DETERMINATION REPORT

Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter in Russian Federation

REPORT NO. 2008-1624

REVISION NO. 01

DET NORSKE VERITAS

DETERMINATION REPORT

DET NORSKE VERITAS
CERTIFICATION AS
Climate Change Services
Veritasveien 1,
1322 HØVIK, Norway
Tel: +47 67 57 99 00
Fax: +47 67 57 99 11
http://www.dnv.com
Org. No: NO 945 748 931 MVA

Date of first issue: 22 October 2008	Project No.: 49050014
Approved by:	Organisational unit: Climate Change Services
Client: OJSC RUSAL Krasnoyarsk	Client ref.: Eduard Nagrelli

Project Name: Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter
Country: Russian Federation
GHG reducing Measure/Technology: PFC emissions reductions measures
ER estimate: 1 165 116 tCO_2e for the 5 year crediting period
Size
☒ Large Scale
☐ Small Scale
Determination Phases:
☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues
Determination Status
☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Final determination with positive determination opinion
☐ Rejected

In summary, it is DNV's opinion that the "Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter" project in the Russian Federation, as described in the PDD Version 03 dated 27 October 2008, meets all relevant UNFCCC requirements for the Joint Implementation project. However, the Letter of Approval by the Russian Federation has not yet been received.

Report No.:	Date of this revision:	Rev. No.
2008-1624	3 March 2009	01

Report title:
Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter in Russian

Work carried out by:
Anu Chaudhary, Yulia A. Zhukova, Ole Andreas Flagstad

Work verified by:
Michael Lehmann

Key words:

☒ No distribution without permission from the Client or responsible organisational unit

☐ Limited distribution

☐ Unrestricted distribution

DETERMINATION REPORT

Abbreviations

AEF	Anode effect frequency
CAR	Corrective Action Request
CEF	Carbon Emission Factor
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
EIA	Environmental Impact Assessment
ERU(s)	Emission Reduction Unit(s)
GHG	Greenhouse gas(es)
IAI	International Aluminium Institute
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
KrAZ	RUSAL Krasnoyarsk Aluminium Smaleter
MP	Monitoring Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
PDD	Project Design Document
PFC	Perfluorocarbon
UNFCCC	United Nations Framework Convention for Climate Change
UC RUSAL	United Company RUSAL
GWP	Global Warming Potential
VSS	Vertical Stud Søderberg
PFPB	Point Feed Prebake

DETERMINATION REPORT

Table of Content ***Page***

DETERMINATION REPORT

1 EXECUTIVE SUMMARY – EXPERT DETERMINATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a determination of the "Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter" project in the Russian Federation. The determination was performed on the basis of UNFCCC criteria for Joint Implementation (JI), as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfilment of stated criteria.

The host Party is the Russian Federation. The other participating Annex I Party is not yet confirmed. The Russian Federation fulfils the criteria to participate in the JI, but has not yet approved the project and authorized the project participants.

By improving the aluminium production process, the project results in reductions of perfluorocarbon (PFC) emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The project applies a methodology developed for the project. The methodology is based on, the methods accepted by the IPCC and the International Aluminium Institute for estimating PFC emissions in the aluminium production process.

The total emission reductions from the project are estimated to be 1 165 116 tCO_2e for 2008 - 2012. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV's opinion that the "Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter" project in Russian Federation, as described in the PDD of 27 October 2008, meets all relevant host country and UNFCCC requirements for the JI.

2 INTRODUCTION

OJSC RUSAL Krasnoyarsk has commissioned Det Norske Veritas Certification AS (DNV) to perform a determination of the "Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter" project in the Russian Federation (hereafter called "the project"). This report summarises the findings of the determination of the project, performed 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 Guidelines for the implementation of Article 6 of the Kyoto Protocol and the subsequent decisions by the JI Supervisory Committee.

2.1 Objective

The purpose of a determination is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. 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).

2.2 Scope

The determination scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. DNV, based on the recommendations in the Validation and Verification Manual, employed a risk-based approach in the determination, focusing on the identification of significant risks for project implementation and the generation of ERUs.

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

3 METHODOLOGY

The determination consisted of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final determination report and opinion.

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation assessed during the determination:

/1/ UC RUSAL, "Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter", Version 1 of 31 October 2007 and version 03 of 27 October 2008

/2/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Determination and Verification Manual*.

/3/ Rusal, Minutes of meeting including discussion on JI-project, 3 November 2005

/4/ Rusal, PIN for "Reduction of PFC emissions at Krasnoyarsk Aluminium Smelter," project, December 2005

/5/ YOMO Services Ltd -Rusal Krasnoyarsk JSC, Consulting agreement, 1 January 2006

/6/ International Aluminium Institute, The Aluminium Sector Greenhouse Gas Protocol (addendum to the WRI/WBSCD Greenhouse Gas Protocol), October 2006

/7/ Jerry Marks, Emissions measurement for RUSAL Krasnoyarsk Aluminium Smelter, September 2007

/8/ YOMO Services, Status report on Rusal Krasnoyarsk efficiency improvement project for 2006-2007, December 2007

/9/ Letter to DNV by International Aluminium Institute, IAI Expert Opinion on Issues Raised on the Joint Implementation (JI) Project Proposal: "Reduction of PFC Emissions from RUSAL Krasnoyarsk Aluminium Smelter", 20 January 2009

/10/ CDM Executive Board, Tool for the demonstration and assessment of additionality, version 3

The main changes between the version of the PDD published for the 30 days stakeholder consultation period and the final version of the PDD is related to the documentation of JI-consideration, baseline determination and the analysis of alternatives and clarifications on the financial analysis.

3.2 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/2/	2007-12-19	Mr. Alexey Spirin, Project Director "Kyoto protocol"	UC RUSAL	▪ Additionality of the project ▪ Planes of production

				▪ Project boundary
/3/	2007-12-19	Mr. Eduard Nagrelli, Ecology and quality Director	RUSAL Krasnoyarsk OJSC	▪ Additionality of the project ▪ Planes of production ▪ Project boundary ▪ Current performance of the project ▪ EIA
	2007-12-19	Mr. Vladimir Nesterov, Chief metrology engineer	RUSAL Krasnoyarsk OJSC	▪ Monitoring plan ▪ Measurement and equipment
	2007-12-19	Mr. Maxim Korobkov, Department of electrolysis manager	RUSAL Krasnoyarsk OJSC	▪ Baseline and project scenario confirmation ▪ Results of the project implementation ▪ Operation manual ▪ Training
	2007-12-19	Mrs. Svetlana Shevnina, project manager	RUSAL Krasnoyarsk OJSC	▪ Management of project
	2007-12-19	Mr. Sergey Lukaev, Head of Department of integrated management system	RUSAL Krasnoyarsk OJSC	▪ Management of project ▪ Monitoring plan ▪ Internal audits
	2007-12-19	Mr. Genady Botrich , Ecology and Monitoring Director	RUSAL Krasnoyarsk OJSC	▪ EIA ▪ Registration and Permits
	2007-12-20	Mr. Jury Seirovatkin , Process Control	RUSAL Krasnoyarsk OJSC	▪ Monitoring plan ▪ Measurement and equipment

	System Foreman		
2007-12-20	Mr.Vitaly Kozmin, Foreman	RUSAL Krasnoyarsk OJSC	▪ Baseline and project scenario confirmation ▪ Project implementation ▪ Measurements
2007-12-20	Mrs. Elena Kosmina, Head of Planning Department	RUSAL Krasnoyarsk OJSC	▪ Investment analysis
2007-12-20	Mr. Konstantin Myachin, Carbon Project Manager	CTF Consulting Ltd	▪ Additionality of the project

3.3 Resolution of Outstanding Issues

The objective of this phase of the determination was to resolve any outstanding issues which needed be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a determination protocol was customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

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

The determination protocol consists of three tables. The different columns in these tables are described in the figure below. The completed determination protocol for the "Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium Smelter" project is enclosed in Appendix A to this report.

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

i) mistakes have been made with a direct influence on project results;
ii) JI and/or methodology specific requirements have not been met; or
iii) there is a risk that the project would not be accepted as a JI project or that emission reductions will not be issued.

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

DETERMINATION REPORT

Determination Protocol Table 1: Mandatory Requirements for JI Project Activities		
Requirement	***Reference***	***Conclusion***
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)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*

Determination Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 01 - in effect as of: 15 June 2006. Each section is then further sub-divided.	*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 c**orrective action request (CAR)** due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the determination team has identified a need for further clarification.*

Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Determination conclusion***
If the conclusions from the draft Determination are either a CAR or a CL, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants during the communications with the determination team should be summarised in this section.*	*This section should summarise the determination team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Determination protocol tables

3.4 Internal Quality Control

The determination report underwent a technical review performed by a technical reviewer qualified in accordance with DNV's qualification scheme for JI determination and verification.

3.5 Determination Team

Role/Qualification	*Last Name*	*First Name*	*Country*
JI validator	Chaudhary	Anu	India
GHG auditor	Zhukova	Yulia	Russian Federation
JI validator	Flagstad	Ole Andreas	Norway
Sector Expert	Van Evercooren	Jan	Belgium
Technical reviewer	Lehmann	Michael	Norway

4 DETERMINATION FINDINGS

The findings of the determination are stated in the following sections. The determination criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the determination protocol in Appendix A.
The final determination findings relate to the project design as documented and described in the project design documentation dated 27 October 2008.

4.1 Participation requirements

The project participants representing the host Party the Russian Federation is OJSC RUSAL Krasnoyarsk. Carbon Trade & Finance SICAR S.A. in the second project participant. However, the participating Annex I Party authorizing this project participant is not yet confirmed. The letter of approval by the Russian Federation including an authorization of OJSC RUSAL Krasnoyarsk to participate in the project has not yet been received. A letter of approval, including an authorization of Carbon Trade & Finance SICAR S.A. has also to be provided by the Party eventually selected to authorise this project participant.

4.2 Project design

OJSC RUSAL Krasnoyarsk which is a legal name of Krasnoyarsk Aluminium Smelter (KrAZ) produces about 950 000 tonnes of aluminium annually and is the second largest smelter in the world. KrAZ production capacities include 24 potrooms grouped into 12 potlines with two potrooms in each. Twenty one of these potrooms use vertical stud Søderberg process (VSS), the remaining use Point Feed Prebake electrolytic process (PFPB). The smelter does not have its own power generation capacities and receives electricity from the local power grids. The proposed JI-project is part of a bigger operational efficiency improvement project at the site.

The proposed project aims at reducing PFC emissions through the reduction of anode effect frequency (AEF). This will be achieved by improving

- organization control and repair of mechanical defects in automated alumina feed systems;
- process parameters for automated alumina feed systems;
- selection of automated alumina feed system's work algorithm..

The proposed measures are not of primary importance for metal production but help to optimise the pot and automatic process control system's operating parameters, resulting in an anode effect frequency (AEF) reduction.

The starting date of the project is 1 January 2006 and the project duration is 11 years. The proposed crediting period is 5 years of 2008-2012.

4.3 Baseline determination

4.3.1 Baseline scenario selection

The PDD evaluates three alternatives to the project scenario:

1. Replacing the VSS pots with pots using prebaked anods. This is an earlier scenario that was discarded earlier due to the high investment needs. It is still found to be economically unattractive.

2. Implementing the bigger smelter modernisation project without a specific subproject to reduce the anode effect frequency (AEF).
3. Proposed activity without JI-revenues.

Scenario 2 is found to be the most realistic baseline scenario as it would be feasible to achieve other improvements without including the economically unattractive element of AEF without JI-revenue.

4.3.2 Baseline methodology

A specific baseline methodology was developed for the project based on the 3rd version of the methodology "The Aluminium sector Greenhouse Gas Protocol" /6/. Jerry Marks, a consultant to the International Aluminium Institute (IAI) assisting the aluminium industry to quantify its PFC emissions, performed measurements on the site /7/ and gave recommendations on the choice of values for critical parameters for estimating the PFC emissions from the RUSAL Krasnoyarsk Aluminium Smelter. DNV has also received a separate letter from The International Aluminium Institute /9/ that confirms the chosen method as the most suitable one.

4.3.3 System boundaries

The system boundary is clearly defined, The project is limited to CF_4 and C_2F_6 emissions produced as a result of anode effects in VSS pots (1878 pots) and pots with the prebaked anodes technology in potrooms 7, 8 and 26 (278 pots). The project boundary also covers VSS pots newly installed within the frameworks of the smelter modernization project (total 76 pots are added to existing 1878 ones; in potrooms 9 to 23, installation of 4 additional pots was made in each room. In potroom 1 and 4, the 8 additional pots in each are installed). Including new pots into the project boundary is explained by the fact that their installation is implied by the baseline scenario.

The system boundaries presented in tabular format:

	GHGs involved	*Description*
Baseline emissions	*CF_4* *C_2F_6*	*Tetrafluoromethane emissions* *Hexafluoroethane emissions*
Project emissions	*CF_4* *C_2F_6*	*Tetrafluoromethane emissions* *Hexafluoroethane emissions*
Leakage		*No leakage in the project*

4.4 Additionality

DNV was able to confirm that JI was a decisive factor in the decision to proceed with the project activity by reviewing Rusal minutes of meeting /3/ and a PIN /4/ that explicitly states that JI was considered in November 2005, prior to the start of the project activity.

The PDD describes how the additionality of the project has been assessed by checking against version 3 of the Tool for the demonstration and assessment of additionality developed for the CDM /10/.

STEP 1 – Alternatives. Please refer to the selection of realistic and credible alternatives in section 4.3.

STEP 2- Investment analysis. The PP claims that the costs related to the proposed JI-activity is 105 919 rubels. Evidence has been presented for the total costs of the Operational Efficiency Improvement project in the form of a lump sum contract with the hired consultant. Although the costs for the measure to reduce AEF were not specified in the lump sum contract, the evidence provided confirms that there were substantial investments linked to AEF reduction measures. There are some potential energy and material saving costs associated with the AEF reduction measures, and DNV has assessed these savings. While they are very difficult to quantify, DNV's investigations found that these savings can be considered negligible. Hence, DNV has been able to confirm the investment analysis that demonstrates that the project is not financially attractive in the absence of JI benefits. Even DNV was not able to verify the exact reported investment cost, the conclusion of the investment analysis are robust with regard to the investment costs.

STEP 3 - Barrier analysis. The project developer claims barriers due to the difficulty to assess economic benefits of the measures and barriers due to prevailing practice. The first barrier is related to the investment analysis that is discussed above. The barrier due to prevailing practice is related to the common practice and is thus discussed below.

STEP 4 - Common practice analysis. DNV was able to confirm that the proposed activity not to be common practice as the measures in the project go beyond the trends in the industry. This also supports the described barrier that says that RUSAL would continue today's practice if no incentives were available.

Given the above, it is DNV's opinion that the project is not a likely baseline scenario and emission reduction resulting from the project thus can be considered as additional to what would have happened in absence of the JI.

4.5 Monitoring

The monitoring plan in the PDD provides for the collection and archiving of all relevant data for determining the project's emission reductions and it is found appropriate. The parameters to be monitored are as follows:

- overall aluminium production
- anode effect frequency
- anode effect duration
- slope coefficient for CF_4
- weight fraction C_2F_6/CF_4

No leakage effects are expected.

The sources of data to be monitored to determine the project and baseline emissions are clearly described. Provisions for training of staff for monitoring and maintenance of monitoring equipment are deemed reasonable.

The monitoring plan provides for the collection and archiving of all relevant data needed to estimate or measure emissions occurring within the project boundary and to determine the baseline emissions.

4.6 Estimate of GHG emissions

Baseline emissions and project emissions are forecast applying correct calculations and adequate assumptions.

The slope factor chosen is different for VSS and PFPB pots. Also the VSS pots with point feeders (VSS-PF) have different values than VSS without point feeders.

AEF and anode effect duration are established from a linear trend from the available data. This approach represents best practise considering the available data, and the adequateness of the approach has been confirmed by the International Aluminium Institute /9/.

Uncertainties are according to the used tier 2 and tier 3 methods of IPCC 2006 guidelines and found acceptable.

4.7 Environmental impacts

There is no EIA requirement in Russia for this kind of project. The project will reduce both input of resources and output of emissions and will therefore not lead to negative environmental impact.

4.8 Comments by local stakeholders

There is no requirement in Russia to consult local stakeholder project for this type of project. No stakeholder consultation has been held and this is found acceptable.

4.9 Comments by Parties, stakeholders and observers

The PDD of 31 October 2007 was made publicly available on the JI website, and Parties, stakeholders and observers were through the JI website invited to provide comments during a 30 days period from 16 January 2008 to 14 February 2008.

No comments were received.

APPENDIX A

JI DETERMINATION PROTOCOL

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

Requirement	Reference	Conclusion
The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	Pending
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
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
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
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 host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	OK
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 host Party shall have in place a national registry in accordance with Article 7, paragraph 4	Marrakech Accords, JI Modalities, §21(d)/24	OK
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
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
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	Marrakech Accords, JI Modalities, §33(d)	OK

Requirement	Reference	Conclusion
Party shall be carried out		
The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Marrakech Accords, JI Modalities, Appendix B	OK
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
The baseline methodology shall exclude to earn emission reductions for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B	OK
The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)	OK

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
Are the project's spatial boundaries (geographical) clearly defined?	/1/		Yes, the project's spatial boundaries are clearly defined. The project is located in the city of Krasnoyarsk, Russia. The project's geographical coordinates are 56°05'32" N and 93°00'43" E.		OK
Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/		The project is limited to CF_4 and C_2F_6 emissions produced as a result of anode effects in VSS pots (totally 1954 pots) with the prebaked anodes technology in potrooms 7, 8 and 26 (278 pots). Pots for aluminium refining (74 pots for production of high purity aluminium (HPA)) are not included into the project boundary, as another pot technology is used (the anode and cathode are reversed), and greenhouse gases are not emitted here, because the anode and the cathode are not consumed. The project boundary does not include activity related to installation of the alumina point feeder system. Reduction in perfluorocarbon emissions is only achieved due to reduction in AEF resulting from operational improvements.		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Also the project does not claim the reduction in indirect emissions due to electric energy saving resulting from reduction in the frequency of AE because of impossibility of measuring the electricity savings. The project also excludes CO_2 emissions produced as a result of anode consumption, as the project activity is not aimed at reduction of anode paste/anode consumption. All the mentioned above has been verified during the site visit.		
A.2. Participation Requirements *Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*					
Which Parties and project participants are participating in the project?	/1/	DR I	The project participants are RUSAL Krasnoyarsk OJSC (RUSAL Krasnoyarsk Aluminium Smelter belonging to UC RUSAL) and Carbon Trade & Finance SICAR S.A.		OK
Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/		The letters of approval from the host Party Russia is to be submitted to DNV.	CAR1	
A.3. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that*					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
environmentally safe and sound technology and know-how is used.					
Does the project design engineering reflect current good practices?	/1/	DR	Yes, the project design engineering reflects internal good practice and is not a common practice in Russia.		OK
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
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/	DR I	Yes, the project provides enhancements of operation of the Automated Alumina Point Feeder System, which was implemented as a part of the Joint Smelter Modernization project earlier and designed to increase production, eliminate Anode Plant and Casting House bottlenecks and reduce smelter's environmental impact.		OK
Does the project make provisions for meeting training and maintenance needs?	/1/		It was indicated during the site visit that internal training would be provided to the staff. It needs to be confirmed whether this training has already been carried out and are there any internal documentary procedures that take care of Training and maintenance needs?	CL 1	OK
B.2. Baseline Scenario Determination					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.					
Is the discussion and selection of the baseline methodology transparent?	/1/	DR	The project activity does not follow any specific CDM approved methodology though partly guidelines and references have been taken from the CDM methodology ACM0030 "PFC emission reductions from anode effect mitigation at primary aluminium smelting facilities". However, this methodology is not completely applicable to the project activity. The project primarily follows the 3rd version of the methodology "The Aluminium sector Greenhouse Gas Protocol". This documents need to be provided to DNV. The PDD refers to Annex B, however the same is not provided in the PDD. Please provide all the relevant and underlying documents used to establish the baseline.	CL 2	OK
Does the baseline methodology specify data sources and assumptions?	/1/		As indicated in CL2 above, some documents and Annexes still need to be provided.		OK
Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.)	/1/		Refer CL 2		OK
Does the baseline methodology specify types of variables used	/1/		Refer CL 2		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
(e.g. fuels used, fuel consumption rates, etc)?					
Does the baseline methodology specify the spatial level of data (local, regional, national)?	/1/		Yes		OK
What is the baseline scenario?	/1/		The baseline scenario chosen is the implementation of smelter modernisation project with installation of alumina point feeder systems and implementation of the efficiency upgrading project of OJSC RUSAL Krasnoyarsk.		OK
What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/		Prior consideration of JI benefits: it is indicated that the activities included in the scope of the project started in January 2006. Hence, it needs to be demonstrated with appropriate evidences that JI benefits were seriously considered before the start of the project. Also the evidence for the start date of the project needs to be provided. The project's additionality has been demonstrated through the use of latest Additionality tool (Version 03) – Step 1 – 3 possible alternatives to the proposed project activity have been identified: a) Transfer of the reduction technology from self-baking anodes to prebaked	CL 3	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			anodes b) Implementation of the smelter modernization project and the efficiency upgrading project without actions aimed at reduction in the frequency of anode effects. c) Implementation of the smelter modernization project and the efficiency upgrading project with actions aimed at reduction in the frequency of anode effects without its further development as a JI project. Step 2 – Investment Analysis – the project is not expected to generate any measurable monetary benefits. The JI project expenditures for the period 2006-07 are described to be approx USD 4 200 000. It needs to be clarified. -why energy and material cost savings can not be quantified -why not all financial analysis is given in rubels. -A detailed breakdown of the project costs, especially as 90% of project costs are described as consulting costs (principal consultant: YOMO). -how 18% has been determined to be the correct part of the total costs belonging to the JI-project.	CL 10	

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			Step 3: Barrier Analysis – Three barriers to the project activity have been identified: a) Barriers in the form of Business Strategy – the company does not focus on AEF reduction measures because of the uncertainty of the economic benefits resulting from AEF reductions. Hence, in the absence of JI revenues, there is no incentive or requirement for the project proponent to go ahead with the proposed activity. Barriers in the form of existing practice – It is indicated that there are no such similar project activities taken up in Russia. The project is the first of its kind in Russia. b) Financial Barriers: since the project is not expected to generate any monetary benefit on its own, the investment cost of USD 4.2 million will not be recovered in the absence of JI revenues. This barrier is however, not considered different from the Investment analysis described above and is hence not acceptable as an additional barrier. Subsection 3(b) in the PDD is not answered	CL 4	

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			correctly. The section needs to include explanation on how the other alternatives do not face the same barriers as the proposed project.	CL 5	
Has the baseline scenario been determined according to the methodology?	/1/		Subsection 3(b) in the PDD is not answered correctly. The section needs to include explanation on how the other alternatives do not face the same barriers as the proposed project and then arrive at the possible baseline scenario.	CL 5	OK
Has the baseline scenario been determined using conservative assumptions where possible?	/1/		Russian aluminium plants do not use any automatic systems (technical means) for anode effect quenching. The common practice that also takes place at the Krasnoyarsk aluminium smelter is a manual quenching of anode effect with use of the wood pole. The proposed project activity is focused on prevention of the anode effects appearance rather than their quick quenching. It has been confirmed during the site visit that RUSAL Krasnoyarsk systematically fulfils the annual targets for AEF reduction based on the implemented project measures. The target of 0.54 anode effect frequency per cell a day was set for 2007 and current results demonstrates the plant will comply with this target.		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/		It has been confirmed during site-visit and interview with a head of environmental department of RUSAL Krasnoyarsk plant that in accordance with Russian environmental legislation PFC emission are not included in Rusal Krasnoyarsk plant limits for pollutant emissions approved by Rostechnadzor federal authority and it has been confirmed that no changes with respect to the PFC emission regulation are expected in the foreseeable future.		OK
Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/		Yes.		OK
Have the major risks to the baseline been identified?	/1/		No risks to the baseline have been identified. However, the following points need to be clarified – Since the installation of the Point feeders has been done only in the past one year, the data used for establishing the baseline from the past years will not correctly reflect the effect of point feeders on the frequency of AEF. This does not seem to be conservative.	CL 6	OK
B.3. Additionality Determination The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.					
What is the methodology selected to demonstrate additionality?	/1/	DR	The project's additionality has been demonstrated through the use of the		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			additionality tool (Version 03).		
Is the project additionality assessed according to the methodology?	/1/	DR	Yes, the additionality tool has been correctly applied to demonstrate additionality.		OK
Are all assumptions stated in a transparent and conservative manner?	/1/		Refer CL 3, 4, 5 & 6.		OK
Is sufficient evidence provided to support the relevance of the arguments made?	/1/		Refer CL 3, 4, 5 & 6		OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/		The project's start date is 01 January 2006. Documentary evidence of this start date needs to be provided. The installation of project has been completed 12 November 2007 in accordance with the schedule for implementation.	CL7	OK
Is the start of the crediting period clearly defined and reasonable?	/1/		The project's crediting period starts in January 2008 and the duration is 5 years.		OK
B.4. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
Is the monitoring plan documented according to the chosen methodology and in a complete and transparent manner?	/1/		The project monitoring procedures are based on KrAZ's existing practice of measurement and recording of technical and economical	CL11	OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			indicators.		
Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of ERUs, for this project activity, whichever occurs later?	/1/		It needs to be confirmed that all data shall be kept for at least 2 years after the end of the crediting period.	CL 8	OK
B.5. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/		Yes, all relevant data are collected and archived.		OK
Are the choices of project GHG indicators reasonable and conservative?	/1/		Yes		OK
Is the measurement *method* clearly stated for each GHG value to be monitored and deemed appropriate?	/1/		The Krasnoyarsk aluminum smelter has comprehensive monitoring system for electrolytic cells performance monitoring. Each cell is equipped with voltage and electricity intensity sensors that transmit data to the controllers of initial automated control systems (SAAT-1, SAAT-2, Sematic, etc). The data from initial level is simultaneously transferred to the all-factory automated industrial control system SMIT where the monitoring data for all electrolytic cells throughout the smelter is stored. The SMIT		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			work has been witnessed during the site visit and traceability of data checked.		
Is the measurement *equipment* described and deemed appropriate?	/1/		The performance of the all-factory automated industrial control system SMIT and initial automated systems has been verified. It has been confirmed that data are monitored and collected properly.		OK
Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/		Yes. During the site visit a Chief Metrology Engineer has been interviewed. They apply the internal instruction I10.47-2007 "Internal audit of the quality and environmental management system" and "Work Standard of process control system functional check" 211.016 (13) 2007, Reduction 7.		OK
Is the measurement *interval* identified and deemed appropriate?	/1/		Yes.		OK
Is the *registration, monitoring, measurement* and *reporting* procedure defined?	/1/		Yes, the procedures for measurements and monitoring equipment maintenance have been verified.		OK
Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed?	/1/		The maintenance requirements are general for the voltage and electricity intensity sensors as well as electronic controllers and automated control system computers. The maintenance work is performed on systematic basis (according to the plant's monitoring regulation) by the special contractor company "IT-service", owned by RUSAL. The contractor has a license of handling the calibration, repair and		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			maintenance of the monitoring equipment.		
Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/		This needs to be confirmed.	CL 8	OK
B.6. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/		Yes		OK
Are the choices of baseline GHG indicators reasonable and conservative?	/1/		Yes		OK
Is the measurement *method* clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/		The performance of the all-factory automated industrial control system SMIT and initial automated systems has been verified. It has been confirmed that data are monitored and collected properly.		OK
Is the measurement *equipment* described and deemed appropriate?	/1/		As above		OK
Is the measurement *accuracy* addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR/I	Yes. During the site visit a Chief Metrology Engineer has been interviewed. They apply the internal instruction I10.47-2007 “Internal audit of the quality and environmental management system” and “Work Standard of		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			process control system functional check" 211.016 (13)2007, Reduction 7.		
Is the measurement *interval* for baseline data identified and deemed appropriate?	/1/	DR/ I	Yes		OK
Is the *registration, monitoring, measurement* and *reporting* procedure defined?	/1/	DR/I	Yes, The procedures for measurements and monitoring equipment maintenance have been verified.		OK
Are procedures identified for *maintenance* of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR/I	Yes		OK
Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR/I	This needs to be confirmed.	CL 8	OK
B.7. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	No leakage effects have been identified.		OK
B.8. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
Is the authority and responsibility of overall project management clearly described?	/1/	DR/I	Yes, the responsibilities are defined as a part of the integrated quality and environmental		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
			management system of RUSAL Krasnoyarsk plant (ISO9001, ISO 14001 DNV certificates). No additional provisions for monitoring during the project activity to the existing on-site are needed. A final data processing and JI annual monitoring report preparation will be done by mother company US RUSAL as a part of the internal "Kyoto protocol" project function.		
Are procedures identified for training of monitoring personnel?	/1/	DR	It was indicated during the site visit that internal training would be provided to the staff. It needs to be confirmed whether this training has already been carried out and are there any internal documentary procedures that take care of training and maintenance needs?	CL 1	OK
Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	This needs to be confirmed.	CL 8	
Are procedures identified for review of reported results/data?	/1/	DR	Yes		OK
Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Yes		OK
B.9. Calculation of GHG Emission Reductions – Project emissions *It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/	DR	Yes, the emission reduction calculations have been provided.		OK
Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Yes, the project emission calculations have been checked by DNV. The monitoring parameters as well as the estimation methods used by UC RUSAL are expected to make conservative forecast/ estimate of project perfluorocarbon emissions.	CL12	OK
Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Yes		OK
B.10. Calculation of GHG Emission Reductions – Baseline emissions *It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
Are the calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/		Yes		OK
Have conservative assumptions been used when calculating the baseline emissions?	/1/		Yes, the baseline emission calculations have been checked. The underlying data and baseline emission estimation methods have been provided in detail and they are expected to result in conservative estimates of baseline emissions.	CL12	

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
Are uncertainties in the baseline emission estimates properly addressed?	/1/		Since the installation of the point feeders has been done only in the past one year, the data used for establishing the baseline from the past years might not correctly reflect the effect of point feeders on the frequency of AEF.	CL 6	OK
B.11. Calculation of GHG Emission Reductions – Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
Are the leakage calculations documented according to the chosen methodology and in a complete and transparent manner?	/1/		No sources of leakage have been identified.		OK
B.12. Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					
Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/		Yes, the emission reductions are real and measurable. The project is expected to result in total emission reductions of 1 162 169 tCO_2 from 2008-2012		OK
D. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/		No negative environmental impacts are expected to occur due to the project activity.		OK

CHECKLIST QUESTION	Ref.	MoV *	COMMENTS	Draft Concl.	Final Concl.
Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/		No, EIA is not mandatory.		OKOK
Will the project create any adverse environmental effects?	/1/		No		OK
Are transboundary environmental impacts considered in the analysis?	/1/		No		OK
Have identified environmental impacts been addressed in the project design?	/1/		NA		OK
Does the project comply with environmental legislation in the host country?	/1/		Yes		OK
E. Stakeholder Comments *If required by the host country, the AIE should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.*					
Have relevant stakeholders been consulted?	/1/		It is not clear whether stakeholders have been identified and informed about the project activity and what medium has been used for stakeholder consultation.	CL 9	OK
Have appropriate media been used to invite comments by local stakeholders?	/1/		As above		OK
If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/		As above		OK
Is a summary of the stakeholder comments received provided?	/1/		As above		OK
Has due account been taken of any stakeholder comments received?	/1/		As above		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CL 1 It was indicated during the site visit that internal training would be provided to the staff. It needs to be confirmed whether this training has already been carried out and whether there any internal procedures that take care of training and maintenance needs?		Various training has been provided in a framework of project. All training a covered by the training procedure developed in accordance to ISO 9001 and ISO 14001 requirements. It have been send additionally, There are numerous documents related to maintenance activities management. All maintenace activities are subject of ISO 9001 and ISO 14001 management system activity and they are successfully managed. Some records with evidences of training are attached.	OK
CL 2 The project primarily follows the 3rd version of the methodology "The Aluminium sector Greenhouse Gas Protocol,. This document needs to be provided to DNV. The PDD refers to Annex B, however the same is not provided in the PDD. Please provide all the relevant and underlying documents used to establish the baseline.		The links to documents requested is here: The Aluminium Sector Greenhouse Gas Protocol, 2006'. It's a part of "2006 IPCC Guidelines for National Greenhouse Gas Inventories", Volume 3 "Industrial Processes and Product Use": http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/3_Volume3/V3_4_Ch4_Metal_Industry.pdf And originally is on the International Aluminiu, Institute site: http://www.world-aluminium.org/cache/fl0000127.pdf The PDD reference to Annex B has been done to Annex B of Decision 9/CMP.1. But it is not correct reference. The correct reference should be done to Appendix B of Decision 9/CMP.1. The reference to Annex B in the PDD has been removed.	OK, The request for clarification is satisfactorily addressed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CL 3 It needs to be demonstrated with appropriate evidences that JI benefits were seriously considered before the start of the project. Also the evidence for the start date of the project needs to be provided.		The project idea has been initiated in RUSAL in the beginning of 2005, when the "Kyoto protocol" internal project started after Russian Federation ratified the international Kyoto Protocol. At the end of 2005 the project idea for reduction of AEF by step-by-step enhancement towards automated point feeders operation was finally approved and PIN developed. However, long awaiting of the JI procedures with requirements to PDD format and PDD approval procedure from Russian authorities has deferred the PDD development as no possibilities for its approval existed. Only after May of 2007 when basic Decree #332 stipulating requirements for JI projects was issued and taking into account started RUSAL company GHG inventory it has been decided to finalize PDD and submit it for determination and subsequent Russian and JISC approval. It has been confirmed by this documents -Protocol dated 03-11-2005 about possibility of AEF reduction JI project - Business plan of Kyoto project dated 25-02-05 -Order N476 dated 22-09-05 About implementation of Kyoto project	OK. The documents specified have been verified by DNV and the request for clarification is satisfactorily addressed. OK
CL 4 Since the project is not expected to generate any monetary benefit on its own, the investment cost will not be recovered in the absence of JI revenues. This barrier is however, not considered different from the		The financial barrier is the same barrier as described in Section B.2. Step 2 the financial barrier has been excluded from Section B.2. Step 3. The new version of PDD is provided.	OK. The revised PDD Version 03 of 27 October 2008 includes the required changes and the request for

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
Investment analysis described before and is hence not acceptable as an additional barrier.			clarification is satisfactorily addressed.
CL 5 Subsection 3(b) in the PDD is not answered correctly. The section needs to include explanation on how the other alternatives do not face the same barriers as the proposed project and then arrive at the possible baseline scenario.		The following text has been included in Subsection 3(b) of PDD «Alternative Scenario 1 does not face anyone of identified barriers as business strategy for new built plants concern of implementation of Prebake technology. It is also a business as usual scenario for most countries in the world. The only barrier for that Scenario is too high capital costs that are irresistible barrier right now. Alternative Scenario 3 does not realized without JI investments because of identified barriers. Alternative Scenario 2 does not face anyone of identified barriers as business strategy of company is for receiving of maximum production of aluminium and relative cost minimization on tone of Aluminium. Therefore the Scenario 2 actions aimed at reduction technology stabilization and better controllability in conditions of high current strength of cells. Actions for rising of stability of aluminium reduction process and increasing of aluminium production are realized at all UC RUSAL plants and this project of increasing of efficiency considered as pilot project for replication of its experience».	OK The revised PDD Version 03 of 27 October 2008 includes the required changes and the request for clarification is adequately addressed.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CL 6 Since the installation of the Point feeders has been done only in the past one year, the data used for establishing the baseline from the past years will not correctly reflect the effect of point feeders on the frequency of AEF. This does not seem to be conservative.		It was mentioned before it is a first of its kind project in Russia. Only a couple of plants in the world with VSS technology did some improvements with pointfeeders and frequency of anode effects (AEF). So it was impossible to compare of alumina pointfeeders installation effect on Krasnoyarsk Alumina smelter and some other smelters. There were only some experimental pointfeeders on Russian smelters. They did not demonstrate any improvements in anode effect frequency reduction. Project developer uses as much as possible the information about influence of pointfeeders on AEF. It was also considered the effect from installation of point feeders on prebake cells in potrooms 7,8 and 26 in 1998-2001. The calculations and analysis were done based on previous experience and the data for several potrooms with VSS technology where alumina pointfeeders were installed before project implementation. It was confirmed with technology experts that it was conservative approach to consider influence of pointfeeders itself on AEF. There were no other confidence approaches to assess of pointfeeders influence on AEF.	OK. Evidence of the technology experts' opinion was provided in order to confirm that the selected approach is representative and conservative.
CL 7 The project's start date is mentioned as 01 January 2006, even though in previous sections it is mentioned that the JI project was planned and initiated in 2005 itself?? Documentary evidence of this start date needs to be provided.		The project start date 01/01/2006 is indicated in the YOMO contract (first line). The project start date 01/01/2006 is just indicative date. It's assumed that setting target for particular year considered as starting of implementing of actions from the beginning of year. But it does not mean that in the reality the particular project has been started from 01.01.06. (for instance, New	OK. DNV has assessed the references and found ref 1-3 and 10 especially relevant to underpin the start date of 1

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
		Year Holidays in Russia goes till the 9 of January). Some actions has bee started from the first days of 2006 and than have been be included in the KrAZ Operational Efficiency Improvement project. Te Fig. B.1.1.F is demonstrated that some improvements in AEF has been achieved in January of 2006. The following documents, which demonstrated plans to start project in 2006 have been also provided to the auditor during the site visit: 1. Protocol dated 03-11-2005 about possibility of AEF reduction JI project 2. Business plan of Kyoto project dated 25-02-05 3. Order N476 dated 22-09-05 About implementation of Kyoto project 4. Office memo dated 20-09-2005 #03-081-65/05 5. Office memo dated 01-11-2005 #03-081-68/05 6. Fax-message dated 23-10-05 # EN-47/153 7. PIN dated December 2005 8. PIN Cash flows xls dated 18-12-05 9. PIN Emissions calculations xls dated December 2005 10. Goals map of KrAZ for 2006. Additionally it have been sent by e-mail.	January 2006. The signed consultant agreement with YOMO has been provided .
CL 8 a) It needs to be confirmed that all data shall be kept for at least 2 years after the end of the crediting period.		a) The technical reports are kept more than 10 years on plant than it is pass to Regional Archive for permanent storage. It is verbal procedure on the plant. But it is also stated in the "List of typical managing documents with indication of	OK

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
b) Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)? c) Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?		retention period, appeared in the results of organization's activity" issued by Rosarchive 27/10/2003 which is regulative documents for all organization in Russian Federation. b) There is documented procedure in the accordance to ISO 9001:2000 requirements regarding records handling ST AD 09.4.2.4. c) There is documented procedure TRP 02.01.01.09-2006 which is covered emergency situations which can cause unintended emissions. The mentioned documents have been sent to DNV in electronic format.	
CL 9 It is not clear whether stakeholders have been identified and informed about the project activity and what medium has been used for stakeholder consultation.		It is not required by legislation to inform any stakeholders about such kind of projects. Only technical projects with significant impact on environment have to go through consultations with stakeholders. It is not technical project related to installation of new facilities. This project has no significant adverse impact on environment. There are no any other specific requirements in JI procedures to have consultations with stakeholders.	OK
CL10 It needs to be clarified. 1. -why energy and material cost savings can not be quantified 2. -why not all financial analysis is given in rubels. 3. -A detailed breakdown of the project		1. Reduction in the frequency of AE theoretically can lead to saving electric energy, reduction in metal losses, but since many of additional measures are implemented at the same time it is impossible to relate such savings directly to reduction of the AE frequency. Augmentation of the aluminum production. In parallel to the project activities the new pots have been installed, the	OK 1.Expert opinion underpins that saving are negligible 2. Clarification on rubls versus USD is

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
costs, especially as 90% of project costs are described as consulting costs (principal consultant: YOMO). 4. -how 18% has been determined to be the correct part of the total costs belonging to the JI-project		current strength on all pots has been raised up, and other operational measures in the framework of Krasnoyarsk Aluminium Smelter Operational Efficiency Improvement Project were going on. So it is physically impossible to correspond any amount of additionally produced aluminum to particular measure (as to reduction in the frequency of AE) Electricity consumption reduction. A lot of factors also have an influence to this. For instance, increasing of electric current leads to growth of the electricity consumption. Changing of anode paste parameters also makes an impact to this. The analysis witch has been made in the middle of 2007 (during PDD writing) and it demonstrates that changes in the specific power consumption are very different in different potrooms and in different years. For instance, 14 potrooms in 2006 demonstrated an increase of specific power consumption per tonne of aluminium comparing to 2005. And most of the potrooms in 2006 (20) it has been shown an increase of specific power consumption pet tonne of aluminium comparing to 2004. The excel file with electrical data is attached. Therefore energy and material cost savings can not be quantified and considered as additional advantages of the project. 2.All expenses in Annex 4 has been given in Rubles. Only for convenience and more clear understanding for those who is not familiar with a rate of Russian rubbles the JI Project expenses have been converted to US dollars by using	OK. For 3 and 4 it is still not clearly explained on what basis 18% of costs have been considered. Nevertheless, although the costs for the measure to reduce AEF were not specified in the lump sum contract, the evidence provided confirms that there were substantial investments linked to AEF reduction measures. There are some potential energy and material saving costs associated with the AEF reduction measures, and DNV has assessed

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
		average rate 25 Rubles/USD. This conversion has been made in the raw "Expenses in USD thousand (at the rate of 25 Rubles per USD)". That is "Costs of actions to reduce anode effect frequency 18 % of the amount": 2006 (54 011,9 RUR = 2160,5 USD), 2007 (51 907,9 RUR = 2076,3 USD), Total 2006-2007 (105 919,8 RUR = 4236,8 USD) 3.The project costs as is in accordance to Annex 4 include: - Consulting costs (payment to YOMO consulting services) – They had not breaked down in the contracts with YOMO – just have been spited by quarters. - YOMO costs – costs for consultants travel expenses. - RUSAL Krasnoyarsk Aluminium Smelter Operational Efficiency Improvement Project Costs – costs related to functioning of the Project staff. No other breakdown project costs exist in accordance to the text of agreement with YOMO. Attached part of the agreement with YOMO contains tasks that have been set up for the consultant. Task (e) specifies basic principles regarding reduction of CO_2 emissions through respective reduction of PFC emissions. The consultant has been given a freedom to define exact measures for achieving of the established goal for carbon footprint of the aluminum production that indeed took place in the project development as described in the PDD (cycled approach to reach an aim). The specific costs for particular item are not defined in the contract, because consultant has been paid for actual man-days used.	these savings. While they are very difficult to quantify, DNV's investigations found that these savings can be considered negligible. Hence, DNV has been able to confirm the investment analysis that demonstrates that the project is financially attractive in the absence of JI benefits. Even DNV was not able to verify the exact reported investment cost, the conclusion of the investment analysis are robust with regard to the investment costs.

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
		4. The contract with YOMO has no any breakdown for costs for reaching the particular project goal or project activity. The reason for this is that different project activities have several effects at the same time. So it has not been possible to split costs in the contract by project goals. Besides YOMO costs there were costs for project implementation from plant side. Due to the same reason it was not possible to divide them by particular goals and extract Anode affect reduction activities costs. Any way in the periodical reports to the general director of UC RUSAL there was particular mentioned a proportion of amount of the work for achieving of particular goal. In the report for 2006-2007 it was particular indicated that 18% of work relates to Anode effect reduction activities. The percentage is obtained from analysis of project reports from YOMO, project reports of Project department, Potrooms reports, work orders and other records where particular activity is recorded of staff involved in the project. Of course there were no any precision time measurement techniques for that. Such workload assessment is mostly based on expert opinion of different stuff. Anyway it is only one possible way to assess amount of work related to Anode affect reduction and can be used also for determination of Project costs for Anode affect reduction activities. The report for general director of UC RUSAL is attached in the electronic form.	
CL11 The project monitoring procedures are based		As it has been described in PDD (Section B.1.) the project developer has decided not to follow AM0030 methodology.	OK. The choice of new methodology

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
on KrAZ's existing practice of measurement and recording of technical and economical indicators. Is this in accordance with ACM0030?		Reasons are following: 1. AM0030 methodology applies only to the PFPB technology. Krasnoyarsk aluminium smelter uses mostly VSS technology. 2. AM0030 methodology is based on the first version of the emission calculation methodology of the International Aluminium Institute, included in 1996 IPCC Guidelines for National Greenhouse Gas Inventories. At the moment of PDD development the 3-rd version of the methodology "The Aluminium Sector Greenhouse Gas Protocol" (Addendum to the WRI/WBCSD Greenhouse Gas Protocol) 2006 has been approved, which is included in 2006 IPCC Guidelines for National Greenhouse Gas Inventories. PDD developers have decided to use new IPCC methodology. 3. Installation of PointFeeders as baseline scenario results in changes in slope coefficients and baseline calculations methodology need to be updated. Therefore it has been decided to develop absolutely new methodology and use it in PDD. The JI project in Krasnoyarsk aluminium smelter is first of it's kind and expected to be unique itself in future. This is a reason why it has been also necessary to develop unique methodology and include it in the PDD. Any references and comparison with AM0030 methodology in that case are not appropriate.	is acceptable and monitoring procedures are OK. The request for clarification is adequately addressed

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 2	Summary of project owner response	Determination team conclusion
CL12 The monitoring parameters as well as the estimation methods used by UC RUSAL are expected to make conservative forecast/ estimate of project perfluoro carbon emissions. The uncertainty in the calculation of slope coefficient is high, DNV requests a justification of the uncertainty. What is provided so far is not sufficient, i.e. the link to supporting docs is not functioning properly.		Slope coefficient is according to 3rd version of the methodology "The Aluminium sector Greenhouse Gas Protocol". Link provided	OK
CL13 For clarity the PP is requested to present a table to illustrate where the project follows ACM0030 and where it does not follow ACM0030. For the parts where it does not follow ACM0030 it is requested to include descriptions/references to the principles/methods followed.		Please see response to CL 11. AM0030 is not used.	OK

- o0o -