCLAMER

This report contains the results of the determination of whether the project under consideration meets the relevant requirements of Article 6 of the Kyoto Protocol and the JI guidelines. The used determination procedure does not fall under the verification procedure under the JISC, as defined in the JI guidelines, paragraphs 30–45. Instead, paragraph 23 of the JI guidelines apples to the determination based on which Bureau Veritas Certification Holding SAS issues, under the contractual arrangements with NCSF, an expert opinion on the project as per the RF Government Decree No. 332, dated 28 May 2007, "Procedure for approval and verification of status of projects carried out in accordance with Article 6 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change".

APPENDIX A: COMPANY JI PROJECT DETERMINATION PROTOCOL

Table 1 Mandatory Requirements for Joint Implementation (JI) Project Activities

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
1. The project shall have the approval of the Parties involved.	Kyoto Protocol Article 6.1 (a)	CAR 01. The project has no approval of the Host Party. Verifiers' Note: JISC Glossary of JI terms/Version 01 defines the following: a) At least the written project approval(s) by the host Party(ies) should be provided to the AIE and made available to the secretariat by the AIE when submitting the determination report regarding the PDD for publication in accordance with paragraph 34 of the JI guidelines; (b) At least one written project approval by a Party	Table 2, Section A.5.

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		involved in the JI project, other than the host Party(ies), should be provided to the AIE and made available to the secretariat by the AIE when submitting the first verification report for publication in accordance with paragraph 38 of the JI guidelines, at the latest.	
2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur.	Kyoto Protocol Article 6.1 (b)	OK	Table 2, Section B.2
3. The sponsor Party shall not acquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7.	Kyoto Protocol Article 6.1 (c)	OK	N/A
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3.	Kyoto Protocol Article 6.1 (d)	OK	N/A
5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects.	Marrakech Accords, JI Modalities, §20	OK	The Russian national focal point is the Ministry of Economic Development. The Russian national guidelines

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
			and procedures are established by the RF Government Decree N 332 dated 28/05/07 and by RF Ministry of Economic Development and Trade Order N 444 dated 20/12/07.
6. The host Party shall be a Party to the Kyoto Protocol.	Marrakech Accords, JI Modalities, §21(a)/24	OK	Russia has ratified the Kyoto Protocol by Federal Law N 128-ФЗ dated 04/11/04.
7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts.	Marrakech Accords, JI Modalities, §21(b)/24	OK	The Russian Federation's assigned amount has been calculated and recorded In the 4th National Communication dated 12/10/06.
8. The host Party shall have in place a national registry in accordance with Article 7, paragraph 4.	Marrakech Accords, JI Modalities, §21(d)/24	OK	Russian Federation has established the GHG Registry by the RF Government Decree N 215-p

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
			dated 20/02/06.
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination.	Marrakech Accords, JI Modalities, §31	OK	National Carbon Sequestration Foundation has submitted a PDD to Bureau Veritas Certification, which contains all information needed for determination.
10. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments.	Marrakech Accords, JI Modalities, §32	OK	The PDD was made publicly available for comments on Bureau Veritas Rus site from 22 April 2009 till 21 May 2009.
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the host Party, an environmental impact assessment in accordance with procedures as required by the host Party shall be carried out.	Marrakech Accords, JI Modalities, §33(d)	OK	Table 2, Section F
12. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by	Marrakech Accords,	OK	Table 2, Section B.2

1. REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
sources that would occur in absence of the proposed project.	JI Modalities, Appendix B		
13. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B.2
14. The baseline methodology shall exclude to earn ERUs for decreases in activity levels outside the project activity or due to force majeure.	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B.2
15. The project shall have an appropriate monitoring plan.	Marrakech Accords, JI Modalities, §33(c)	OK	Table 2, Section D
16. A project participant may be: (a) A Party involved in the JI project; or (b) A legal entity authorized by a Party involved to participate in the JI project.	JISC "Modalities of communication of Project Participants with the JISC" Version 01, Clause A.3	The Russian project participant will be authorised by the Host Party through the issuance of the approval for the project. Conclusion is pending a follow-up on CAR 01. Refer to Verifiers' Note in 1 above.	Table 2, Section A

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of the project					
1. A.1 Title of the project					
Is the title of the project presented?	1,2	DR	The title of the project is: "Upgrading of technological tube furnaces at the company "LUKOIL-Permnefteorgsyntez" LLC, city of Perm, Russian Federation". The Sectoral Scope is Fugitive emissions from fuels (solid, oil and gas) - 10.		OK
Is the current version number of the document presented?	1,2	DR	The PDD Version 02.		OK
A.1.1. Is the date when the document was completed presented?	1,2	DR	PDD Version 02 is dated 20 April 2009.		OK

A.2. Description of the project					
A.2.1. Is the purpose of the project included?	1,2	DR	The aim of the project is indicated as the reconstruction of equipment at "LUKOIL-Permnefteorgsyntez" LLC. The equipment concerned is the technological tube furnaces for high-temperature heating of oil and oil products. Reconstruction (upgrading) includes both modernization and replacement of the existing furnaces. The history of the project is described by the following milestones: establishment of the project idea (21/07/05); adoption of the Programme "Upgrading and replacement of technological tube furnaces at the "LUKOIL-Permnefteorgsyntez" LLC up to the year of 2010" (July 2005); the most of financing and construction work (2008). The baseline scenario is implicitly describes as follows: "Using of existent equipment would have been continued in the absence of the project activity". The project scenario envisages reconstruction of 14 furnaces. The estimated reduction of GHG emissions is 350,773 tCO2e over the crediting period 2008-2012.		OK
A.2.2. Is it explained how the proposed project reduces greenhouse gas emissions?	1,2	DR	GHG emissions are reduced due to: - increase of furnace thermal efficiency as a result of upgrading;		OK

			- decrease of consumption of the fuel with a higher carbon content.		
A.3. Project participants					
A.3.1. Are project participants and Party(ies) involved in the project listed?	1,2	DR	OJSC LUKOIL is the project participant. Party A is the Russian Federation. Party B is not defined.		OK
A.3.2. The data of the project participants are presented in tabular format?	1,2	DR	The data is presented in the tabular format as per [2}.		OK
A.3.3. Is contact information provided in Annex 1 of the PDD?	1,2	DR	The contact information is provided in PDD Annex 1.		OK
A.3.4. Is it indicated, if it is the case, if the Party involved is a host Party?	1,2	DR	Russian Federation is indicated as a host Party in accordance with the mandatory tabular format [2].		OK
A.4. Technical description of the project					
A.4.1. Location of the project activity					
A.4.1.1. Host Party(ies)	1,2	DR	The Russian Federation.		OK
A.4.1.2. Region/State/Province etc.	1,2	DR	Perm Krai.		OK
A.4.1.3. City/Town/Community etc.	1,2	DR	City of Perm.		OK
A.4.1.4. Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page)	1,2	DR	The unique identification is given by the following information: city of Perm, the capital of Perm Krai (administrative subject of the Russian Federation), indicated on all geographical maps of the Russian Federation. Distance from Moscow is 1522		OK

			km.		
A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project					
A.4.2.1. Does the project design engineering reflect current good practices?	1,2	DR	Furnace efficiency 91-92% implies that project design engineering represents current good practices. It is not disclosed which technical solutions provide the high thermal efficiency of the upgraded furnaces. The implementation schedule is not provided though it is required in [2].	CAR 02 CAR 03	OK OK
A.4.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	1,2	DR	Conclusion is pending a response to CAR 02.	Pending	OK
A.4.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1,2	DR	The project technology is unlikely to be substituted by other or more efficient technologies within the project period.		OK
A.4.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1,2	DR	Please clarify if the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period.	CL 01	OK
A.4.2.5. Does the project make provisions for meeting training and maintenance needs?	1,2	DR	Conclusion is pending a response to CL 01.	Pending	

A.4.3.	Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances					
A.4.3.1.	Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)	1,2	DR	According to PDD Section A.4.3 p. 6, GHG emission reductions due to the project will occur due to: - the higher thermal efficiency of new tube furnaces (91-92% versus 65% for the furnaces before upgrading); ~~- the change of the proportion of gas to liquid fuel consumed by furnaces from 40/60 to 60/40 percent. The gas combustion will result in reduction of GHG emission.~~ Verifier's Note: this issue was present in PDD Version 02 but was deleted from PDD Version 03 since was not confirmed by the calculations made.		OK
A.4.3.2.	Is it provided the estimation of emission reductions over the crediting period?	1,2	DR	The estimated GHG emission reduction is 350,773 tCO_2e over the crediting period 2008-2012. Refer to PDD Section A.4.3.1. Conclusion is pending a response to CAR 17, which may result in recalculation of the CO_2 emissions	Pending	OK
A.4.3.3.	Is it provided the estimated annual reduction for the chosen credit period in tCO_2e?	1,2	DR	The estimated annual emission reduction is 70,155 tonnes of CO2 equivalent. Refer to	Pending	OK

			PDD Section A.4.3.1. Conclusion is pending a response to CAR 17, which may result in recalculation of the CO_2 emissions		
A.4.3.4. Are the data from questions A.4.3.2 and A.4.3.3 above presented in tabular format?	1,2	DR	The data is presented in the tabular format. Refer to PDD Table in Section A.4.3.1.		OK
A.5. Project approval by the Parties involved					
A.5.1. Are written project approvals by the Parties involved attached?	1,2	DR	Conclusion is pending a response to CAR 01.	Pending	
B. Baseline					
B.1. Description and justification of the baseline chosen					
B.1.1. Is the chosen baseline described?	1,2	DR	The baseline is defined as "Continuing of practice of use and annual repairs of old furnaces without their upgrading and building new ones". Sources and availability of liquid fuel and gas consumed by furnaces are not specified. The key information and data for the baseline presented in tabular format on pp. 12 and 13 has flaws as follows: - this data is not sufficient to define the liquid fuel and gas consumption in the baseline scenario by the quantity of energy (heat) for the process in furnaces in the project scenario; - "source" of the liquid fuel and gas	CAR 04 CAR 05	OK OK

			consumption data has to be calculation rather than "flow meter" as mistakenly indicated in the table; - the indicated figures for ex ante calculations of the liquid fuel and gas consumption, and quantity of energy for the process for furnace I are not transparent as to their reference to a sample "furnace i"; - the value 1001.65 Gcal is mistakenly assigned to two different parameters with different dimension.		
B.1.2. Is it justified the choice of the applicable baseline for the project category?	1,2,3	DR	The own baseline is established in line with JISC Guidance for baseline setting and monitoring (paragraph 20b). The chosen baseline is reasonably selected with the use of the analysis including four steps: 1) identification of alternatives, 2) analysis of barriers, 3) investment analysis, 4) analysis of common practice.		OK
B.1.3. Is it described how the methodology is applied in the context of the project?	1,2	DR	Not applicable since this is the own project-specific methodology.		OK
B.1.4. Are the basic assumptions of the baseline methodology in the context of the project activity presented (See Annex 2)?	1,2	DR	Reasonable assumptions of the baseline methodology are as follows: - CO_2 leakages at fuel supply routes are conservatively not included under the reasonable assumption that such leakages at the baseline scenario exceed those in the project scenario since fuel consumption in the		OK

			baseline scenario is higher (refer to PDD Section B.3 Table B.3.1). - CH_4 and N_2O emissions are insignificant.		
B.1.5. Is all literature and sources clearly referenced?	1,2	DR	Relevant literature and sources are referenced through the text of PDD except: - references to the technical documentation for the furnaces upgrading; - numbers of volume and chapter for 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Note: The verifiers reviewed the technical documentation for the furnaces upgrading during the site visit on 20 May 2009.	CAR 06	OK
B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the JI project					
B.2.1. Is the proposed project activity additional?	1,2,4	DR	To prove the project additionality, an approach was used similar to the provisions of the CDM "Combined tool to identify the baseline scenario and demonstrate additionality". Two alternative scenarios were selected: Scenario 1 Continuing of practice of use and annual repairs of old furnaces; Scenario 2 Project activity without registration under JI. Both scenarios do not contradict with the mandatory legislation and regulations. No particular barriers are shown to prevent the		

			implementation of Scenario 1. The implementation of Scenario 2 is prevented by the financial (investment) barriers. Investment analysis of Scenario 2 has shown that the fuel cost saving due to a higher furnace efficiency cannot compensate for high investment costs (19 MEuro) and, as a result, the project has negative NPV (ref. PDD Section B.1 Table B.1.1 pp. 9-10). Thus, the proposed project activity is not most economically or financially attractive alternative scenario. Therefore, the Scenario 1 was taken as the baseline scenario. The presentation of investment analysis in PDD lacks transparency as regards key input data such as discount rate and costs of liquid fuel and gas. Sensitivity analysis shall be included as well. In common practice analysis, PDD refers to two refineries (Ryazan and Moscow), where the scale of upgrading and CAPEX were considerably lower, and yet there was a governmental support. It is the verifiers' opinion that for the projects like this it is quite difficult if possible at all to correctly identify distinctions between the project and similar activities, for instance those related to individual furnace design or the origin of the fuel consumed by furnaces	CAR 07	OK

			(market or own production). Also it should be noted that the projects on furnace upgrade/replacement are mostly unprofitable. So, the project provides emission reductions that is additional to any that would otherwise occur, and yet it financially additional to the baseline scenario.		
B.2.2. Is the baseline scenario described?	1,2	DR	Please refer to PDD Section B.1.		OK
B.2.3. Is the project scenario described?	1,2	DR	The project scenario is described in PDD Sections A.4.3, B.1, B.2.		OK
B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario included?	1,2	DR	Please refer to PDD B.1 and B.2.		OK
B.2.5. Is it demonstrated that the project activity itself is not a likely baseline scenario?	1,2	DR	Please refer to PDD Section B.1 and B.2. The project activity without registration under JI mechanism is not a likely baseline scenario since it is not most economically and financially attractive as compared with the chosen baseline scenario.		OK
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized?	1,2	DR	Succinct information about relevant regulations in the Russian Federation as to using of tube furnaces is presented in PDD Sections A.4.3 and B.1.		OK
B.3. Description of how the definition of the project boundary is applied to the project activity					
2. B.3.1. Are the project's spatial (geographical)	1,2,3	DR	The baseline boundary is in line with the		OK

boundaries clearly defined?			provisions of paragraph 11 of the JISC Guidance for baseline setting and monitoring. Refer to PDD Section B.3 on p. 15.		
B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline					
B.4.1. Is the date of the baseline setting presented (in DD/MM/YYYY)?	1,2	DR	The date of the baseline setting is 31.10.2008.		OK
B.4.2. Is the contact information provided?	1,2	DR	The baseline was developed by National Carbon Sequestration Foundation (NCSF). Contact persons: Daniil Ukhanov, Senior expertt Tel. +7 499 788 78 35 ext. 102 Fax +7 499 788 78 35 ext. 107 e-mail: UkhanovDM@ncsf.ru Bugdaeva Agrafena, PhD, Senior expert Tel. +7 499 788 78 35 ext. 104 Fax +7 499 788 78 35 ext. 107 e-mail: BugdaevaAV@ncsf.ru		OK
B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	NCSF is not a participant of the Project.		OK
C. Duration of the project and crediting period					
C.1. Starting date of the project					
C.1.1. Is the project's starting date clearly defined?	1,2,5	DR	July 2005 is defined as the starting date of the	CAR 08	

			project in PDD Section C1. The day is not defined. On 21 July 2005, the OJSC "LUKOIL" has adopted the Programme "Upgrading and replacement of technological tube furnaces at the "LUKOIL-Permnefteorgsyntez" LLC up to the year of 2010". Adoption of such a programme is a triggering mechanism for implementation of any LUKOIL. The Programme is in the possession of the verifier.		
C.2. Expected operational lifetime of the project					
C.2.1. Is the project's operational lifetime clearly defined in years and months?	1,2	DR	The operational lifetime is defined as 20 years (246 months) based on the depreciated rate 5% per year (1/0,05=20 years) taken in the technical designs of furnaces upgrading.		OK
C.3. Length of the crediting period					
C.3.1. Is the length of the crediting period specified in years and months?	1,2	DR	It is specified as 5 years (60 months). Starting date of the crediting period is not defined.	CAR 09	OK
D. Monitoring Plan					
D.1. Description of monitoring plan chosen					
D.1.1. Is the monitoring plan defined?	1,2,6	DR	The monitoring plan is established based on the CDM "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" (Version 02). Option 1 – Monitoring of the emissions in the		OK

			project scenario and baseline scenario – is chosen. Data to be collected is defined in PDD Sections D.1.1.1 and D.1.1.3.		
D.1.2. Option 1 – Monitoring of the emissions in the project scenario and the baseline scenario.	1,2	DR	Please refer to D.1.1.		OK
D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be archived.	1,2,	DR	Data to be collected in order to monitor emissions from the project are defined in PDD Section D.1.1.1. The parameters to be monitored are: ID1 – consumption of liquid fuel in furnace i (in ton/year), ID2 – consumption of gas in furnace i (in ton/year), ID3 – volume composition of gas (in %) – analyzed daily, ID4 – quantity of energy for the process in furnace i (in TJ), ID5 – net calorific value of liquid fuel (in TJ/ton). It is defined that the data will be archived electronically or on paper. The "source of data" for liquid fuel and gas consumption do not include flow meters Rosemount 3095 and Yokogawa DY080 used in PNOS at the installations AVT-4 and 24-6 respectively (a finding from the site visit). There is an ambiguity as regards the source of data for liquid fuel NCV: analysis by the sanitary-hygienic laboratory is indicated in PDD Section D.1.1.1, point ID 5; 2006 IPCC is indicated in the notation to Formula D.1.1.2.4).	CAR 10 CAR 11	OK OK

			The same point of concern pertains to the baseline scenario.		
D.1.4. Description of the Formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO2 equivalent).	1,2	DR	These are Formulae (D1.1.2.1) – (D1.1.2.10) presented in PDD Section D.1.1.2.. They allow to calculate CO_2 emissions from complete combustion of gas and liquid fuel. It is not explained how the daily variations of the gas composition will be taken into account when calculating the average mass fraction of carbon in the gas fuel. The same point of concern pertains to the baseline scenario. It is not analysed to which extend the 2006 IPCC data for the emission factor and net caloric value of the residual oil fuel is applicable to the variable composition liquid fuel consumed by the furnaces. The same point of concern pertains to the baseline scenario. Note: Calculation of specific fuel consumption by Formulae (D.1.1.2.9) and (D.1.1.2.10) is superfluous since these parameters are actually of no use.	CAR 12 CAR 13	OK OK
D.1.5. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived.	1,2,3	DR	Data to be collected in order to monitor baseline emissions are defined in PDD Section D.1.1.3. The parameters to be monitored are: ID6 – consumption of liquid fuel in furnace i (in ton/year), ID7 – consumption of gas in furnace i (in ton/year), ID8 – volume		

			composition of gas (in %), ID9 – net calorific value of liquid fuel (in TJ/ton), ID10 – quantity of energy for the process in furnace i (in TJ). It is defined that the data will be archived electronically or on paper. Monitoring of net caloric value of gas, and of the ratio of fluid fuel and gas consumption is not envisaged though these parameters are necessary for estimation of fuel consumption.	CAR 14	OK
D.1.6. Description of the Formulae used to estimate baseline emissions (for each gas, source etc, emissions in units of CO2 equivalent).	1,2,3	DR	These are Formulae (D1.1.4.1) – (D1.1.4.4), (D.1.1.4.7 – D.1.1.4.10) presented in PDD Section D.1.1.4. They allow to estimate CO2 emissions by the values of specific fuel consumption. Formulae (D.1.1.4.5 – D.1.1.4.6) and (D.1.1.4.11 – D.1.1.4.12) proposed for calculation of gas and liquid fuel consumption in the baseline scenario lack any rationale and cannot be applied. Accordingly, the indication of "source of data" for ID 6 and ID 7 in PDD Section D.1.1.3 as "calculation on the basis of the specific fuel consumption" is meaningless.	CAR 15	OK
D.1.7. Option 2 – Direct monitoring of emissions reductions from the project (values should be consistent with those in section E)	1,2	DR	Not applicable.		OK
D.1.8. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived.	1,2	DR	Not applicable.		OK

D.1.9. Description of the Formulae used to calculate emission reductions from the project (for each gas, source etc; emissions/emission reductions in units of CO2 equivalent).	1,2	DR	Not applicable.		OK
D.1.10. If applicable, please describe the data and information that will be collected in order to monitor leakage effects of the project.	1,2	DR	The leakages are considered negligible (refer to B.1.4).		OK
D.1.11. Description of the Formulae used to estimate leakage (for each gas, source etc,; emissions in units of CO2 equivalent).	1,2	DR	Not applicable.		OK
D.1.12. Description of the Formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions in units of CO2 equivalent).	1,2	DR	This is the straightforward Formula (D.1.4.1) ER = BE – PE. Refer to PDD Section D.1.4.		OK
D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided?	1,2	DR	The basic objectives for monitoring of sources of pollutant emissions in atmosphere are defines as follows: - Evaluating of qualitative and quantitative composition of emissions directly at the source; - Assessment of impact on atmosphere air associated directly with the source of man's impact (in measurement points at the border of sanitary protection area, in the dwelling housing system). A list of materials available at the company for organizing of monitoring is provided in PDD Section D.1.5. "LUKOIL-Permnefteorgsyntez" LLC has an		OK

			Environmental Management System certified to ISO 14001:2004 by Bureau Veritas Certification.		
D.1.14. Is reference to the relevant host Party regulation(s) provided?	1,2	DR	Refer to PDD Section D.1.5 and Section F.		OK
D.1.15. If not applicable, is it stated so?	1,2	DR	Refer to D.1.14.		OK
D.2. Qualitative control (QC) and quality assurance (QA) procedures undertaken for data monitored					
D.2.1. Are there quality control and quality assurance procedures to be used in the monitoring of the measured data established?	1,2	DR	The measurement devices are envisaged to be calibrated. This will be checked during the site visit.		OK
D.3. Please describe of the operational and management structure that the project operator will apply in implementing the monitoring plan					
D.3.1. Is it described briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project	1,2	DR	It is described and illustrated on the chart in PDD Section D.3.		OK

D.4. Name of person(s)/entity(ies) establishing the monitoring plan					
D.4.1. Is the contact information provided?	1,2	DR	"National Carbon Sequestration Foundation" – (NCSF, Moscow). Contact person: Ukhanov Daniil, senior expert Tel. +7 499 788 78 35 ext. 102 Fax +7 499 788 78 35 ext. 107 e-mail: ukhanovDM@ncsf.ru		OK
D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD?	1,2	DR	It is not indicated that NCSF is not the project participant listed in Annex 1 of PDD.	CAR 16	OK
E. Estimation of greenhouse gases emission reductions					
E.1. Estimated project emissions					
E.1.1. Are described the Formulae used to estimate anthropogenic emissions by source of GHGs due to the project?	1,2	DR	These are Formulae (E.1.1) – (E.1.8) presented in PDD Section E.1. The Formulae were checked and found correct.		OK
E.1.2. Is there a description of calculation of GHG project emissions in accordance with the Formula specified in for the applicable project category?	1,2	DR	GHG project emissions are calculated by Formulae (E.1.1) – (E.1.8) for each upgraded furnace on the excel spreadsheet, which was made available to the verifiers. Calculations of GHG emissions by the Formulae (E.1.1) – (E.1.8) are shown in PDD Section E.1 Table E.1. The used values of gas and liquid fuel consumption were received from the plant operator/engineer.		OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	1,2	DR	The furnace thermal balance in the calculations is not fulfilled, namely:	CAR 17	OK

			- the process heat does not equal the fuel consumption times the furnace efficiency; on the contrary, there is a significant discrepancy; - the ratio of fuel consumption in old and upgraded furnaces does not equal to the ratio of corresponding furnace efficiencies» on the contrary, there is a significant discrepancy. This point of concern equally pertains to the baseline calculations.		
E.2. Estimated leakage					
E.2.1. Are described the Formulae used to estimate leakage due to the project activity where required?	1,2	DR	Not applicable (refer to B.1.4).		OK
E.2.2. Is there a description of calculation of leakage in accordance with the Formula specified in for the applicable project category?	1,2	DR	Not applicable		OK
E.2.3. Have conservative assumptions been used to calculate leakage?	1,2	DR	Refer to B.1.4		OK
E.3. The sum of E.1 and E.2.					
E.3.1. Does the sum of E.1. and E.2. represent the small-scale project activity emissions?	1,2	DR	The project falls under category of large scale projects. As no leakage is expected, E1+E2=E1.		OK
E.4. Estimated baseline emissions					
E.4.1. Are described the Formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category?	1,2	DR	These are Formulae (E.4.1) – (E.4.8) presented in PDD Section E.4. The Formulae were checked and found correct.		OK

E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the Formula specified for the applicable project category?	1,2	DR	GHG project emissions are calculated by Formulae (E.4.1) – (E.4.8) for each upgraded furnace on the excel spreadsheet, which was made available to the verifiers. Calculations of GHG emissions by the Formulae (E.4.1) – (E.4.8) are shown in PDD Section E.1 Table E.4. The used values of gas and liquid fuel consumption were received from the plant operator/engineer.		OK
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?	1,2	DR	Refer to E.1.3. Conclusion is pending a response to CAR 17.	Pending	OK
E.5. Difference between E.4. and E.3. representing the emission reductions of the project					
E.5.1. Does the difference between E.4. and E.3. represent the emission reductions due to the project during a given period?	1,2	DR	Yes, it does. Refer to Formula (E.5.1) in PDD Section E.5.		OK
E.6. Table providing values obtained when applying Formulae above					
E.6.1. Is there a table providing values of total CO_2 abated?	1,2	DR	PDD Section E.6 Table E.6 provides the total values of project emissions, leakage, baseline emissions, and emission reductions in accordance with the JI reporting format. Conclusion is pending a response to CAR 17, which may result in recalculation of the CO_2 emissions.	Pending	OK

F. Environmental Impacts					
F.1. Documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party					
F.1.1. Has an analysis of the environmental impacts of the project been sufficiently described?	1,2	DR	Please list the documentation in the PDD.	CAR 18	OK
F.1.2. Are there any host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1,2,7	DR	The host Party requirements for an Environmental Impact Assessment (EIA) are defined by Article 32 of Federal Law # 7-FZ. The PDD Section F.1 includes mutually exclusive statements: "Environment impact assessment of the Project was not carried out …" and "For the project of upgrade/replacement of technological tube furnaces the environmental impact assessment was carried out and can be presented by request". References to EIA are not provided.	CAR 19	OK
F.1.3. Are the requirements of the National Focal Point being met?	1,2,8	DR	The requirements of the National Focal Point to present the EIA should be met before the submission of the project to the Coordination Centre of National Focal Point [7].		OK
F.1.4. Will the project create any adverse environmental effects?	1,2	DR	Section F2 is not included in PDD. Accordingly the information is not provided if environmental impacts are considered significant by the project participants or the host Party.	CAR 20	OK

F.1.5. Are transboundary environmental impacts considered in the analysis?	1,2	DR	The project activity has no transboundary environmental impacts.		OK
F.1.6. Have identified environmental impacts been addressed in the project design?	1,2	DR	Conclusion is pending responses to CAR 16 and CAR 17.	Pending	OK
G. Stakeholders' comments					
G.1. Information on stakeholders' comments on the project, as appropriate					
G.1.1. Is there a list of stakeholders from whom comments on the project have been received?	1,2	DR	PDD Section G.1 refers to public hearings in the frame of the presentation of the "Project of environmental safety program for the organizing of the "LUKOIL" group for the years 2004-2008" for the Privolzhsky Federal region. These hearings were held in December 2003 and could not address the project, which started in July 2005.	CAR 21	OK
G.1.2. The nature of comments is provided?	1,2	DR	Conclusion is pending a response to CAR 21, which shall address the question G.1.2 if appropriate.	Pending	OK
G.1.3. Has due account been taken of any stakeholder comments received?	1,2	DR	Conclusion is pending a response to CAR 21, which shall address the question G.1.3 if appropriate.	Pending	OK

Table 3 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?	1,2	DR	Please clarify if "LUKOIL-Permnefteorgsyntez" LLC has a Rostekhnadzor Permission for Air Emission.	CL 02	OK
1.2. Are there conditions of the environmental permit? In case of yes, are they already being met?	1,2	DR	Conclusion is pending a response to CL 02.	Pending	OK
1.3. Is the project in line with relevant legislation and plans in the host country?	1,2	DR	Yes, the project is in line with relevant legislation and plans in the host country.		OK

Table 4 Resolution of Corrective Action and Clarification Requests

<table>
<tr><th>Draft report clarifications and corrective action requests by determination team</th><th>Ref. to checklist question in tables 1, 2, 3</th><th>Summary of project owner response</th><th>Determination team conclusion</th></tr>
<tr><td>CAR 01
The project has no approval of the Host Party.</td><td>1 Table 1</td><td>N/A</td><td>The CAR is pending an approval by the host Party.</td></tr>
<tr><td>CAR 02
It is not disclosed which technical solutions provide the high thermal efficiency of the upgraded furnaces.</td><td>A.4.2.1</td><td>(Page 6 in PDD)

The main effect obtained due to the utilization of waste heat of gases. (It is planned to implement units for waste gases recuperation on the upgraded furnaces).

The high thermal efficiency is the result of the individual designing of construction projects, drawings and specifications for each furnace.
<table>
<tr><th></th><th>Equipment</th><th>Furnace</th><th>Technical solutions</th></tr>
<tr><td>1</td><td>35-20</td><td>P-101</td><td>It was built the cylindrical furnace instead of the A-type furnace.</td></tr>
<tr><td>2</td><td>24-7</td><td>P-2</td><td>The furnace upgrading is scheduled to start 2010-11.</td></tr>
<tr><td>3</td><td>AVT-4</td><td>P-403</td><td>It was built the box furnace instead of the A-type furnace.</td></tr>
</table></td><td>Indeed, the main contributor to the increase of the furnace thermal efficiency is the utilization of the exhaust gases heat. The old furnaces were not equipped with such heat transfer surfaces. This issue was checked during the site visit to PNOS on 29 May 2009.

The CAR is closed based on the adequate and extended addition made to the PDD.</td></tr>
</table>

4	AVT-5	P-3	The furnace upgrading is scheduled to start 2010-11.
5	36-30	P-2R	It was upgraded the furnace convection and it was replaced the roof and the bottom of the furnace by the heatproof concrete.
6	24-9	P-1	It was upgraded burners and the furnace bottom.
7	24-9	P-2	It was upgraded burners and the furnace bottom.
8	AVT-4	P-1	It was built the box furnace instead of two the A-type furnaces.
9	AVT-4	P-2	
10	AVT-5	P-4	It was built the box-type furnace instead of two the A-type furnaces.
11	AVT-5	P-5	
12	37-40	P-3	It was built box-type furnace instead of the A-type furnace.
13	24-6	P-1	It was built the cylindrical vertical furnace with electroignition burners instead of the A-type furnace.
14	37-10	P-2/3	It was built box-type furnace with detached radiant chambers instead of the A-type furnace.
15	24-7	P-3	The furnace upgrading is scheduled to start 2010-11.
16	AVT-5	P-1	The furnace upgrading is scheduled to start 2010-11.
17	24-6	P-2	The furnace upgrading is scheduled to start 2010-11.
18	37-10	P-1	The furnace upgrading is scheduled to start 2010-11.

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>CAR 03
The implementation schedule is not provided though it is required in [2].</td><td>A.4.2.1</td><td>(Page 5 in PDD)
The implementation schedule:
<table>
<tr><th></th><th>Equipment</th><th>Furnace</th><th>Start of operation</th></tr>
<tr><td>1</td><td>35-20</td><td>P-101</td><td>20.10.2003</td></tr>
<tr><td>2</td><td>24-7</td><td>P-2</td><td>30.12.2004</td></tr>
<tr><td>3</td><td>AVT-4</td><td>P-403</td><td>14.04.2005</td></tr>
<tr><td>4</td><td>AVT-5</td><td>P-3</td><td>25.07.2008</td></tr>
<tr><td>5</td><td>36-30</td><td>P-2R</td><td>29.04.2005</td></tr>
<tr><td>6</td><td>24-9</td><td>P-1</td><td>22.03.2008</td></tr>
<tr><td>7</td><td>24-9</td><td>P-2</td><td>22.03.2008</td></tr>
<tr><td>8</td><td>AVT-4</td><td>P-1</td><td>16.04.2008</td></tr>
<tr><td>9</td><td>AVT-4</td><td>P-2</td><td>16.04.2008</td></tr>
<tr><td>10</td><td>AVT-5</td><td>P-4</td><td>25.07.2008</td></tr>
<tr><td>11</td><td>AVT-5</td><td>P-5</td><td>25.07.2008</td></tr>
<tr><td>12</td><td>37-40</td><td>P-3</td><td>30.07.2008</td></tr>
<tr><td>13</td><td>24-6</td><td>P-1</td><td>22.05.2009</td></tr>
<tr><td>14</td><td>37-10</td><td>P-2/3</td><td>01.01.2010</td></tr>
<tr><td>15</td><td>24-7</td><td>P-3</td><td>01.01.2011</td></tr>
<tr><td>16</td><td>AVT-5</td><td>P-1</td><td>01.01.2012</td></tr>
<tr><td>17</td><td>24-6</td><td>P-2</td><td>01.01.2012</td></tr>
<tr><td>18</td><td>37-10</td><td>P-1</td><td>01.01.2012</td></tr>
</table></td><td>The exact implementation schedule is presented.
The CAR is closed based on the adequate and exact addition made to the PDD.</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>CAR 04
Sources and availability of liquid fuel and gas consumed by furnaces are not specified.</td><td>B.1.1</td><td>(Page 10 in PDD)
The liquid fuel and the gas are by-products of the PNOS industrial process oil refining. It is available any volume of fuel from the shop of preparing of fuels.</td><td>The issue was checked during the site visit to PNOS on 29 May 2009.
The CAR is closed based on the adequate addition to the PDD.</td></tr>
<tr><td>CAR 05
The key information and data for the baseline presented in tabular format on pp. 12 and 13 has flaws as follows:
- this data is not sufficient to define the liquid fuel and gas consumption in the baseline scenario by the quantity of energy (heat) for the process in furnaces in the project scenario;
- "source" of the liquid fuel and gas consumption data has to be calculation rather than "flow meter" as mistakenly indicated in the table;
- the indicated figures for ex ante calculations of the liquid fuel and gas consumption, and quantity of energy for the process for furnace I are not transparent as to their reference to a sample "furnace i";</td><td>B.1.1</td><td>(Page 12 in PDD)
For the answer on this question Table B.1.3. Key information and data used for baseline was changed.
<table><tr><td>Data/Parameter</td><td>Quantity of net energy for the process in furnace i;</td></tr><tr><td>Data unit</td><td>TJ</td></tr><tr><td>Description</td><td>Each furnace have to produce fixed net quantity of heat for the technological process</td></tr><tr><td>Time of determination / monitoring</td><td>Monthly</td></tr><tr><td>Source of data (to be) used</td><td>Thermo technical laboratory</td></tr><tr><td>Value of data applied (for ex ante calculations / determinations)</td><td>This parameter is individual for each furnace.</td></tr><tr><td>Justification of the choice of data or description of measurement methods and procedures (to be) applied</td><td>This parameter allows to calculate the consumption of fuels</td></tr></table></td><td>Adequate changes to the list of data and parameters which define the baseline were made.
The CAR is closed based on adequate correction made to the PDD.</td></tr>
</table>

- the value 1001.65 Gcal is mistakenly assigned to two different parameters with different dimension.		

QA/QC procedures (to be) applied	The equipment is calibrated and checked in accordance with regulations and quality control procedures. Maintenance is carried out in accordance with norms of their technical specifications.
Any comment	

Data/Parameter	Net calorific value of liquid fuel
Data unit	TJ/ton
Description	It is value describes the heat produced from the burning of 1 ton of fuel.
Time of determination/monitoring	Weekly
Source of data (to be) used	Thermo technical laboratory
Value of data applied (for ex ante calculations / determinations)	0.04147 TJ/ton
Justification of the choice of data or description of measurement methods and procedures (to be) applied	This parameter is necessary for the calculation of fuel consumption in the baseline;
QA/QC procedures (to be) applied	The equipment in laboratory is calibrate and checked in accordance with regulations and quality control procedures. The laboratory is accredited.
Any comment	

Data/Parameter	Net calorific value of gaseous fuel

			Data unit	TJ/ton
			Description	It is value describes the heat produced from the burning of 1 ton of fuel.
			Time of determination/monitoring	Weekly
			Source of data (to be) used	Thermo technical laboratory
			Value of data applied (for ex ante calculations / determinations)	0.03307 TJ/ton
			Justification of the choice of data or description of measurement methods and procedures (to be) applied	This parameter is necessary for the calculation of CO2 emissions from liquid fuel consumption;
			QA/QC procedures (to be) applied	The equipment in laboratory is calibrate and checked in accordance with regulations and quality control procedures. The laboratory is accredited.
			Any comment	
			Data/Parameter	Proportion of fuel contribution in $furnace_i$ energy production from each fuel before the project
			Data unit	%
			Description	This parameter describes the proportion of type of fuel in energy production of every furnace
			Time of determination / monitoring	yearly

			Source of data (to be) used	Technical reports for the previous years
			Value of data applied (for ex ante calculations / determinations)	This value is individual for every furnace
			Justification of the choice of data or description of measurement methods and procedures (to be) applied	This parameter allows to calculate the consumption of fuels
			QA/QC procedures (to be) applied	There are technical instructions for filling technical reports.
			Any comment	
			Data/Parameter	Efficiency coefficient for every furnace
			Data unit	%
			Description	These parameters are need for the calculation of quantity of net energy for the process in furnace i.
			Time of determination/monitoring	Yearly
			Source of data (to be) used	Technological documentation for every furnace
			Value of data applied (for ex ante calculations / determinations)	This value is individual for every furnace and vary between 50% and 75.49%
			Justification of the choice of data or description of measurement methods and procedures (to be) applied	These parameters allow to calculate quantity of energy for the process in furnace i
			QA/QC procedures (to be) applied	—

<table>
<tr><td></td><td></td><td><table><tr><td>Any comment</td><td></td></tr></table></td><td></td></tr>
<tr><td>CAR 06
Relevant literature and sources are referenced through the text of PDD except:
- references to the technical documentation for the furnaces upgrading;
- numbers of volume and chapter for 2006 IPCC Guidelines for National Greenhouse Gas Inventories.</td><td>B.1.5</td><td>All the literature and sources were referenced as required.</td><td>The CAR is closed based on the adequate corrections made to the PDD.</td></tr>
<tr><td>CAR 07
The presentation of investment analysis in PDD lacks transparency as regards key input data such as discount rate and costs of liquid fuel and gas. Sensitivity analysis shall be included as well.</td><td>B.2.1</td><td>(Page 11 in PDD)
The discount rate is 15% accordingly to the LUKOIL data.
Costs of liquid fuel and gas are 6 601.63 rub/t and 805.97 rub/t

Indicators of economic effectiveness of the project:<table><tr><th>Item</th><th>Unit</th><th>Project without ERU</th><th>Project with ERU</th></tr><tr><td>CAPEX</td><td>mln rub</td><td>1 548.83</td><td>1 548.83</td></tr><tr><td>OPEX</td><td>mln rub</td><td>222.19</td><td>222.19</td></tr><tr><td>Hurdle discount rate</td><td>%</td><td>15</td><td>15</td></tr><tr><td>NPV</td><td>mln rub</td><td>-973</td><td>-902</td></tr><tr><td>IRR</td><td>%</td><td>N/A</td><td>N/A</td></tr></table></td><td>The requested data are disclosed in the PDD and is made available to the verifiers in terms of a calculation spread sheet. All the input data were checked with the PNOS economist during the site visit to PNOS on 29 May 2009.
The discount rate 15% was taken in the technical designs of furnaces upgrading and accepted by LUKOIL. Evidence was</td></tr>
</table>

<table>
<tr>
<td></td>
<td></td>
<td>Sensitivity analysis shows that has the change of CAPEX has the prepotent effect:
<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Unit</th><th colspan="2">CAPEX</th></tr>
<tr><th>+10%</th><th>-10%</th></tr>
<tr><td>CAPEX</td><td>mln rub</td><td>1703.83</td><td>1393.83</td></tr>
<tr><td>OPEX</td><td>mln rub</td><td>222.19</td><td>222.19</td></tr>
<tr><td>Hurdle discount rate</td><td>%</td><td>15</td><td>15</td></tr>
<tr><td>NPV</td><td>mln rub</td><td>-994</td><td>-786</td></tr>
<tr><td>IRR</td><td>%</td><td>N/A</td><td>1.38</td></tr>
</table>
<table>
<tr><th rowspan="2">Item</th><th rowspan="2">Unit</th><th colspan="2">Price of fuels</th></tr>
<tr><th>+10%</th><th>-10%</th></tr>
<tr><td>CAPEX</td><td>mln rub</td><td>1 548.83</td><td>1 548.83</td></tr>
<tr><td>OPEX</td><td>mln rub</td><td>222.19</td><td>222.19</td></tr>
<tr><td>Hurdle discount rate</td><td>%</td><td>15</td><td>15</td></tr>
<tr><td>NPV</td><td>mln rub</td><td>-865</td><td>-939</td></tr>
<tr><td>IRR</td><td>%</td><td>1.18</td><td>N/A</td></tr>
</table>
</td>
<td>provided to the verifier (LY) during the site visit to PNOS.
Reasonable sensitivity analysis is made.
The CAR is closed based on the adequate additions made to the PDD.</td>
</tr>
<tr>
<td>CAR 08
July 2005 is defined as the starting date of the project in PDD Section C1. The day is not defined.</td>
<td>C.1.1</td>
<td>(Page 17 in the PDD)
Starting date of the project is 1 August 2003. On this date the first upgrading works on the installation 35-20 furnace started. Workers begun to arrange the place for a new cylindrical furnace P-101 on the installation 35-20 instead of the A-type furnace P-101.</td>
<td>Please refer to the table in the PP response to CAR 03.
The CAR is closed based on the adequate correction made to the PDD.</td>
</tr>
<tr>
<td>CAR 09
Starting date of the crediting period</td>
<td>C.3.1</td>
<td>Starting date of the crediting period is 1 January 2008.</td>
<td>The CAR is closed based on the adequate addition</td>
</tr>
</table>

is not defined.			made to the PDD.
CAR 10 The "source of data" for liquid fuel and gas consumption do not include flow meters Rosemount 3095 and Yokogawa DY080 used at the installations AVT-4 and 24-6 respectively (a finding from the site visit).	D.1.3	(Page 20 in the PDD) The cells in the Table D.1.1.1. were modified and now Source of data for ID 1 fuel flow meters: USA Micro Motion F100S129, Yokogawa EJA 53OA-EAS4N07-NE-KS2 and for ID 2 fuel flow meters: Rosemount 3051CO3, Yokogawa DY080-EBLBA2-2-N/KS1/MV	Additional metering equipment is included in the monitoring plan. The CAR is closed based on the adequate addition made to the PDD.
CAR 11 There is an ambiguity as regards the source of data for liquid fuel NCV: analysis by the sanitary-hygienic laboratory is indicated in PDD Section D.1.1.1, point ID 5; 2006 IPCC is indicated in the notation to Formula D.1.1.2.4). The same point of concern pertains to the baseline scenario.	D.1.3	(Page 21 and 22 in the PDD) NCV for liquid fuel is determined by thermotechnical laboratory. It is shown in Table D.1.1.1. ID5 source of data: Analysis carried out by the thermotechnical laboratory and in the formula D.1.1.2.4 error reference was deleted. So did for the baseline scenario.	The verifiers visited this laboratory and got acquainted with the measurement techniques. The CAR is closed based on adequate corrections made to the PDD.
CAR 12 It is not explained how the daily variations of the gas composition will be taken into account when calculating the average mass fraction of carbon in the gas fuel. The same point of concern pertains to the baseline scenario.	D.1.4	(Page 20 in the PDD) We explained how the daily variations of the gas composition will be taken into account when calculating the average mass fraction of carbon in the gas fuel in the Table 1.1.1. ID 3 Comment: Daily measurements are aggregated in a month volume ratio of every component in gas and average value is used.	The explained approach seems appropriate. The CAR is closed based on the adequate addition made to the PDD.

CAR 13 It is not analysed to which extend the 2006 IPCC data for the emission factor and net caloric value of the residual oil fuel is applicable to the variable composition liquid fuel consumed by the furnaces. The same point of concern pertains to the baseline scenario.	D.1.4	(Page 22 in the PDD) The analysis of the used values presented in reference 7 of PDD. The value of emission factor is accepted on the data from the document 2006 IPCC Guidelines for National Greenhouse Gas Inventories. As according to the measurements of the thremotechnical laboratory NCV of the liquid fuel is in range from 0.04147 TJ/ton to 0.04165 TJ/ton and this is the same range as in 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 2. Energy. Table 1.2, p.1.18 for residual fuel oil. Also the description of residual fuel oil according to this document is following "these heading defines oils that make up the distillation residue. It comprises all residual fuel oils, including those obtained by blending" this statement fits the description of liquid fuel that is used in technological furnaces. Considering all above mentioned we uses emission factor for residual fuel oil from this document.	The use of the net caloric value of the residual oil fuel as a reference for selecting the right indicator from IPCC tables appears a reasonable approach. Very often IPCC values are used as default data without any substantiation. The CAR is closed based on an reasonable explanation added to the PDD.
CAR 14 Monitoring of net caloric value of gas, and of the ratio of fluid fuel and gas consumption is not envisaged though these parameters are necessary for estimation of fuel consumption.	D.1.5	(Page 21, 27 in the PDD) We added ID 6 $NCV_{gasfuel}$ net calorific value of gaseous fuel in the Table D.1.1.1. and ID 11 $NCV_{gasfuel}$ net calorific value of gaseous fuel, ID 13 $\varphi_{liqfuel,BL,i}$ proportion of liquid fuel contribution in furnace i energy production, ID 14 $\varphi_{gaseous,BL,i}$ proportion of gaseous fuel contribution in furnace i energy production in the Table D.1.1.3.	The parameters in question were added to the monitoring plan Tables. The CAR is closed based on the adequate addition made to the PDD.
CAR 15 Formulae (D.1.1.4.5 – D.1.1.4.6) and (D.1.1.4.11 – D.1.1.4.12)	D.1.6	(See pages 24,25,29,31 of the PDD) For the calculation of gas and liquid fuel consumption we added in section D.1.1.2. following formulae and text:	The incorrect approach was deleted from the PDD. Instead, an accurate method was set forth

proposed for calculation of gas and liquid fuel consumption in the baseline scenario lack any rationale and cannot be applied. Accordingly, the indication of "source of data" for ID 6 and ID 7 in PDD Section D.1.1.3 as "calculation on the basis of the specific fuel consumption" is meaningless.		Also it is necessary to monitor $Q_{net,i}$ – quantity of net energy for the process in furnace i. It can be calculated by the following formulae: (D.1.1.2.9) $\mathbf{Q_{net,i} = (FC_{gasfuel,PJ,i} * NCV_{gasfuel} + FC_{liqfuel,PJ,i} * NCV_{liqfuel}) * \eta_{PJ}}$ Where: $\mathbf{Q_{net,i}}$ – quantity of net energy for the process in furnace i, TJ; $\mathbf{FC_{gasfuel,PJ,i}}$ – consumption of gaseous fuel by process (technological) furnaces [1], ton/year; $\mathbf{NCV_{liqfuel}}$– average calorific net-value of 1 ton of liquid fuel, TJ/ton; $\mathbf{FC_{liqfuel,PJ,i}}$ – consumption of liquid fuel by process (technological) furnaces [2], ton/year; $\mathbf{NCV_{gasfuel}}$– average calorific net-value of 1 ton of liquid fuel, TJ/ton; $\mathbf{\eta_{PJ}}$ – efficiency coefficient of the furnace i according to the Project; In the section D.1.1.4. we added: Consumption of liquid fuel in furnace i in the baseline will be calculated by the formula: (D.1.1.4.5.) $\mathbf{FC_{liqfuel,BL,i} = Q_i * \varphi_{liqfuel,BL,i}/NCV_{liqfuel}}$ Where: $\mathbf{FC_{liqfuel,BL,i}}$ – consumption of liquid fuel in furnace i in the	which is based on the heat balance equations. This critical CAR is closed based on the adequate corrections made to the PDD.

[1] Acc. to the data taken by an operator-engineer.
[2] Acc. to the data recieved by an operator/engineer.

		baseline, tons/year; $\mathbf{Q}_{,i}$ – quantity of energy for the process in furnace i according to baseline, TJ; $\varphi_{liqfuel,BL,i}$ – proportion of liquid fuel contribution in furnace i energy production; $\mathbf{NCV}_{liqfuel}$ - net calorific value of liquid fuel, TJ/ton; Quantity of energy for the process in furnace i according to baseline will be calculated by the formula: (D.1.1.4.6.) $\mathbf{Q_i} = \mathbf{Q_{net}}/\eta_{BL,i}$ Where: $\mathbf{Q_{net}}$ – quantity of net energy for the process in furnace i, TJ; $\eta_{BL,i}$ – efficiency factor of the furnace i in baseline scenario; So the previous method was changed and old formulae deleted.	
CAR 16 It is not indicated that NCSF is not the project participant listed in Annex 1 of PDD.	D.4.2	We indicate in Annex 1 of the PDD that NCSF is not the project participant. (see p. 46 of the PDD)	The CAR is closed based on the due addition made to the PDD.
CAR 17 The furnace thermal balance in the calculations is not fulfilled, namely: - the process heat does not equal the fuel consumption times the furnace efficiency; on the contrary, there is a significant discrepancy; - the ratio of fuel consumption in	E.1.3	(See pages 39,40,41,42,43,44 in the PDD) For to avoid any discrepancies in the thermal balance we changed calculation model of the Project (see xls. spread sheet) and added additional furnaces upgraded before the year 2005. And section E of the PDD changed. Also baseline, project emissions and emission reductions had changed. Below we describe these changes.	The balance was not fulfilled sine the incorrect method of baseline emissions was used (ref. to CAR 15). The calculations by the new method (ref. to the response to CAR 15) have

<table>
<tr>
<td>old and upgraded furnaces does not equal to the ratio of corresponding furnace efficiencies; on the contrary, there is a significant discrepancy.
This point of concern equally pertains to the baseline calculations.</td>
<td></td>
<td>In section E.1. we added formulae for calculation of net energy for the process in furnace i it can be calculated with the following formulae:

(E.1.9.) $Q_{net,i} = (FC_{gasfuel,PJ,i} * NCV_{gasfuel} + FC_{liqfuel,PJ,i} * NCV_{liqfuel}) * \eta_{PJ,i}$

Where:
$Q_{net,i}$ – quantity of net energy for the process in furnace i, TJ;
$FC_{gasfuel,PJ,i}$ – consumption of gaseous fuel by process (technological) furnaces, ton/year;
$NCV_{liqfuel}$ – average calorific net-value of 1 ton of liquid fuel, TJ/ton;
$FC_{liqfuel,PJ,i}$ – consumption of liquid fuel by process (technological) furnaces [3], ton/year;
$NCV_{gasfuel}$ – average calorific net-value of 1 ton of gaseous fuel, TJ/ton;
$\eta_{PJ,i}$ – efficiency coefficient of the furnace i according to the Project;

So the Table E.1. Project Emissions had been changed.

<table>
<tr><th>Year</th><th>Expected GHG emissions acc. to the Project, tons CO_2 eq.</th></tr>
<tr><td>2008</td><td>381,878</td></tr>
<tr><td>2009</td><td>327,631</td></tr>
</table>
</td>
<td>brought accurate results. This was checked by our own calculations by the spread sheet, which was made available to the verifiers.
The CAR is closed based on the adequate corrections made to the PDD as a response too CAR 15.</td>
</tr>
</table>

[3] Acc. to the data recieved by an operator/engineer.

2010	321,495
2011	317,467
2012	289,351
Total for 2008-2012	**1,637,822**

And Table E.3. Summarized emissions from leakages and from the Project had been changed.

Year	Expected GHG emissions Project, tons CO2 eq.	Expected "leakage" effect, tons CO2 eq.	**Expected GHG emissions acc. to tl Project, tons CO2 e**
2008	381,878	0	381,878
2009	327,631	0	327,631
2010	321,495	0	321,495
2011	317,467	0	317,467
2012	289,351	0	289,351
Total in 2008-2012	**1,637,822**	**0**	**1,637,822**

In section E.4. we added calculation of consumption of liquid fuel in furnace i in the baseline and calculation of quantity of energy for the process in furnace i according to baseline:
Consumption of liquid fuel in furnace i in the baseline will be calculated by the formula:

$$(E.4.4.)\ FC_{liqfuel,BL,i} = Q_{,i} * \varphi_{liqfuel,BL,i}/NCV_{liqfuel}$$

Where:
$FC_{liqfuel,BL,i}$ – consumption of liquid fuel in furnace i in the baseline,

		tons/year; **$Q_{,i}$ –** quantity of energy for the process in furnace i according to baseline, TJ; **$\varphi_{liqfuel,BL,i}$ –** proportion of liquid fuel contribution in furnace i energy production; **$NCV_{liqfuel}$ -** net calorific value of liquid fuel, TJ/ton; Quantity of energy for the process in furnace i according to baseline can be calculated with the following formulae: (E.4.5.) **$Q_i = Q_{net,i} / \eta_{BL,i}$** Where: **$Q_{net,i}$** – quantity of net energy for the process in furnace i, TJ; **$\eta_{BL,i}$ –** efficiency factor for the furnace i according to baseline; And also we added: Consumption of gas fuel in furnace i in the baseline will be calculated by the formula: (E.4.8.) **$FC_{gasfuel,BL,i} = Q_{,i} * \varphi_{gasfuel,BL,i} / NCV_{gasfuel}$** Where: **$FC_{gasfuel,BL,i}$ –** consumption of gaseous fuel in furnace i in the baseline, tons/year; **$Q_{,i}$ –** quantity of energy for the process in furnace i according to baseline, TJ; **$\varphi_{gasfuel,BL,i}$ –** proportion of gaseous fuel contribution in furnace i energy production; **$NCV_{gasfuel}$ -** net calorific value of gaseous fuel, TJ/ton; Quantity of energy for the process in furnace i according to baseline can be calculated with the following formulae:	

(E.4.9.) $Q_i = Q_{net,i} / \eta_{BL,i}$

Where:

$Q_{net,i}$ – quantity of net energy for the process in furnace i, TJ;

$\eta_{BL,i}$ – efficiency factor for the furnace i according to baseline;

Also Table E.4 Baseline emissions was changed:

Year	**Expected greenhouse gas emissions acc. to the Baseline scenario, tons CO2 eq.**
2008	494,154
2009	494,154
2010	494,154
2011	494,154
2012	494,154
Total in 2008-2012	**2,470,770**

And table E.6 the result of emission reductions from the Project activity

Year	Expected GHG emissions Project (tons CO2-e)	Expected "leakage" effect (tons CO2-e)	Expected GHG emissions Baseline (tons CO2-e)	Expected GHG emissions reduction (tons CO2-e
2008	381,878	0	494,154	112,276
2009	327,631	0	494,154	166,523
2010	321,495	0	494,154	172,659
2011	317,467	0	494,154	176,687
2012	289,351	0	494,154	204,803
Total in 2008-2012	**1,637,822**	**0**	**2,470,770**	**832,948**

CAR 18 Please list the documentation in the PDD.	F.1.1	(See p.45 in the PDD) Section F.2 was included in the PDD. We presented list of documents in it: Conclusion of expert commission of state ecological expertise for the project "Further equipping of AVT-4 unit aiming to increase material resources for the KGPN, LUKOIL-PNOS LLC (first stage)" from 24-th January 2003 doesn't have any objections and allows implementation of project activity. Technical documentation: "LUKOIL-Permnefteorgsintez" LLC machine 37-40 furnace P-3 description note 0148636-1281/2007.PZ developed by "ALITER-AKSI" LLC was approved by chief engineer of the project as satisfying all the regulations and standards for furnace operating. Also "LUKOIL-Permnefteorgsintez" has all necessary permissions for Air Emission approved by Rostekhnadzor: Permission #1 for emission of pollutants in the air from 29.08.07 №52-g (for a period 29.08.2007 – 01.07.2008) signed by deputy head of Perm regional survey of ecological, technological and nuclear control; Permission #201 for emission of pollutants in the air from 26.06.2008 №416 (for a period 01.07.2008 – 01.07.2009) signed by deputy head of Perm regional survey of ecological, technological and nuclear control.	The list of relevant documents is included in the PDD. The CAR is closed based on the adequate addition made to the PDD.

CAR 19 The PDD Section F.1 includes mutually exclusive statements: "Environment impact assessment of the Project was not carried out …" and "For the project of upgrade/replacement of technological tube furnaces the environmental impact assessment was carried out and can be presented by request". References to EIA are not provided.	F.1.2	(See p.45 in the PDD) Mutually exclusive sentences were deleted. As a matter of fact, environment impact assessment in a form of state ecological expertise must be done for every project before the year 2007. Since the year 2007 state ecological expertise was abolished and ecological assessment has become a part of technical project documentation. But this documentation must include section of environment protection. There are conclusions of state ecological expertise for the projects started before 2007 (for instance: Conclusion of expert commission of state ecological expertise for the project "Further equipping of AVT-4 unit aiming to increase material resources for the KGPN, LUKOIL-PNOS LLC (first stage)" from 24-th January 2003). For the projects started since the year 2007 section of environmental protection is included in technical project documentation (as an example: "LUKOIL-Permnefteorgsintez" LLC machine 37-40 furnace P-3 description note 0148636-1281/2007.PZ)	The CAR is closed based on the adequate correction made to the PDD.
CAR 20 Section F2 is not included in PDD. Accordingly, the information is not provided if environmental impacts are considered significant by the project participants or the host Party.	F.1.4	(See p.45 in the PDD) We included section F.2. in the PDD. Conclusion of expert commission of state ecological expertise for the project "Further equipping of AVT-4 unit aiming to increase material resources for the KGPN, LUKOIL-PNOS LLC (first stage)" from 24-th January 2003 doesn't have any objections and allows implementation of project activity. Technical documentation: "LUKOIL-Permnefteorgsintez" LLC machine 37-40 furnace P-3 description note 0148636-1281/2007.PZ developed by "ALITER-AKSI" LLC was approved	The CAR is closed based on the elimination of the omission in the PDD Version 02.

		by chief engineer of the project as satisfying all the regulations and standards for furnace operating. Also "LUKOIL-Permnefteorgsintez" has all necessary permissions for Air Emission approved by Rostekhnadzor: Permission #1 for emission of pollutants in the air from 29.08.07 №52-g (for a period 29.08.2007 – 01.07.2008) signed by deputy head of Perm regional survey of ecological, technological and nuclear control; Permission #201 for emission of pollutants in the air from 26.06.2008 №416 (for a period 01.07.2008 – 01.07.2009) signed by deputy head of Perm regional survey of ecological, technological and nuclear control.	
CAR 21 PDD Section G.1 refers to public hearings in the frame of the presentation of the "Project of environmental safety program for the organizing of the "LUKOIL" group for the years 2004-2008" for the Privolzhsky Federal region. These hearings were held in December 2003 and could not address the project, which started in July 2005.	G.1.1	(See p.46 in the PDD) We changed section G.1.: For this Project public hearings were carried out jointly with discussing of the "Project of environmental safety program for the organizing of the "LUKOIL" group for the years 2009-2013 and forecast until 2017" which includes environmental safety measures on "LUKOIL-Permnefteorgsintez" LLC and realization of Kyoto Protocol provisions. The program was approved by Federal Survey for Environment managing (Rosprirodnadzor) in Perm Krai. The program was evaluated by Mr. Viseman, PhD. Chief of Environmental protection department from Perm State	In fact the JI projects are not required to go through a local stakeholder consultation process. Anyway this process took place during the public presentation of the LUKOIUL Environmental Programme for 2009-2013 in Perm in November 2008. The Programme for upgrading the PNOS furnaces was addressed there as well. Necessary

		Technological University. Also chairman of Perm Krai organization "Russian society of nature protection" visited these hearings and supported the program. According to the activity of "LUKOIL – Permnefteorgsintez" LLC and its upgrading of the furnaces there were no objections received. In the section G.1 there are also references on Letter of approval of "Environmental safety program for the organizing of the "LUKOIL" group for the years 2009-2013" dated 23.10.2008 #VP/07-2453 and Letter of evaluation results about the "Environmental safety program for the organizing of the "LUKOIL" group for the years 2009-2013" dated 6.11.2008 #172.	references to this presentation are made in the PDD. The verifier (LY) attended this presentation and made a speech. The verifier observed that different groups of stakeholders (authorities, NGO, university, observers, mass media) expressed publicly their opinion on the LUKOIL environmental activities in Perm region including those at PNOS. Neither items of concern nor requests with regard to PNOS project were made. The CAR is closed based on the appropriate additions made to the PDD.
CL 01 Please clarify if the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period.	A.4.2.4	(See p.6 in the PDD) For the clarification in section A.4.2.4. was added the sentence: The upgraded furnaces don't require any extensive trainings for operating staff and maintenance efforts in order to work as presumed during the project period.	The issue is made clear. The CAR is closed based on the adequate addition made to the PDD.

CL 02 Please clarify if "LUKOIL-Permnefteorgsyntez" LLC has a Rostekhnadzor Permission for Air Emission.	Table 3 1.1	(See p.45 in the PDD) About permissions from the Rostekhnadzor we mentioned in the section F.2.: Also "LUKOIL-Permnefteorgsintez" has all necessary permissions for Air Emission approved by Rostekhnadzor: Permission #1 for emission of pollutants in the air from 29.08.07 №52-g (for a period 29.08.2007 – 01.07.2008) signed by deputy head of Perm regional survey of ecological, technological and nuclear control; Permission #201 for emission of pollutants in the air from 26.06.2008 №416 (for a period 01.07.2008 – 01.07.2009) signed by deputy head of Perm regional survey of ecological, technological and nuclear control.	The CAR is closed based on the adequate addition made to the PDD.

Appendix B: Verifiers CV's

Mr. Flavio Gomes:
Lead Verifier
Bureau Veritas Certification Holding SAS – Global Manager for Climate Change

Flavio Gomes is a Chemical and Safety Engineer graduated from «UNICAMP – Universidade Estadual de Campinas», with a MSc title in Civil Engineer (Sanitation). He spent four years at RIPASA Pulp and Paper as Environmental Process Engineer. He is, since 2006 the Global Manager for Climate Change. Previously and since 1997, he was senior developer for Bureau Veritas Consulting in fields of Environment, Health, Safety, Social Accountability and Sustainability audit and management systems. He also acted as Clean Development Mechanism verifier, and Social/Environmental Report auditor, in the name of Bureau Veritas Certification. Flavio is pursuing his PhD on Energy Management at the Imperial College – London.

Leonid Yaskin, PhD (thermal engineering)
Verifier.
Bureau Veritas Certification Rus General Director- Lead Auditor, Lead Tutor, Verifier

He has over 30 years of experience in heat and power R&D, engineering and management, environmental science, and investment analysis of projects. He worked in Krrzhizhanovsky Power Engineering Institute, All-Russian Teploelectroproject Institute, JSC Energoperspectiva. He worked for 8 years on behalf of European Commission as a monitor of Technical Assistance Projects. He is a Lead auditor of Bureau Veritas Certification for Quality Management Systems (IRCA registered), Environmental Management System (IRCA registered), Occupational Health and Safety Management System (IRCA registered). He performed over 250 audits since 2002. Also he is a Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and a Lead Tutor of the IRCA registered OHSAS 18001 Lead Auditor Training Course. He is an Assuror of Social Reports. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in the determination of 10 JI projects.

Alexander Osadchiev, PhD (power engineering)
Verifier.
Bureau Veritas Certification Rus - Lead Auditor.

He has over 20 years of experience in heat and power engineering, environmental science, and project management. He worked in Moscow Power Engineering Institute (Technical University), All-Russian Project Institute of power engineering industry. He is a Lead auditor of Bureau Veritas Certification for Quality Management Systems, Environmental Management Systems, Occupational Health and Safety Management Systems. He performed over 50 audits since 2007. Also he is auditor for standard SA8000 social accountability. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and was/is involved in the determination of a few JI projects.

Ashok Mammen - PhD (Oils & Lubricants).
Bureau Veritas Certification - Internal Technical Reviewer
Over 20 years of experience in chemical and petrochemical field. Dr. Mammen is a lead auditor for environment, safety and quality management. He is also a lead verifier for GHG projects and has been involved in the validation and verification processes of more than 60 CDM/JI and other GHG projects.