JI DETERMINATION
PDD REPORT

REDUCTION OF PFC EMISSIONS AT IRKUTSK ALUMINIUM SMELTER

"RUSAL-IRKAZ" JOINT STOCK COMPANY

Report No: 8000407360- 2012-189

Date: 2012-04-12

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Date of first issue: 2012-04-12	Project No.: 8000407360
Final Approval by: Rainer Winter	Organisational unit: TÜV NORD JI/CDM Certification Program
Client: "RUSAL-IrkAZ" Joint Stock Company	Client ref.: Mr. Vladimir Bestenew
Summary:	☒ positive determination opinion ☐ negative determination opinion

TÜV NORD JI/CDM Certification Program (CP) has carried out determination PDD of the project: *"Reduction of PFC emissions at Irkutsk aluminium smelter*" with regard to the relevant requirements of the UNFCCC for JI project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol Article 6 criteria and the Guidelines for the implementation of Article 6 of the Kyoto Protocol as agreed in the Marrakech Accords.

In the course of the pre-determination 5 Corrective Action Requests (CARs) and 5 Clarification Requests (CLs) were raised and successfully closed except for CAR A1. As the approval of the Host country will only be issued upon a positive determination opinion, this CAR will automatically be closed upon issuance of host country approval.

The review of the project design documentation (PDD Ver. 04 dated 12.04.2012) and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria Russian Federation and all relevant UNFCCC requirements for JI. The project activity approval from DFP of Russian Federation will only be issued after final determination opinion. Therefore CAR A1 cannot be closed at this stage.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 6,022,528 tCO2e are most likely to be achieved in the period from 2008-01-01 to 2012-12-31.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the determination PDD.

Report No.: 8000407360	Subject Group: Climate Protection
Report title: "Reduction of PFC emissions at Irkutsk aluminium smelter"	
Work carried out by: Mr. Evgeni Sud Mr. Anton Yarushin	
Final technical review by:	Local technical review by

Date of this revision:	Rev. No.:	Number of pages:
2012-04-12	1	121

Indexing terms

Kyoto Protocol
JI Determination PDD

Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
ERU	Emission Reduction Unit
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CL	Clarification Request
DFP	Designated Focal Point
FAR	Forward Action Request
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
JI	Joint Implementation
JISC	Joint Implementation Supervisory Committee
NCV	Net Calorific Value of Fuel
PDD	Project Design Document
PP	Project participant
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change

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1 OBJECTIVE / SCOPE

TÜV NORD JI/CDM Certification Program (CP) has carried out a determination PDD of the project

"Reduction of PFC emissions at Irkutsk aluminium smelter"

with regard to the relevant requirements for JI project activities.

The determination is a requirement for all JI projects. The purpose is to have an independent third party assessment of the project design and in particular, the project's baseline, the monitoring plan (MP), the project's compliance with relevant UNFCCC JI Track 1 and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination 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 the Kyoto Protocol Article 6 criteria and the Guidelines for the implementation of Article 6 of the Kyoto Protocol as agreed in the Marrakech Accords.

2 GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

Item	Data		
Project title	Reduction of PFC emissions at Irkutsk aluminium smelter		
Project size	☒ Large Scale ☐ Small Scale		
JI Procedure	☒ Track 1 ☐ Track 2 ☐ PoA		
Project Scope	☐	1	Energy Industries (renewable- /non-renewable sources)
	☐	2	Energy distribution
	☐	3	Energy demand
	☐	4	Manufacturing industries
	☐	5	Chemical industry
	☐	6	Construction
	☐	7	Transport
	☐	8	Mining/Mineral production
	☒	9	Metal production
	☐	10	Fugitive emissions from fuels (solid, oil and gas)
	☐	11	Fugitive emissions from production and consumption of halocarbons and hexafluoride
	☐	12	Solvents use
	☐	13	Waste handling and disposal
	☐	14	Land –use, land-use change and forestry
	☐	15	Agriculture
Applied Methodology	*JI Specific*		
Technical Area(s)	O (Metal production)		

Item	Data
Crediting period	*5 years*
Start of crediting period	*2008-01-01*

2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

Characteristic	Party	Project Participant
Host party	Russian Federation	"RUSAL-IrkAZ" Joint Stock Company
Other involved party	-	-

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

No.	Project Location
Host Country	Russian Federation
Region:	Irkutsk region
Project location address	city of Shelehov, Industrial street, 4

2.4 Technical Project Description

The goal of the project activity is to reduce GHG emissions through reducing the frequency of anode effect. This should be achieved through the adoption of acidic bath technology(change of the cryolite ratio) in pot rooms. This measure involves a change of the bath composition in potrooms 1-8 that use the Soederberg technology. The objective is to achieve stable working conditions of the smelters and reduce anode effect frequency.

Additionally the PP has constructed a new potline with feed pre-bake technology and closed potrooms 3 and 4 where Soederberg VSS technology had been used. The new potlines started its operation in 2008. Till 2008 the increase of the aluminium demand was met through the increase of the voltage on the existing Soederberg facilities.

3 METHODOLOGY AND DETERMINATION PDD SEQUENCE

3.1 Determination PDD Steps

The determination of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- A desk review of the PDD/PDD/ submitted by the client and additional supporting documents
- Determination planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft determination reporting
- Resolution of corrective actions (if any)
- Final determination reporting
- Technical review
- Final approval of the determination.

The sequence of the determination is given in the table 3.1 below:

Table 3.1: Determination PDD sequence

Topic	Time
Assignment of determination	2012-04-02
Submission of PDD for global stakeholder commenting process	N/A[1]
On-site visit	2012-04-02
Draft reporting finalised	2012-04-07
Final reporting finalised	2012-04-12
Technical review on final reporting finalised	2012-04-10

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,

[1] Is not required under Track 1 procedures of Russian Federation

- the necessary competences to carry out the determination PDD can be provided,
- Impartiality issues are clear and in line with the JI accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a determination team, consistent of one team leader and 1 additional team members, were appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

	Name	Company	Function [1]	Qualification Status [2]	Scheme competence	Technical competence [4]	Host country Competence	Team Leading competence
☒ Mr. ☐ Ms.	Evgeni Sud	TN Cert Germany	TL	LA	☒	O	☒	☒
☒ Mr. ☐ Ms.	Anton Yarushin	Anton Yarushin	ETE	ETE	☐	-	☒	☐
☒ Mr. ☐ Ms.	Rainer Winter	TN Cert Germany	FA TR [3]	SA	☒	O	☐	☒

[1] TL: Team Leader; TM: Team Member, TR: Technical review; FA: Final approval

[2] GHG Auditor Status: A: Assessor; E: Expert; SA: Senior Assessor; T: Trainee; TE: Technical Expert

[3] No team member

[4] As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....)

3.4 Consideration of Public Stakeholder Comments

In accordance with decison 9/CMP.1 (§ 36) the draft PDD, as received from the project participants, has not been made publicly available on the dedicated UNFCCC JI website prior to the verification activity commenced. This is not required according to the track 1 procedures.

3.5 Determination PDD Protocol

In order to ensure consideration of all relevant assessment criteria, a determination protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of determination and the results of the pre-determination the identified criteria. The determination protocol reflects the generic JI requirements each JI project has to meet as well as project specific issues as applicable. The determination protocol serves the following purposes:

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

The determination protocol as described in Figure 1.

Determination Protocol Table A-1: Requirement checklist						
No.	***DVM[2] paragraph / Checklist Item*** *(incl. guidance for the determination team)*	***Initial Finding*** *(Means and results of assessment)*	***Ref.***	***Action requested to project participant*** *(CAR, CL, FAR)*	***Review of PP´s action***	***Conclusion***
Number of the checklist item	*The section gives a reference to the relevant paragraph of the DVM. The checklist items are linked to the various requirements the project should meet. The checklist is organised in various sections.*	*The section is used to elaborate and discuss the checklist item in detail. It includes the initial assessment of the determination team and how the assessment was carried out.*	*Gives reference to the information source on which the assessment is based on.*	*Assessment based on evidence provided if the criterion is not fulfilled a CAR, CL or FAR (details of each finding are elaborated in chapter 4) is raised otherwise no action is requested. The assess-*	*Assessment based on the project participant action in response to the raised CAR, CL or FAR (details of each finding are elaborated in chapter 4). The*	*Final assessment at the final determination stage is given.*

[2] JISC 19 Annex 4

	Each section is then further subdivided as per the requirements of the topic and the individual project activity.			*ment refers to the draft determination stage.*	*assessment refers to the final determination stage.*	

Figure 1: Determination protocol tables

The completed determination protocol is enclosed in Annex 1 to this report.

3.6 Review of Documents

The published PDD (version 1) and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the determination team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

3.7 Follow-up Interviews

The determination team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for JI.

The main topics of the interviews are summarized in table 3-3.

Table 3-3: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, JSC "RUSAL-IrkAZ" 2. Consultant, CJSC "National Carbon Sequestration Foundation"	- Chronological description of the project activity with documents of key steps of the implementation. - Current status of plant design - Technical details of the project realization, project feasibility, designing, operational life time, monitoring of the project - Host Country Approval - Approval procedures and status - Monitoring and measurement equipment and system. - Financial aspects - Crediting period - Project activity starting date - ERU allocation / ownership

Interviewed Persons / Entities	Interview topics
	- Baseline study assumptions - Additionality - Monitoring - Analysis of local stakeholder consultation - Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting - National Legislation - Editorial issues of the PDD

A comprehensive list of all interviewed persons is part of section: 7 References.

3.8 Project comparison

The determination team has compared the proposed JI project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Methodological issues
- Reasons for reviews, requests for reviews and rejections within the JI registration process.

3.9 Resolution of Clarification and Corrective Action Requests

3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence on the project results,
- the requirements deemed relevant for determination PDD of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC JISC or that emission reductions would not be able to be verified during determination ERU.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first determination ERU.

3.9.2 Draft Determination PDD

After reviewing all relevant documents and taken all other relevant information into account, the determination team issues all findings in the course of a draft determination report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.9.3 Final Determination PDD

The final determination starts after issuance of the proposed corrective action (CA) of the CARs CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the determination team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first determination ERU. The determination team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive determination opinion can be issued by the determination team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

3.10 Technical review

Before submission of the final determination report a technical review of the whole determination procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the determination team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the determination opinion and the topic specific assessments as prepared by the determination team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.11 Final approval

After successful technical review of the final report an overall (esp. procedural) assessment of the complete determination will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for the Host Country Approval and/or registration can be started (in case of a positive determination opinion).

4 DETERMINATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised**:**

Table 4-1: Summary of CARs, CLs and FARs issued

Determination topic [1)]	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project boundaries - Participation requirements - Technology to be employed - Contribution to sustainable development	2	0	-
Project baseline (B) - Baseline Methodology - Baseline scenario determination - Additionality determination - Calculation of GHG emission reductions Project emissions Baseline emissions - Leakage	1	2	-
Duration of the Project / Crediting Period (C)	-	-	-
Monitoring Methodology (D) - Monitoring of Project emissions Baseline emissions Leakage Sustainable development indicators / environmental impacts Project management planning	1	3	-
Estimation of greenhouse gas emission reductions (E)	1	0	-
Environnemental impacts (F)	-	-	-
Stakeholder Comments (G)	-	-	-
SUM	**5**	**5**	**-**

[1)] The letters in brackets refer to the determination protocol

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all determination items it should be referred to the determination protocols (see Annex 1).

Finding:	A1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Approvals of all Parties involved are pending.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	According to the Resolution # 780 dd. 15/09/2011 the decision on approval will be taken by the Ministry of Economic Development of Russian Federation after consideration of the application package of the project proponent, which includes a positive determination opinion. In other words the project approval may be issued in the case of the determination of PDD.		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	This correct a positive determination opinion is prerequisite for applying Host Country Approval.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☐ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☐ The CAR / CL is closed, ☒ The CAR / CL could **not** be closed.		

Finding:	A2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Map provided in the PDD are in Russian language.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Corrected/please see Figure 4.13 Shelekhov city on the map of Irkutsk oblast		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The PDD was duly revised Figure 4.13 of the PDD shows a map of Shelekhov city and Irkutsk oblast in English.		

Finding:	A2
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.

Finding:	B1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The elaboration of the baseline scenario does not take into account possible increase of the aluminium demand and the corresponding increase of the production capacities.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Corrected/ please see B1 & B2 page 3-19-21-30-31		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The required corrections have been done in the revised PDD. In response to the finding the PP has explained how the theoretical increase of the international aluminium demand could have be met by the plant. The PDD duly explains the technical and organizational measures that would be necessary to increase aluminium production. In essence there are two plausible measures. These are (a) to increase the voltage in the electrolyte cells or (b) to install additional cells. It could be appropriately explain that PP would use both measures to increase aluminium production. The PP would at first increase aluminium production by increasing changing operating conditions of the existing cells (inter alia increasing voltage). If this would be not sufficient the most probable option is the installation of the electrolyte cells of the same technology. The PP operated 8 lines with the Soederberg technology with upper current distributor without alumina point feeder (VSS) to adopt completely new technology for few additional electrolyte cells is not reasonable from the technical point of view. This is because the effort and expenses associated with such measure would be disproportional high related to the additional amount of aluminium. Therefore it could be concluded that even in case of increasing aluminium demand the PP would operate the same technology. Thus the increasing aluminium demand does not affect the baseline technology. Please also refer to annex 2of this report.		

Finding:	B1
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.

Finding:	B2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	A justification of the prior consideration of JI was not provided. It was not demonstrated that continuous and real actions was taken to secure JI status.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The information on justification of the prior consideration of JI and that continuous action were taken to secure JI status is provided in the Summary table in the PDD. The appropriate revision was introduced in the version 2 of revised PDD. Please see the subsection "Kyoto history component"		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The justification of the prior consideration of JI and of the continuous actions taken to secure JI status were checked and found appropriate and duly evidenced. Please refer to the detailed assessment presented in the section 5.2.4 of this report.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.		

Finding:	B3		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The investment analysis does not transparently show the possible benefits from the electricity savings.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The theoretical benefit from energy savings can be calculated by multiplying reduction in project additional consumption by 40 kWh per tonne Aluminium with aluminium production (e.g. in 2002 it was approx. 280 Ths t) tonne with the tariff as of 2002. The theoretical savings would be approx. 2 Mio Rub (40kWh/t*280 ths.t *0.2 rub/kWh = 2 Mio rub) The investment costs for implementing the project activity are 26,9 Mio Rub. As evident from this analysis even the theoretically		

	estimated savings are significantly lower than the investment costs. Please refer to the detailed analysis in section B of the PDD.
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	Nevertheless, the PP has provided an analysis of potential energy savings in the PDD and showed that they are disproportional as compared to the investment costs. The analysis of the potential energy savings was crosschecked by the determination team and found correct. In particular, the applied assumptions could be verified as follows: k - electrochemical equivalent of aluminium equal to 0.336 g/Ah reflects the amount of aluminium produced at the cell cathode for an hour after passage of one Ampere electric current. This is a default value and can be confirmed through various data sources e.g. (http://environmentalchemistry.com/yogi/periodic/Al.html). The calculated electricity consumption 10,800 kWh could be further supported by internal reports and is plausible with regards to the technical specification of the applied equipment. Also the specific power rate calculated as 15474 kWh/t is plausible as compared to the specific rates (min. 13000 KWh/t) indicated in third party sources/B-4/. Furthermore it was assumed that at the electrolytic pot once a day anode effect with voltage of 40 V for 2 min is observed. This is in line with internal measurement reports of the company. The measurements could be verified based on data archived in the IT supported system of the plant. As a result of the analysis it was estimated that reducing the frequency of anode effect from 1 to 0.8 per day power consumption will reduce the specific energy consumption for aluminium production (kWh/tAl) by 0.22%. The identified value is plausible as compared to the value (0.17%) reported in a similar registered CDM project (Ref. 1860). It is also worth to note that very low effect from reducing the frequency of the anode effect was reported in the PDD for the Krasnoyarsk project, which belongs to the same group of RUSAL smelters. The low effect from reducing the frequency of the anode effect is also reported in almost all registered CDM projects (Ref, 1610, 1860, 3019). In addition, the determination team has reviewed actual figures and found that the project measures reduced the specific power consumption in average by 40kWh/tAl, which is slightly higher than estimated above. Applying the electricity tariff of 0.2Rubel/kWh[3] the reduction of anode effect leads to savings of approximately 2 Mio Rubel per annum. This is disproportional as compared to the investment sum of 26.9 Mio Rubel. T Though there is a certain economy resulted from the reduced electricity consumption, these saving are very theoretical and

[3] The tariff was taken from the official notification of the company.

	cannot be considered as a suitable basis for investment decisions (please refer to detailed assessment above). Additionally it should be noted that even in case these theoretical savings had occurred their value would have been disproportional low (2 Mio. Rub.) as compared to the required investments 26.9 Mio.Rub) and correspond to a quite long amortisation time period. Therefore it is reasonable to assume that theoretical electricity savings cannot be considered as a suitable motivation for investing in such measures.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.

Finding:	**D 1**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The monitoring of the amount of unprocessed aluminium is not clearly described in the PDD.		

Finding:	D 1
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The volume of production of electrolytic aluminum by potrooms for the year is determined by summing the mass of the metal, determined by weighing buckets with metal from the electrolysis, and determines the mass of aluminum in liquid form, located in electrolyzers as a work in progress. Amount of electrolytic aluminium is used for calculations of project emissions and baseline emissions. Electrolytic aluminium is aluminium, which is actually produced during the year, including aluminium of non-complete production. The annual decrease of electrolytic aluminium output cannot be calculated for each month since the amount of aluminium of non-complete production is not estimated on a monthly basis. Thus, the amount of unprocessed aluminium is used. (Scheduled production output for 2008 – 2012 is also estimated in tonnes of unprocessed aluminium). Unprocessed aluminium is aluminium, which is actually yielded from the electrolytic pot (not including non-complete production). Theoretically, these values should be equal, but due to the fact that aluminium yielded from the electrolytic pot is fluid, in actual practice they differ from each other. The longer the period is, the smaller the difference between values becomes. Difference observed for several days is usually less than 1%, thus taking into consideration the fact that non-complete production is estimated on a quarterly basis, it is assumed that these values are equal. Please see p56 PDD -Aluminium production output.
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	A sufficient clarification regarding the monitoring of the amount of unprocessed aluminium was provided. The provided clarification is in line with the information obtained within the interviews performed during the on-site assessment. The explained assumption is also in line with the information given by the experts of the plant within the interviews. The same was supported by internal recordings.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.

Finding:	D 2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unam-*	1. Please clarify the method used to determine average mass of		

biguous style; address the context (e.g. section)	one centimetre of fluid metal. 2. Please clarify the conservativeness of the assumed anode frequency and duration in the baseline scenario.
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	1. Method for the determination of the average weight of one centimeter of the liquid metal is regulated by the internal procedure based on the official standard (GOST 3221-85). The required corrections were done in the PDD. Please see p42. 2. Duration of anode effect (DAE) depends on how quickly anode effect stops. Anode effect is stopped manually with the help of wooden poles in all potrooms at aluminium Smelter. In compliance with the initial conditions it was not supposed to change the anode effect termination, so as the initial data we adopted by average realised value before the project with alkaline electrolytes was implemented in 2002. For C2 and C3 pots for the period 2009-2011 for the duration of anode effect we used average value for the period from the beginning of the project. It should be noted that the adopted mean value indicates the conservative actual level of DAE with alkaline baths. It is obvious that there is a trend of significant increase of DAE since 2001. There may be fluctuations in one direction or another, associated with many factors: the quality of alumina, the quality of fluoride additives, the quality of maintenance, and etc. However, such fluctuations could occur under any scenario, so taking the average value as the base, provided the technology remains the same, indicates realistic practices. Frequency of anode effect (FAE) can be taken as a constant for each type of technology. The project on revamp of pot technology from 'alkaline' to 'acidic' bath technology was implemented based on the Kyoto Protocol. This allowed essential reduction in the frequency of anode effect. In order to estimate the baseline of the project we adopted the average frequency of anode effect achieved before switching to the technology of 'acidic' baths in 2002. It should be noted that for the estimation of the base frequency we assumed the conservative scenario where as the basis we took average values for 2000-2002 in spite of the emerging trend for increase. We should also note that increasing the current strength of 14% during the development of the baseline on the primary production, may lead to a corresponding increase in PFC emissions and pollutants. That is, in other words it can be argued that this would lead to an increase in FAE and DAE addition to the basic of their growth without the project. However, for conservatism, we do not take into account a 14% increase. i.e., we use the output of the baseline average values to the project without taking into account trends in the increase and a

	subsequent 14% increase in AE. That is, act conservatively.
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	1. As per the PDD, "the average weight of one centimeter of the liquid metal set at least once a year with the metal-indicator method based on GOST 3221-85". The same could be verified based on the review of the relevant official standard (GOST 3221-85). Method for determining average weight of one centimetre of the liquid metal as described in the PDD is in line with the method described in provided internal procedure. 2. In response to the finding the PP explained that the frequency and duration of the anode effect in the baseline scenario are based on the historical values for the years 2000-2002. The PP also explained that an increase of the frequency was observed. The same could be verified based on the internal reports. However the increasing tendency of the anode effect frequency was not taken into account. This is conservative and was accepted by the determination team. Within the estimation the aluminium amount as well as the anode effect duration and frequency are taken from the internal reports extracted from the IT supported system. It should be noted that the estimation is based on the actual figures for the years 2008-2011 and estimate for the year 2012. Bearing in mind that the final version of the PDD was developed in 2012 the use of actual figures was accepted
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.

Finding:	**D 3**		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please clarify the appropriateness of the archiving period for the weight recordings and other data. The PDD does not indicate that monitoring data will be available 2 years after the end of crediting period.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The specified period of 4 years is a mistake. The retention period for all documents at least 5 years. Nevertheless the data on the emission reductions achieved, and the original data will be available for project participants 2 years after the last transfer of ERUs. Corrected on 5 years/please see p42.		

Finding:	D 3
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The PDD was duly revised. It is important to note that all relevant The data on the emission reductions achieved, and the original data will be available for project participants 2 years after the last transfer of ERUs.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.

Finding:	D 4		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please clarify procedures used in case of malfunction of the relevant measurement devices.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Corrected/please see D3 on p43.		
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	In response to the finding the PP has included a provision for handling monitoring data in case of malfunction of measurement devices. The included provision was accepted.		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.		

Finding:	E 1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	The section E of the PDD does not indicate the applied assumptions.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Corrected/please see p46		

Finding:	E 1
AIE Assessment #1 *The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and AIE assessments (#2, #3, etc.) shall be added.*	The calculation done is as per elaborated algorithm. Are all data not to be monitored is correct. The values for the monitoring parameters are plausible. The estimated emission reductions are plausible and conservative. It should be noted that for the years 2008-2011 the actual figures were used.
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic determination ERU ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The CAR / CL is closed, ☐ The CAR / CL could **not** be closed.

5 DETERMINATION ASSESSMENT SUMMARY

5.1 General Description of the Project Activity

5.1.1 Participation

LOA

Letter of Approval (LoA) from all Parties involved are pending. As the LoA of the Host country will only be issued upon a positive determination opinion, this CAR will automatically be closed upon issuance of host country approval.

Project Participants

Party involved is Russian Federation acting as a Host Party. Project Participant of the Host Country is "RUSAL-IrkAZ" Joint Stock Company.

5.1.2 PDD editorial Aspects

Project Design Document Form Version 01 – in effect as of 15 June 2006 – has been used. This is the latest version of the PDD form. Guidelines for users of the JI PDD form Version 04 have been used for completing the PDD. These Guidelines should be taken into account for all PDDs to be published from 1 January 2009.

5.1.3 Technology to be employed

The goal of the project activity is to reduce GHG emissions through reducing the frequency of anode effect. This should be achieved through the adoption of acidic bath technology (change of the cryolite ratio) in pot rooms. This measure involves a change of the bath composition in potrooms 1-8 that use the Soederberg technology. The objective is to achieve stable working conditions of the smelters and reduce anode effect frequency.

Additionally, few years after the investment decision, the PP has constructed a new potline with feed pre-bake technology and closed potrooms 3 and 4 where Soederberg VSS technology had been used. The new potline started its operation in 2008. Till 2008 the increase of the aluminium demand was met through the increase of the voltage on the existing Soederberg facilities.

The description of the project activity is considered to be accurate, complete, presented in a detailed manner and in line with provided evidences and results of the on-site inspection.

The implementation of the project activity could be evidenced by various protocols and acts that traced particular stages of the project implementation and recorded main results. The determination team has checked all provided evidences/CR1//CR2//CR3//CR4//CR5//CR6//CR7//CR8//CR9/. Based on this the description of the project implementation as described in the PDD could be verified.

5.1.4 Small Scale Projects

No applicable because it is a large scale project

5.2 Project Baseline, Additionality and Monitoring Plan

5.2.1 Application of the Methodology

The PDD explicitly indicates that the JI specific approach was used to identify the baseline and justify the additionality.

The PDD provide a detailed theoretical description in a complete and transparent manner. In particular it indicates that JI specific approach is based on the Guidance on criteria for baseline setting and monitoring” (Version 03) and Appendix B to Decision 9/CMP.1. The version 03 of the Guidance on criteria for baseline setting and monitoring” is the latest version that was issued within the JISC 26 meeting.

5.2.2 Project Boundary

All equipment used within the project activity has been listed in the PDD including the information about its purpose and the technical specification. The project boundary is clearly described in words and a visualisation of the physical project boundary as well as a table defining all significant GHG gases has been included in the PDD.

Within the on-site assessment the determination team was able to confirm that project was implemented as described in the PDD. The relevant equipment was installed. The technical data of the installed equipment correspond to the information provided in the PDD.

5.2.3 Baseline Identification

The procedure to arrive at the baseline scenario is in line with the applied methodology. All plausible alternatives have been identified.

Alternatives

The PDD includes an analysis of all realistic alternatives to the project scenario as required by the methodology. The project activity without JI consideration and the continuation of the pre-project practice have been identified as plausible and realistic alternatives.

Barrier analysis

In order to identify the most plausible alternative the PP performed key factor analysis, which is similar to the barrier analysis as per the approved CDM tools/TA//CT/.

In the course of the key factor analysis the PP demonstrated that project activity faces different barriers related to the technical feasibility. The explained barriers deemed to be reasonable and in line with the information provided in similar cases/CDM-P/ (please refer to annex 2). It was duly demonstrated that possible savings of the electricity consumption (2 Mio Rub) cannot be exactly determined (i.e. only

theoretically). Most important, such theoretical savings are disproportional low as compared to the required investments (26.9 Mio Rub)

Taking into account that the implementation of the project activity requires substantial investments and expenses but the continuation of the current practice does not require any it was reasonably concluded that the project activity is less attractive as compared to the continuation of the pre-project situation.

Investment analysis / Simple cost analysis

In the course of the additionality justification the PP performed a Simple Cost analysis. The selection of the simple cost analysis was accepted because the implementation of the project measures does not result in financial benefit except for the ERU related income. Though there is a certain economy resulted from the reduced electricity consumption, these saving are very theoretical and cannot be considered as a suitable basis for investment decisions (please refer to detailed assessment in annex 2). Additionally it should be noted that even in case these theoretical savings had occurred their value would have been disproportional low (2 Mio. Rub.) as compared to the required investments 26.9 Mio.Rub).

The PP demonstrated that the JI project activity and the alternatives identified in Step 1 generate no financial or economic benefits. Therefore a simple cost analysis was performed. The investment costs as given in section B.2.2 of the PDD were checked by the determination team and found consistent with the documented evidences/INV/.

It could be evidenced that the implementation of the project activity requires substantial investments and expenses (26.9 Mio Rub). At the same time the continuation of the current practice does not require any additional expenses. Therefore it was reasonably concluded that the project activity is less attractive as compared to the continuation of the pre-project situation.

5.2.4 Additionality Determination

Consideration of JI in decision making (if project start before determination)

RUSAL is the world's largest aluminium producer. The company was founded in 2000. RUSAL became the global aluminium industry leader in 2007 after its merger with SUAL. Today RUSAL operates in 19 countries. RUSAL's assets include 16 aluminium smelters, 12 alumina refineries, 8 bauxite mines, 3 aluminium powder plants, 3 silicon factories, 3 secondary aluminium plants, 4 foil mills, 2 cryolite and 2 cathode plants.[4]

The considered project activity is one of the five JI projects that are implemented at the aluminium smelters of RUSAL Company. These projects are

1. *Reduction of PFC emissions at Irkutsk aluminium smelter", Irkutsk, Russia* (hereinafter referred to as "Irkutsk project")

[4] This information was taken from the official website of RUSAL company http://www.rusal.ru/en/about/facts.aspx

2. "*Reduction of PFC emissions at Bratsk aluminium smelter", Bratsk, Russia* (hereinafter referred to as "Bratsk project")
3. "*Reduction of PFC emissions at Sayanogorsk aluminium smelter", Sayanogorsk, Russia* (hereinafter referred to as "Sayanogorsk project")
4. "*Reduction of PFC emissions at Novokuznetsk aluminium smelter", Novokuznetsk, Russia* (hereinafter referred to as "Novokuznetsk project")
5. "*Reduction of PFC emissions at Krasnoyarsk aluminium smelter", Krasnoyarsk, Russia*[5] (hereinafter referred to as "Krasnoyarsk project")

The objective of all five projects is to reduce PFC emissions through reduction of the anode effect frequency.

All project implemented a number of organizational and technical measures at the aluminium smelters. Krasnoyarsk project involves modernization measures, which result in reduction of the anode effect frequency. Irkutsk aluminium smelter adopted point feed pre-baked technology. Aluminium smelters in Bratsk, Novokuznetsk and Sayanogorsk remain operating based on the Soderberg technology by implementing measures to decrease cryolitic ratio and moving to acidic electrolytes.

Out of the five projects only the last one – "Krasnoyarsk project" was positively determined and approved by the Host Party as JI project under Track 1 rules. Other four projects are currently under determination.

All these four projects were started in 2002. At the time of decision to go ahead with the project activity all four aluminium smelters (Irkutsk, Bratsk, Sayanogorsk, Novokuznetsk) did not (100%) belong to RUSAL company. Due to this, the prior consideration of the JI is considered at the plant level. Also the actions to secure JI status are considered on the particular plant level.

In 2006/2007 all four smelters aluminum smelter merged with RUSAL Company. After this merger the management of the JI project has been shifted from individual plants to the holding – i.e. to RUSAL holding company located in Moscow. Therefore after 2006 all actions to secure JI status were under control of the RUSAL holding and performed by the special department established in the RUSAL holding company in Moscow.

Nevertheless it is important to note that although the PP considered all projects collectively as one portfolio of JI projects, the determination team has checked each individual project separately.

The description of actions and the corresponding assessment of the determination team for the considered project activity is presented in the table below:

Year	Description of action provided by Project participant	Assessment by the determination team
2001/2002	Action: Intention to adopt the	Various technical options to reduce

[5]ITL project ID: RU1000231 please refer to: http://ji.unfccc.int/JIITLProject/DB/6FU0T3C7WY5XWTR9EM5JQD5RDVHDSI/details

(management decision)	acidic bath technology for reducing anode effect within the framework of Article 6 of the Kyoto Protocol. Evidence: Decision of Technical Council. Minutes of discussion of Technical Council of 01.02.2002 Justification of the evidence: That was a management decision to start the project as a JI activity.	the frequency of anode effect were analyzed by the technical specialists of the plant. The results of this analysis were presented to the members of the technical council within the meeting held on 01.02.2002. Along with the results the timeline for implementation of particular measures was discussed within this meeting. As result of the discussion the decision to go ahead with project activity was taken by the responsible managers within this meeting. This is evident from the protocol of this meeting/PTS-02/. The protocol clearly states that measures to reduce frequency of anode effect should be implemented as JI project. Based on this it could be confirmed that project participant was aware of the JI prior to the project activity start date. Provided evidence/PTS-02/ clearly shows that JI was considered within the decision making process. As explained in the section B of the PDD the project activity does not result in economic or financial benefits. Therefore the determination team agrees that the benefits from ERUs were a decisive factor in the decision to proceed with the project. The protocol clearly lists the personnel attended, the topics discussed and decision made. The protocol of the meeting is prepared in appropriate manner and the decision to go ahead with the project is signed by responsible managers. Therefore the provided evidence was assessed to be a reliable source. The provided evidence is in line with requirements of the "*Guidelines on the demonstration and assessment of*

		prior consideration of the CDM" as per EB 62 annex 13. As a result the determination team is of the opinion that it could be duly demonstrated that the JI was seriously considered in the decision to implement the project activity. It was concluded that justification of prior consideration is in line with the requirements of the "*Guidelines on the demonstration and assessment of prior consideration of the CDM"* as per EB 62 annex 13.
2003	Action: decision on PIN development and on the start of monitoring of national legislation on Kyoto Protocol ratification and JI-procedure establishment Evidence: See Minutes of discussionof 19.11.2003 Justification of the evidence: Elaboration of PIN was a first step on a way to PDD development. PDD was supposed to be elaborated after KP ratification and establishment of JI-procedure. To know that these conditions are in place the monitoring regarding the legislation onKP-related issues was established.From this point that was a real action to secure a JI status.	Provided *Minutes of discussion ecological council of the plant* dated 19.11.2003/PTS-03/ were assessed as appropriate evidence to demonstrate that continuing and real actions were taken to secure JI status in accordance with EB 62 annex 13. because • The document clearly indicates that PP has analyzed the development of the carbon market and progress of the Kyoto protocol ratification, • The document clearly states that although the PP saw a slowdown of the Kyoto protocol ratification it decided to take further steps, inter alia to develop a document which would contain a brief project description and specify the main project details (PIN). Provided *Minutes of discussion* /PTS-03/ was assessed as reliable evidence because it is prepared in a detail manner, contain the topics of discussion, the decision made and is signed by responsible personnel.
2004	Action: Monitoring of KP ratification status and PIN elaboration Evidence: PIN elaborated	The explanation given by PP could be duly evidenced. The first PIN/PIN/ version was assessed as reliable evidence, which demonstrates that PP has taken continuing and real

	Justification of the evidence: Elaboration of PIN was a first step on a way to PDD development. Keeping adherence to commitment to develop the project under JI-mechanism after KP ratification and establishment of JI approval procedure the IRKAZ smelter were proceeding with the monitoring of status of laws on adoption of these documents. That is why this is a real action to provide a JI status for the project.	actions to secure JI status. In addition the PP has provided *Protocol of the technical council of the plant* dated 15.01.2004 where a feasibility study development and adoption of pre-backed technology within the framework of Article 6 of the Kyoto Protocol were discussed with technical experts/PTS-04/. Provided document/PTS-04/ was assessed as reliable evidence because it is prepared in a detail manner, contain the topics of discussion, the decision made and is signed by responsible personnel.
2005	Action: Monitoring of KP ratification status and PIN elaboration Evidence: Minutes of discussion of 22.03.2005 Justification of the evidence: Keeping adherence to commitment to develop the project under JI-mechanism after KP ratification and establishment of JI approval procedure the IRKAZ smelter were proceeding with the monitoring of status of laws on adoption of these documents.	To demonstrate that further actions were taken to secure JI status the PP provided *Protocol of the technical council*/PTS-05/ dated 13.09.2005 were recommendations of technical experts for starting the 5th potline were examined. This protocol was assessed as appropriate evidence to demonstrate that continuing and real actions were taken to secure JI status in accordance with EB 62 annex 13. because • It clearly indicates that PP has analyzed the development of the carbon market and progress of the Kyoto protocol ratification, • It clearly states that although the Kyoto protocol came into force in 2005 there were no procedures for approval JI projects in Russian Federation. • Despite this fact the PP has continued monitoring of the main parameters in order to enable project registration once the procedures are defined.
2006	Action: Monitoring of KP	*Protocol of the technical council of the*

	ratification status and PIN elaboration. Observation of national legislative documents on realization of KP mechanism in Russia. Evidence:Minutes of discussion of 28.03.2006 Justification of the evidence: Keeping adherence to commitment to develop the project under JI-mechanism after KP ratification and establishment of JI approval procedure the IRKAZ smelter were proceeding with the monitoring of status of laws on adoption of these documents.	*plant* dated 18.03.2006 regarding the implementation of the JI project /PTS-06/ was assessed as reliable evidence that continuing and real actions were taken to secure JI status in accordance with EB62 annex 13. This is because • The protocol clearly evidence that PP has monitored the ratification status and was aware about all official documents issued by Russian government. • It correctly states that at the time when the meeting was held (18.03.2006) no procedures for approval JI project were in place. • Despite this fact the technical council decided to further monitor the new rules related to approval of JI project in Russia and to continue monitoring of the project parameters. The information given in the protocol deemed to be reliable and the decisions taken by PP were assessed as plausible.

In 2006 Irkutsk Aluminum smelter merged with RUSAL Company and further the management of the JI project has been carried out on RUSAL level. The below table contains information on measures to secure JI status on RUSAL level.

Year	Description of action provided by Project participant	Assessment by the determination team
2006	Action: Setting the goals. Goal 2 is to secure interests of Company in sphere of GHG regulation and emission reduction circulation. Evidence: Environmental strategy accepted on 25/09/06.Presentation in PPT-format. Justification of the evidence: Due to a merger of assets and	In addition to the actions mentioned in the table above it should be noted that the responsibility for implementation of JI project was shifted to the Head quarter of RUSAL Holding in Moscow. In the years 2006 a special department was established to secure JI status of the project.

	the establishment of a united company RUSAL the management of JI projects moved to a RUSAL central head office in Moscow. Initially, to start the management of a corporate JI project portfolio RUSAL accepted Environmental strategy, which, among others, set a goal on GHG regulation and emission reduction circulation. From that point this was a real action that initiated the development of JI projects of above smelters on a RUSAL level.	
2007	UC RUSAL Action: Setting the goals on reduction of CO2 emissions at Company's smelters/getting additional income from ERU sales and on realization of 6 Company's projects as JI Evidence: Passport of corporate project "Kyoto Protocol" accepted.Presentations of passport of project "Kyoto protocol" and Kyoto project realization. Justification of the evidence: By establishing a corporate project "Kyoto protocol" UC RUSAL set timeframes and estimated budgets for realization of the projects as JI. That was a further RUSAL real action to secure JI status of the smelter's project.	As already noted a special department was established at the holding level. This department was responsible for further development of JI projects and for ensuring the JI status of all JI projects (Irkutsk, Bratsk, Sayanogorsk, Novokuznetsk). The PP provided internal documents as well as internal reports of this department. Provided evidences show all organisational measures and actions taken by this department to further proceed with JI registration process. Most importantly is the fact that • specific goals for all JI projects were defined and • a detailed time schedule for further development of each individual JI project was agreed. The same could be confirmed within the interviews with the responsible personnel. Furthermore it should be noted that although no JI approval procedure were in place on that time, Rusal company started with a one pilot PDD of a PFC reduction project in Krasnoyarsk. This is evident from the

		determination report for the Krasnoyarsk project/KrAZ-D/. As evident from the elaborated time schedule other projects (Irkutsk, Bratsk, Sayanogorsk, and Novokuznetsk) were the next projects to be developed after this first pilot project. Considering the measures taken by PP it could be concluded that PP has taken real actions to secure JI status and the same could be duly evidenced.
2008	UC RUSAL Action 1: Evaluation of all potential JI projects realized in Company's smelters in 2000-2007. Evidence 1: Discussion of all potential JI projects in RUSAL carbon portfolio. Minutes of discussion on evaluation, checking and preparation of JI projects of 28/06/2008. Justification of the evidence 1: By this action RUSAL proceeded with actualizing the goals set in Environmental strategy and the project "Kyoto Protocol". Concrete assignment to evaluate potential JI projects realized in the smelters in 2000-2007 was provided. Action 2: Start of cooperation with a consulting company on JI project preparation for IrkAZ, SAZ, NkAZ projects. Evidence 2: Discussion of the cooperation with a consulting company (NOPPPU). Minutes of discussion # 1 of 24/09/2008. Justification of the evidence 2:	The main document for the year 2008, which evidence real action to secure the JI status is the *minutes of discussion with JI consultant*/PTS-08/. The minutes were provided. It could be evidenced that PP has discussed the cooperation with regards to the development of the considered JI projects with a JI consulting company. The main topic discussed was the PDD development and support within the JI registration process. This clearly demonstrates that PP has taken real action to secure JI status. In addition, the PP provided *minutes of* (internal) *meeting* held on 28.06.2008/PTS-08/ that summarizes actions, which were taken by PP to secure JI status. The provided evidence /PTS-08/ contains information about the discussion of all potential JI projects in RUSAL carbon portfolio. Based on the provided internal documentation it could be concluded that there were regular meetings where the progress of the project development was discussed. As a result of such meetings the responsible managers agreed on further steps. Finally the PDD indicates that PP has

	This document can be considered as a real action because a certain consulting company was named and intentions stipulated for providing assessment of carbon potential of JI projects for attracting carbon investments. Action 3: Monitoring of PFC emissions in 2008 at IrkAZ, BrAZ, SAZ, NkAZ . Evidence3: see file XLS-file 2008-2011 "Meeting emission obligation" Justification of the evidence: This is a direct real action to provide JI status of the smelters' projects as the monitoring for the project emissions was established and provided.	continued to monitor project parameters in order to secure JI and benefit from ERUs once the project is approved and registered.
2009	UC RUSAL Action 1: Postponing of consultancy services due to RUSAL difficult economic situation in the markets. Evidence 1: Discussion of the issue with participation of RUSAL and NOPPPU representatives. Minutes of discussion of 19/03/2009. Justification of the evidence 1: Despite postponing the development of JI projects was not terminated. Parties stuck with an intention to go back to the projects after improving financial health of RUSAL. Consistency of real actions provided on previous steps was not broken. Action 2: Monitoring of PFC	In 2009 PP has postponed consultancy services with JI consulting company. This could be evidenced by "*minutes of discussion*"/PTS-09/. As explained in the PDD despite postponing consultancy services "*the development of JI projects was not terminated. Parties stuck with an intention to go back to the projects after improving financial health of RUSAL".* Though the cooperation with JI consultant was postponed there was an intention to proceed with development of JI projects. This is evident from the provided documented evidence/PTS-09/.. Furthermore the PP has evidenced that monitoring of the project parameters was continued. This further supports the conclusion that

	emissions in 2009 at IrkAZ, BrAZ, SAZ, NkAZ . Evidence2: see file XLS-file 2008-2011 "Meeting emission obligation" Justification of the evidence: This is a direct real action to provide JI status of the smelters' projects as the monitoring for the project emissions was provided.	PP has not terminated the development of JI projects.
2010	UC RUSAL Action 1: Denial of approach proposed by former PDD developer (Poyry Energy) for KrAZ and BrAZ projects and intentions to enter into co-operation with NOPPPU on PDD development. Evidence 1:Discussion of approach proposed by NOPPPU. Minutes of discussion of 02.04.2010 Justification of the evidence 1: That is the evidence that RUSAL and NOPPPY (a third party consultant) were working closely on one of smelters' projects and were to sign a cooperation agreement for PDD development on IrkAZ, SAZ and NkAZ projects. Action 2: Monitoring of PFC emissions in 2010 at IrkAZ, BrAZ, SAZ, NkAZ. Evidence2: see file XLS-file 2008-2011 "Meeting emission obligation" Justification of the evidence 2: This is a direct real action to provide JI status of the smelters' projects as the monitoring for the project	In 2010 the PP has continued cooperation with JI consultant. This is evidenced by means of *minutes of meeting with JI consultant*/PTS-10/. Minutes of discussion with JI consultant dated 02.04.2010 clearly evidence that real actions were taken to secure JI status of particular projects (Irkutsk, Bratsk, Sayanogorsk and Novokuznetsk). Again the PP has evidenced that monitoring of the project parameters was continued. This further supports the conclusion that PP has not terminated the development of JI projects.

	emissions was provided.	
2011	UC RUSAL Action 1: Development of preliminary versions of PDD Evidence 1: Preliminary PDDs Justification of the evidence 1: That is a self-explanatory action. Action 2: Monitoring of PFC emissions in 2011 at IrkAZ, BrAZ, SAZ, NkAZ . Evidence 2: see file XLS-file 2008-2011 "Meeting emission obligation" Justification of the evidence 2: This is a direct real action to provide JI status of the smelters' projects as the monitoring for the project emissions was provided.	In 2011 preliminary versions of the PDDs were developed for all 4 projects (Irkutsk, Bratsk, Sayanogorsk, Novokuznetsk) by JI consultant. These PDDs were submitted to the responsible department of the RUSAL company for further review and approval.
2012	UC RUSAL Action: Approval of preliminary versions of PDD with RUSAL Evidence: Submission of PDDs for determination.Letter of consultant to Tuev-Nord representative # ЮН-58/12 of 29/03/12. Justification of the evidence: That is a self-explanatory action.	In 2012 TÜV Nord was requested to offer determination services for the projects: • "Reduction of PFC emissions at Irkutsk aluminium smelter", Irkutsk, Russia • "Reduction of PFC emissions at Bratsk aluminium smelter", Bratsk, Russia • "Reduction of PFC emissions at Sayanogorsk aluminium smelter", Sayanogorsk, Russia • "Reduction of PFC emissions at Novokuznetsk aluminium smelter", Novokuznetsk, Russia

As a result it could be concluded that project participant was able to demonstrate that continuing and real actions were taken to secure JI status for the project in parallel with its implementation in accordance with provisions of EB 62 annex 13. The explanation of each action was supported by corresponding documented evidence. All explanations and justifications given to explain each particular action were found

plausible, in line with the information given in the corresponding evidence and in line with the development of JI approval process in Russia.

As per the EB 62 annex 13 "*In validating proposed CDM project activities where there is less than 2 years of a gap between the documented evidence the DOE shall conclude that continuing and real actions were taken to secure CDM status for the project activity"*. As evident from the table above, documented evidences were provided for every year after the management decision. Therefore the determination team concluded that continuing and real actions were taken to secure JI status for the project activity.

Application of methodology / methodological tools

The additionality was justified following the JI specific approach elaborated in the PDD.

Alternatives

The PDD includes an analysis of all realistic alternatives to the project scenario as required by the JI specific approach. The project activity without JI consideration and the continuation of the pre-project practice have been identified as plausible and realistic alternatives.

Investment analysis

In the course of the additionality justification the PP performed a Simple Cost analysis. The selection of the simple cost analysis was accepted because the implementation of the project measures does not result in financial benefit except for the ERU related income. Though there is a certain economy resulted from the reduced electricity consumption, these saving are very theoretical and cannot be considered as a suitable basis for investment decisions (please refer to detailed assessment in annex 2). Additionally it should be noted that even in case these theoretical savings had occurred their value would have been disproportional low (2 Mio. Rub.) as compared to the required investments 26.9 Mio.Rub).

The PP demonstrated that the JI project activity and the alternatives identified in Step 1 generate no financial or economic benefits. Therefore a simple cost analysis was performed. The investment costs as given in section B.2.2 of the PDD were checked by the determination team and found consistent with the documented evidences/INV/.

It could be evidenced that the implementation of the project activity requires substantial investments and expenses (26.9 Mio Rub). At the same time the continuation of the current practice does not require any additional expenses. Therefore it was reasonably concluded that the project activity is less attractive as compared to the continuation of the pre-project situation.

Barrier analysis

Barrier analysis was not applied for justification of the additionality.

Common practice analysis

Finally, the PP performed common practice analysis. In doing so, aluminium industry was defined as the relevant sector and Russian Federation as the geographical area. This deemed to be appropriate.

The considered aluminium smelter belongs to the largest aluminium producer group – Rusal. Based on the information provided about the aluminium industry at the time of investment decision it could be verified that the measures similar to the project activity were observed at the following plants Krasnoyarsk, Irkutsk, Bratsk, Sayonogorsk, Novokuznetzk. All these measures were implemented between 2002-2006. However all these measures are either approved as JI projects or seeking approval as JI project.

The results of the common practice analysis were confirmed by another AIE within the determination of the Krasnoyarsk project. The results of the common practice analysis could be further supported by the information provided by independent data sources/B-1/B-2//B-3/. The same is also confirmed in the registered CDM project (Ref. 1610, 1860, 3019).

Summary

In the course of the determination it could be concluded that the baseline scenario has been appropriately elaborated and additionality has been appropriately justified.

5.2.5 Monitoring Methodology

The monitoring plan is elaborated in detail in section D of the PDD. The PDD clearly states that JI specific approach was used to elaborate the monitoring plan. The applied approach is based on the requirements of the "Guidance on criteria for baseline and monitoring" version 03. This is the most recent version and hence appropriate.

As per the PDD the technologies and formulas for defining emissions are based on the requirements and provisions of the 2006 *Aluminium Sector greenhouse gas protocol* developed by International Aluminium Institute, which were included in the 2006 IPCC Guidelines (chapter 4.4. Primary Aluminium production).

The determination team has crosschecked the applied approach with the approach included in the IPCC guidelines and found it consistent. Also the fixed parameters and variables were found consistent with the IPCC data.

The applied approach was assessed as appropriate because it is based on the requirements of the IPCC guidelines. In addition, it should be noted that approved CDM methodologies, which were elaborated for similar measures also explicitly refer to the IPCC guidelines.

Finally, it is worth to note that such approach was elaborated for another very similar JI project (“Reduction of PFC emissions from Krasnoyarsk Aluminium smelter”) and positively determined by another Independent Entity. The referenced project belongs to same group of Rusal projects and involves measures similar to those that were implemented in the considered project.

5.2.6 Monitoring Plan

The monitoring plan covers all monitoring parameters given in the elaborated JI specific monitoring methodology. The monitoring plan was already successfully implemented.

5.2.7 Project Management Planning

The project management planning is appropriate for the purpose of the projects monitoring. As already noted the monitoring plan was already successfully implemented and is duly performed by PP.

It is important to note that RUSAL Company established a special metrological department/division, which is responsible for proper operation all measurement devices on almost all aluminium smelters (also in Irkutsk, Sayanogorsk, Novokuznetsk, Bratsk). This division includes a laboratory, which has accreditation to perform calibration (and exchange) of the measurement equipment. It could be confirmed that all measurement devices are under control of this metrological division. Therefore it was concluded that PP quality control measures are duly implemented at the plant.

5.2.8 Calculation of GHG Emission Reductions

The calculation done is as per elaborated algorithm. All data not to be monitored is correct. The values for the monitoring parameters are plausible. The estimated emission reductions are plausible and conservative. It should be noted that for the years 2008-2011 the actual figures were used. For the year 2012 the estimation is based on the historical figures.

5.2.9 Crediting Period

The choice of the crediting period is unambiguously given in entire PDD. The crediting period starting date 2008-01-01 is appropriate

5.2.10 Environmental Impacts

An Environmental Impact Assessment (EIA) is not required from host country for this type of measures. This could be duly evidenced.

5.2.11 Comments by Local Stakeholders

A local stakeholder consultation is not required from host country for such measures. This could be duly evidenced.

6 DETERMINATION OPINION

TÜV NORD JI/CDM Certification Program (CP) has carried out determination PDD of the project: "Reduction of PFC emissions at Irkutsk aluminium smelter" with regard to the relevant requirements of the UNFCCC for JI project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria refer to the Kyoto Protocol Article 6 criteria and the Guidelines for the implementation of Article 6 of the Kyoto Protocol as agreed in the Marrakech Accords.

In the course of the pre-determination 5 Corrective Action Requests (CARs) and 5 Clarification Requests (CLs) were raised and successfully closed except for CAR A1. As the approval of the Host country will only be issued upon a positive determination opinion, this CAR will automatically be closed upon issuance of host country approval.

The review of the project design documentation (PDD Ver. 04 dated 12.04.2012) and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria Russian Federation and all relevant UNFCCC requirements for JI. The project activity approval from DFP of Russian Federation will only be issued after final determination opinion. Therefore CAR A1 cannot be closed at this stage.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 6,022,528 tCO2e are most likely to be achieved in the period from 2008-01-01 to 2012-12-31.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the determination PDD.

Essen 2012-04-12

TÜV NORD CERT GmbH GERMANY JI/CDM CERTIFICATION PROGRAM TÜV NORD

Evgeni Sud
TÜV NORD JI/CDM CP
Determination Team Leader

Essen 2012-04-12

TÜV NORD CERT GmbH GERMANY JI/CDM CERTIFICATION PROGRAM TÜV NORD

Rainer Winter
TÜV NORD JI/CDM CP
Final Approval

7 REFERENCES

Table 7-1: Documents provided by the project participant

Reference	Document
AE	Plants internal reports that evidence the duration and frequency of the anode effects 2000-2011
AL	Plant's internal reports that evidence the amount of aluminium produced in the years 2000-2011
ATT	Accreditation certificate of the laboratory for carrying out calibration works №001222 valid from 11.12.2009 till 11.12.2014 including the requirements for performing calibration works
ATT1	Annex to the accreditation certificate that defines the allowed calibration works
ATT2	Accreditation certificate of the laboratory №006167 № ROSS RU.0001.510935 valid from 25.03.2011 till 25.03.2016
CAL-IT	Internal protocol №4376-01-66-23-12 28.02.2012 about calibration of the IT supported system including calibration of the measurement channel and control system performance
Cal-PRK	Calibration protocol 1. №11/38 dated 10.06.11 2. №19/001 dated 29.12.11 3. №12/011 dated 01.02.12 4. №11/008 dated 29.03.11 5. №11/007 dated 05.03.11 6. №11/37 dated 10.06.11 7. №11/010 dated 21.03.11 8. №11/005 dated 21.03.11 9. №11/004 dated 21.03.11 10. №11/009 dated 29.03.11 11. №11/003 dated 29.03.11 12. №11/002 dated 29.03.11 13. №11/006 dated 05.03.11 14. №17/006 dated 29.09.11 15. №18/012 dated 18.01.12 16. №16/011 dated 29.09.11 17. №11/010 dated 29.07.10

Reference	Document
	18. №12/010 dated 29.07.10 19. №14/010 dated 29.07.10
Cal-Sc	Calibration schedule of the measurement equipment 2012 dated 16.01.2012 • IrkAz DEP 1 series • IrkAz DEP 3 series • IrkAz DEP 4 series • IrkAz DEP 5 series • IrkAz DEP UTZ • IrkAz DEP LO-1 • IrkAz DEP LO-2 • IrkAz DEP LO-3
CR1	Protocol of the final check №39-06/10-08 of the construction and overhaul of the 2nd set of buildings and structures for the 5th series dated 20 June 2008.
CR2	Act number 4 of the final inspection of capital construction (the second starting complex) 5-series workshop electrolyse to 300kA prebaked anodes dated 20 June 2008.
CR3	Act № 51-08/10-08 final inspection during the construction of capital construction "housing number 9 in the axes of 52-5" is part of the third start-up complex of the aluminium production potline Nr. 5 at 300kA with prebaked anodes JSC "Sual" branch "IrkAZ-SUAL" dated 05.08.2008.
CR4	The act of starting and completion of commissioning of facilities and equipment of a complex series of five "Sual" "IrkAZ-SUAL" dated 07 April 2010.
CR5	The list of unfinished work and the work that must be done to finalize the project equipment Complex 5 Series IrkAZ dated 02.04.2010.
CR7	Minutes of the differences to the list of unfinished work to be performed to finalize the draft of the complex equipment IrkAZ fifth series dated 31.03.2010. Appendix: Minutes of meeting dated 31.03.2010 № 4319-03-12-27-10.
CR8	The act of the working committee on acceptance of the completed construction site of the complex series of five workshops to 300kA electrolysis cells with prebaked anodes "Installing a dry gas cleaning

Reference	Document
	block № 1 № 1,2 chimneys with duct racks, internal systems engineering services " dated 11.01.2008.
CR9	The act of receiving the completed project "Installation of a dry gas cleaning unit number 2 chimneys, duct from the racks, internal systems, engineering services," dated August 15, 2008.
CR10	Letter №26/1041 dt 20.06.2005 «Construction 5th potline»
CS-TS	Technical specification for crane scales 1. KGW-20 №11831 dt. 07.09.2004 2. KGW-20 №10628 dt. 25.10.2003 3. KGW-20 №10629 dated 25.10.2003 4. KGW-20 №10630 dated 24.06.2006 5. KGW-20 №10632 dated 25.10.2003 6. KGW-20 №10633 dated 25.10.2003 7. KGW-20 №11832 dated 07.09.2004 8. KGW-20 №10634 dated 25.10.2003 9. KGW-20 №10635 dated 25.10.2003 10. KGW-20 №12715 dated 29.05.2008 11. KGW-20 №12716 dated 29.05.2008 12. KGW-15 №12901 dated 2008 13. KGW-15 №12899 dated 2008 14. KGW-15 №12900 dated 2008 15. KGW-15 №12898 dated 2008
CS-Cal	Calibration certificate for the crane scales: validity dates 1. KGW-20 №11831: 10.10.2011 – 10.10.2012. 2. KGW-20 №10628: 20.10.2011 – 26.102012 3. KGW-20 №10629: 26.10.2011 – 26.10.2012 4. KGW-20 №10630: 20.12.2011 – 20.12.2012 5. KGW-20 №10632: 10.11.2011 – 10.11.2012 6. KGW-20 №10633: 12.10.2011 – 12.10.2012 7. KGW-20 №10634: 31.10.2011 – 31.10.2012 8. KGW-20 №10635: 07.10.2011 – 07.10.2012 9. KGW-20 №11832: 06.10.2011 – 06.10.2012 10. KGW-20 №12715: 02.11.2011 – 02.11.2012 11. KGW-20 №12716: 04.08.2011 – 04.08.2012 12. KGW-15 №12901: 21.12.2011 – 21.12.2012 13. KGW-15 №12899:17.12.2011 – 17.12.2012 14. KGW-15 №12900: 17.12.2011 – 17.12.2012 15. KGW-15 №12898: 21.12.2011 – 21.12.2012

Reference	Document
EIA	Regulations regarding the assessment of environmental impacts (planned commercial and other activities in the Russian Federation", approved by order of the State Commission for the Protection of the Environment of the Russian Federation № 372 dated May 16, 2000
ES-TS	Technical specification electronic scale 1. ВТА-20ТА №223 dated 10.03.2004 2. ВТП-20Т №22 dated 10.03.2004
ES-Cal	Calibration certificate of the electronic scale 1. BTA-20TA №223 valid from 05.03.2011 till 05.03.2012 2. BTA-20TA №22 valid from 05.03.2011 till 05.03.2012
GOST	National standards: • GOST 8.453-82 Balance for static weighing» dated 01.11.2011 • GOST 427-75 «Metal ruler» 01.11.2011.
INV	Investments costs as per the financial statements internal accounting notifications of the company used as evidence that substantial investments done for the implementation of the project activity
LMD	List of measurement devices of the plant
MLA	"Methods for determining the mass of one inch of liquid 45luminium in the electrolytic method indicator 'Put into effect the order number RM-10-R319
MR-TS	Technical specification / Passport metal ruler 1. L100» №5-1 2004 2. LM» №10-2 dated 2007 3. LM» №10-1 dated 2007 4. LM» №10-3 dated 2009 5. L100» №1-1 dated 2004 6. L100» №1-2 dated 2004 7. L1500» №1-3 dated 2004 8. L90» №1-4 dated 2009 9. L100» №2-1 dated 2004 10. L100» №2-2 dated 2004 11. L150» №2-3 dated 2004 12. LM» №2-4 dated 2006 13. L100» №5-2 dated 2004 14. L100» №6-1 dated 2004

Reference	Document
	15. L100» №7-2 dated 2004 16. L150» №7-3 dated 2004 17. L100» №8-2 dated 2004 18. L150» №8-3 dated 2004 19. L150» №5-3 dated 2004
Own	Evidences regarding the ownership of the plant
PDD	• Project Design Document: "*Reduction of PFC emissions at Irkutsk aluminium smelter",* version 01 dated 26.03.2012 • Project Design Document: "*Reduction of PFC emissions at Irkutsk aluminium smelter",* version 04 dated 12.04.2012
PDV	Maximum allowable emissions defined by the relevant authority for the years 2008 – 2012
PIN	PIN "*Reduction of PFC emissions at Irkutsk aluminium smelter"*
PS	Internal reports and internal communication of the responsible technical departments that evidence the project starting date
PTS-02	Protocol of the technical council of the plant №38-114 dt. 01.02.2002 where the decision to go ahead with the implementation of the project as JI project in the framework of the Kyoto protocol was met.
PTS-03	Minutes of discussion ecological council of the plant of 19.11.2003 where the decision on PIN development was taken.
PTS-04	Protocol of the technical council of the plant №38-21 dt. 15.01.2004 where a feasibility study development and adoption of pre-backed technology within the framework of Article 6 of the Kyoto Protocol and start of the 5th potline were discussed with OAO SUAL-IrkAZ and SibVAMI[6] specialists
PTS-05	Protocol of the technical council were SibVAMI recommendations for starting the 5th potline were examined 13.09.2005
PTS-06	1. Protocol of the technical council of the plant №38-194 dt.

[6] Sibvami is an aluminium institute in Irkutsk. Pl. refer to http://www.sibvami.ru/

Reference	Document
	18.03.2006 regarding the implementation of the JI project. 2. Environmental strategy of RUSAL company accepted on 25.09.2006.
PTS-07	Passport of corporate project "Kyoto Protocol". Presentations of passport of project "Kyoto protocol" and Kyoto project realization.
PTS-08	1. Discussion of the cooperation with a consulting company. Minutes of discussion # 1 of 24/09/2008 2. Discussion of all potential JI projects in RUSAL carbon portfolio. Minutes of discussion on evaluation, checking and preparation of JI projects of 28/06/2008
PTS-09	Discussion of the postponing of consultancy services RUSAL and NOPPPU representatives attended. Minutes of discussion of 19.03.2009
PTS-10	Discussion of approach proposed by NOPPPU. Minutes of discussion of 02.04.2010
PTS-11	Preliminary Project Design Documents developed in 2011: 1. "Reduction of PFC emissions at Irkutsk aluminium smelter", Irkutsk, Russia 2. "Reduction of PFC emissions at Bratsk aluminium smelter", Bratsk, Russia 3. "Reduction of PFC emissions at Sayanogorsk aluminium smelter", Sayanogorsk, Russia 4. "Reduction of PFC emissions at Novokuznetzk aluminium smelter", Novokuznetsk, Russia
Reg	Russian law of the environmental protection
XLS	Emission reduction (Excel) calculation spreadsheet

Table 7-2: Background investigation and assessment documents

Reference	Document
B-1	*PFC EMISSIONS FROM PRIMARY ALUMINIUM PRODUCTION* paper written by Michael J. Gibbs, Vikram Bakshi, Karen Lawson and Diana Pape (ICF Consulting) and Eric J. Dolin (USEPA). Published on

Reference	Document
	the IPCC website http://www.ipcc-nggip.iges.or.jp/public/gp/bgp/3_3_PFC_Primary_Aluminium_Production.pdf
B-2	*Technology and Economics of Reducing PFC Emissions from Aluminium Production* paper written by Marks, M Atkinson, R Chase, S.D. Rand
B-3	*Results of the 2008 Anode Effect Survey* International Aluminium Institute 24 August 2009
B-4	*Prospective Study of the World Aluminium* Industry European Commission Joint Research Centre Institute for Prospective Technological Studies 2008
B-5	*Control of anode effect at aluminium pot Bazhin V.Yu., PhD; Vlasov A.A.; Lupenkov A.V.*
B-6	*Dynamic Control of the Cryolite Ratio and the Bath Temperature of Aluminium Reduction Cell* V. Yurkov, V. Mann, T. Piskazhova, K. Nikandrov, O. Trebukh 2002
B-7	*Development of aluminium reduction process supervisory control system 2004 Light Metals 2004 Edited by Alton T. Tabereaux TMS (The Minerals, Metals & Materials Society), 2004*
CDM-P	Registered CDM projects (Ref. 1610, 1860, 3019) and JI projects (Ref.0111) reviewed within determination in order to check approaches used in similar cases.
CT	Combined tool to identify the baseline scenario and demonstrate additionality version 03
KrAZ-D	Determination report "*Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium smelter"* dated 22.10.2008
KrAz-P	PDD "*Reduction of PFC emissions from RUSAL Krasnoyarsk Aluminium smelter"*
CPM	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
/DVM/	Joint Implementation determination and verification manual (Version 01), issued by the Joint Implementation Supervisory Committee

Reference	Document
GBM	Guidance on Criteria for baseline setting and monitoring version 03
GCP	Guidelines for users of the Joint Implementation project design document form (version 04)
GJI	Guidelines for the implementation of Article 6 of the Kyoto Protocol as per 9/CMP.1
IPCC-GP	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
IPPC	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual including guidelines for aluminium production
KP	Kyoto Protocol (1997)
MA	Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7))
TA	Tool for the demonstration and assessment of additionality (Ver. 5.2).

Table 7-3: Websites used

Reference	Link	Organisation
/ipcc/	www.ipcc-nggip.iges.or.jp	IPCC publications
/iai/	http://www.world-aluminium.org/	International Aluminium Institute
/unfccc/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons

Reference	MoI[1]		Name	Organisation / Function
/IM01/	V	☒ Mr. ☐ Ms	Tenigin Alexey	IrkAZ, Director QD
/IM01/	V	☒ Mr. ☐ Ms	Stepanov I	IrkAZ, Director HR

Reference	MoI[1]		Name	Organisation / Function
/**IM01**/	V	☒ Mr. ☐ Ms	Strelov A	IrkAZ, Director DLP
/**IM01**/	V	☒ Mr. ☐ Ms	Gorhkovenko V	IrkAZ, Director DEP
/**IM01**/	V	☐ Mr. ☒ Ms	Semenova T	IrkAZ, manager AHO
/**IM01**/	V	☒ Mr. ☐ Ms	Ivanec M	IrkAZ, metrolog
/**IM01**/	V	☐ Mr. ☒ Ms	Perceva O	IrkAZ, manager OE
/**IM01**/	V	☒ Mr. ☐ Ms	Borovin O	IrkAZ, manager OE
/**IM01**/	V	☐ Mr. ☒ Ms	Kuznecova A	IrkAZ, manager PDO
/**IM01**/	V	☒ Mr. ☐ Ms	Mokretckiy V I	IrkAZ, manager OPA DEP
/**IM01**/	V	☒ Mr. ☐ Ms	Smirnov V	master DLP

[1)] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

A1: Determination Protocol

A2: Assessment of Baseline Identification

A3: Assessment of Financial Parameters

A4: Assessment of Barrier analysis

A5: Outcome of the GSCP

ANNEX 1: DETERMINATION PROTOCOL

Table A-1: Requirements Checklist

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
A	***Project approvals by Parties involved***					
A.1	*DVM § 19* Have the DFPs of all Parties listed as Parties involved in the PDD provided written project approvals?	*Description:* The Party involved is Russia as the Host Country. No other Party is involved at this stage. The Host Country Approval is pending. *Means of verification:* The approval of the Host Party is pending. *Conclusion:* CAR A1 was raised on this context.	/PDD/	CAR A1	CAR A1	
A.2	*DVM § 19* Does the PDD identify at least the host Party as a Party involved?	*Description:* As per the section A.3 of the PDD Russia has been identified as the Host Country. No Investor Party was identified at this stage. *Means of verification:* This is indicated in the section A.3 of the PDD. *Conclusion:* The requirement is fulfilled.	/PDD/			OK
A.3	*DVM § 19* Has the DFP of the host Party issued a written project	*Description:* No written approval has been provided so far (see A.1). *Means of verification:* N/A	/PDD/	CAR A1	CAR A1	

[7] JISC 19 Annex 4

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	approval?	*Conclusion:* See A.1.				
A.4	*DVM § 20* Are all the written project approvals by Parties involved unconditional?	*Description:* No written approval has been provided so far (see A.1). *Means of verification:* N/A *Conclusion:* See A.1.	/PDD/	CAR A1	CAR A1	
A.5	*DVM § 21* Is each of the legal entities listed as project participants in the PDD authorized by a Party involved, which is also listed in the PDD, through: ▪ A written project approval by a Party involved, explicitly indicating the name of the legal entity? or ▪ Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity?	*Description:* No written approval has been provided so far (see A.1). *Means of verification:* N/A *Conclusion:* See A.1.	/PDD/	CAR A1	CAR A1	

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
B	***Baseline Setting***					
B.1	*DVM § 22* Does the PDD explicitly indicate which of the following approaches is used for identifying the baseline? ▪ JI specific approach ▪ Approved CDM methodology approach	The PDD explicitly indicates that the JI specific approach was used to identify the baseline.	PDD			OK
	JI specific approach only					
B.2	*DVM § 23* Does the PDD provide a detailed theoretical description in a complete and transparent manner?	*Description:* The PDD explicitly indicates that the JI specific approach was used to identify the baseline and justify the additionality. The PDD provide a detailed theoretical description in a complete and transparent manner. In particular it indicates that JI specific approach is based on the Guidance on criteria for baseline setting and monitoring" (Version 03) and Appendix B to Decision 9/CMP.1. Version 03 of the Guidance on criteria for baseline setting and monitoring" is the latest version that was issued within the JISC 26 meeting.	/PDD/ /CT/	CAR B1 CAR A2	CAR B1 CAR A2	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Means of determination: The applied approach was accepted because it follows the step-wise concept of the "Combined tool to identify the baseline scenario and demonstrate additionality". In particular it provides a step-wise method to identify the baseline scenario. The applied approach is applicable in the specific context of the considered project because the potential alternatives to the proposed project activity are available to project participant (PP) and cannot be implemented in parallel to the proposed project activity. In other words the PP can either introduce measures or not. The PP took into account the specific circumstances and technologies of the considered project activity. For example, the specific operation modes and historical data were taken into account in the context of the identification of the baseline. In doing so some conservative assumptions were used with regards to the frequency of the anode effect in the baseline scenario. (see comments below) Finally, it is worth to note that the applied approach is similar to the approach used in the similar project ("*Reduction of PFC emissions from Rusal Krasnoyarsk aluminium smelter*") that was positively determined. This project belongs to the same group of JI projects implemented on the aluminium smelters of Rusal company.				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Conclusion: Therefore the elaborated approach was assessed to be applicable for the purpose of the baseline identification. The requirement is fulfilled.				
B.3	*DVM § 23* Does the PDD provide justification that the baseline is established: (a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one?	*Description:* Yes, by listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one the PDD identifies and justifies baseline scenario. The following possible technical options were considered in the PDD. 1. *Continuation of smelter activity according to a standard Russian practice of Soderberg technology (VSS) application without measures specifically designed for reduction of frequency of anode effects.* 2. *Implementation of the project with cryolite reduction measures designed for reduction of frequency of anode effects without being registered as a JI-project activity* *Means of determination:* The PP has duly identified the project activity itself as well as the continuation of the pre-project situation as possible and plausible baseline options. Furthermore, the PP has	PDD	CL B1	CL B1	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		explained why there are no further plausible options by taking into account the specific circumstances of the considered plant. All considered scenarios were explained in a detailed manner. The determination team has checked the listed scenarios and was able to conclude that no scenario was omitted. Please refer to the assessment in annex 2 of this report. Following the elaborated JI specific approach all identified scenarios were checked against compliance with the relevant regulation, and afterwards the so called "key factor review" was performed in order to identify the most plausible option. *Conclusion:* As evident from the mentioned above the particular requirements of the DVM §23 (a) are fulfilled.				
B.4	(b) Taking into account relevant national and/or sectoral policies and circumstance? – Are key factors that affect a baseline taken into account?	*Description:* As per the PDD the continuation of the pre-project situation is not prohibited by any law or regulation. *Means of determination:* This could be confirmed through analysis of the relevant laws and regulation. In particular, the Russian law on environmental protection does not regulate PFC emissions. Please refer to annex 2 of this report.	PDD	CL B1	CL B1	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		In addition the PP has explained the key factors (that affect the baseline) and how these factors were taken into account. In particular, it is explained that the project activity faces uncertainty with regards to the energy savings and low economic benefit achieved through reduction of the anode effect. Furthermore the specific circumstances of the aluminium industry in Russia and the development of the aluminium sector were considered within the baseline identification. In particular, the owner of the factory (Rusal company) is the main aluminium producer in Russia. Rusal experts are well-experienced and competent with regards to the issues related to the aluminium sector and applied technologies. Rusal experts' competence and experience was used within the baseline identification. *Conclusion:* As evident from the mentioned above the particular requirements of the DVM §23 (b) are fulfilled.				
B.5	(c) In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors?	*Description:* PDD provides justification that the baseline is established in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors. *Means of determination:* The applied approach of the baseline identification involves the step-wise concept of the *"Combined tool to identify the baseline scenario and*	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		demonstrate additionality". Within the justification all plants internal data was transparently presented in the PDD. The same could be verified within the determination. All applied data sources could be verified. Therefore it was assessed as transparent. Please also refer to the comment under B.1" *Conclusion:* The requirement is fulfilled.				
B.6	(d) Taking into account of uncertainties and using conservative assumptions?	*Description:* Uncertainties and using conservative assumptions were taken into account within the baseline identification. *Means of determination:* On the one hand PDD demonstrates that continuation of the pre-project situation is not prohibited by any law or regulation and reflects also the common practice. On the other hand there are uncertainties with regard to the energy savings that might be achieved through the project. As a result the PDD concludes that continuation of the pre-project practice is the most plausible scenario. For detailed assessment please refer to annex 2. *Conclusion:* The requirement is fulfilled.	PDD			OK
B.7	(e) In such a way that ERUs cannot be earned for decreases in activity levels	*Description:* The amount of ERU depends inter alia on the operation of the smelters and the corresponding aluminium production.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	outside the project activity or due to force majeure?	*Means of determination:* As evident from the PDD the aluminium production was on a constant level with a slightly increasing tendency. However there were no significant fluctuations. The monitoring ensures that ERUs cannot be earned for decreases in activity levels outside the project activity or due to force majeure. Please refer to the assessment of the monitoring plan. *Conclusion:* The requirement is fulfilled.				
B.8	(f) By drawing on the list of standard variables contained in appendix B to . Guidance on criteria for baseline setting and monitoring., as appropriate	*Description:* The requirements of the appendix B to Guidance on criteria for baseline setting and monitoring were taken into account within the development of the monitoring plan. The standard variables were duly elaborated in line with IPCC data. *Means of determination:* Please refer to the assessment of the monitoring plan in this annex below. *Conclusion:* The requirement is fulfilled.	PDD			OK
B.9	*DVM § 24* If selected elements or combinations of approved CDM methodologies or methodological tools for baseline setting are used, are	*Description:* Not applicable because a JI specific approach was elaborated and applied. *Means of determination:* N/A *Conclusion:* N/A	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	the selected elements or combinations together with the elements supplementary developed by the project participants in line with 23 above?					
B.10	*DVM § 25* If a multi-project emission factor is used, does the PDD provide appropriate justification?	*Description:* N/A *Means of determination:* N/A *Conclusion:* N/A	PDD			OK
B.11	*DVM § 25* Does the PDD provide the title, reference number and version of the approved CDM methodology used?	*Description:* N/A *Means of determination:* N/A *Conclusion:* N/A	PDD			OK
	Approved CDM methodology approach only	*DVM §26 are not applicable because an approved CDM methodology was no used.*				
C	***Additionality***					

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	JI specific approach only					
C.1	*DVM § 28* Does the PDD indicate which of the following approaches for demonstrating additionality is used? *(a)* Provision of traceable and transparent information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of removals; (b) Provision of traceable and transparent information that an AIE has already positively determined that a comparable project (to be) implemented under comparable circumstances has additionality;	*Description:* The PDD explicitly indicates that the JI specific approach was used to justify the additionality. Furthermore the PDD clearly indicates that "*Provision of traceable and transparent information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of removals"* was used. *Means of determination:* This is evident from the PDD. *Conclusion:* The requirement is fulfilled.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	(c) Application of the most recent version of the .Tool for the demonstration and assessment of additionality. (allowing for a two-month grace period) or any other method for proving additionality approved by the CDM Executive Board.					
C.2	*DVM § 29* (a) Does the PDD provide a justification of the applicability of the approach with a clear and transparent description?	*Description:* The PDD explicitly indicates that the JI specific approach was used to justify the additionality. Furthermore the PDD clearly indicates that "*Provision of traceable and transparent information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of removals"* was used. The PDD provide a detailed theoretical description in a complete and transparent manner. In particular it indicates that JI specific approach is based on the Guidance on criteria for baseline setting and monitoring" (Version 03) and Appendix B to Decision 9/CMP.1. Version 03 of the	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Guidance on criteria for baseline setting and monitoring" is the latest version that was issued within the JISC 26 meeting. *Means of determination:* The applied approach was accepted because it follows the step-wise concept of the "Combined tool to identify the baseline scenario and demonstrate additionality". In particular it provides a step-wise method to identify the baseline scenario and justify the additionality. The applied approach involves the major steps like the identification of the plausible alternatives, identification of the most plausible alternative by means of investment analysis and, finally, the common practice analysis. The applied approach is applicable in the specific context of the considered project because the potential alternatives to the proposed project activity are available to project participant (PP) and cannot be implemented in parallel to the proposed project activity. In other words the PP can either introduce measures or not. Furthermore it allows selection of the most plausible alternative by using conservative assumptions. The applied approach ensures that alternative, which has the lowest financial attractiveness is excluded as possible baseline option. In essence, the applied approach demonstrates that the project activity is not economically viable as compared to the pre-project				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		situation. Finally, the PDD performs common practice analysis and shows that considered project has not already diffused in the relevant sector and geographical area. The PP has also taken into account specific circumstances and technologies of the considered project activity. For example, the specific operation modes and historical data were taken into account. It is also worth to note that the applied approach is similar to the approach used in the similar project ("Reduction of PFC emissions from Rusal Krasnoyarsk aluminium smelter") that was positively determined. This project belongs to the same group of JI projects implemented on the aluminium smelters of Rusal company. The justification of the additionality could be verified as follows. Step 2.1. Identification of the alternative scenarios. All possible and plausible scenarios were identified and justified in the context of the baseline identification. Please refer to the assessment given in annex 2 of this report. Step 2.2 Investment analysis As already noted the economic benefits from energy savings are of insignificant size as compared to the investments				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		required to implement the project activity. Furthermore, the assessment of the potential energy savings is highly uncertain. Therefore it was correctly concluded that theoretical assessment of the electricity savings is not a suitable basis for making investment decisions. Please refer to annex 2. Nevertheless the PP was requested to revise the PDD and to consider probable benefit from energy savings. The same was performed in the PDD. The investment costs could be verified based on the financial statement of the company and various internal financial reports. The amount of energy savings and the corresponding cost savings have been assessed as appropriate. Please refer to annex 2. From the results presented in the PDD it is quite obvious that potential benefit from energy savings is disproportional to the required investment. Please refer to annex 2. Finally, the PP performed common practice analysis. In doing so, aluminium industry was defined as the relevant sector and Russian Federation as the geographical area. This deemed to be appropriate. The considered aluminium smelter belongs to the largest aluminium producer group – Rusal. Based on the information provided about the aluminium industry it could be verified that measures similar to the project activity were				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		observed at the following plants Krasnoyarsk, Irkutsk, Bratsk, Sayonogorsk, Novokuznetzk. All these measures were implemented between 2002- 2006. However all these measures are either approved as JI projects or seeking approval as JI project. The results of the common practice analysis were confirmed by another AIE within the determination of the Krasnoyarsk project. The results of the common practice analysis could be further supported by the information provided by independent data sources/B-1/B-2//B-3/. Also in the registered CDM projects (Ref. 1610, 1860, 3019) it is explained that measures to reduce anode effect frequency are often not prioritised by plants managers because such measures do not bring any economic of financial benefit. *Conclusion:* Therefore the elaborated approach was assessed to be applicable for the purpose of the baseline identification.				
C.3	*DVM § 29* (b) Are additionality proofs provided?	*Description:* All additionality proofs referred to in the PDD and used within the addtionality justification were provided and could be verified by the determination team. *Means of determination:* PDD and corresponding documented evidences. *Conclusion:* The requirement is fulfilled.	PDD			OK
C.4	*DVM § 29*	*Description:* Please refer to the comment under B.1 and B.2.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	(c) Is the additionality demonstrated appropriately as a result?	*Means of determination:* PDD *Conclusion:* The requirement is fulfilled.				
C.5	*DVM § 30* *If the approach 28 (c) is chosen,* are all explanations, descriptions and analyses made in accordance with the selected tool or method?	*Description:* Not applicable because approach 28 (c) was not chosen. *Means of determination:* N/A *Conclusion:* N/A	PDD			OK
	Approved CDM methodology approach only	*As a JI specific approach was applied the DVM §31 is not relevant.*				
D	***Project boundary (applicable except for JI LULUCF projects)***					
	JI specific approach only					
D.1	*DVM § 32* Does the project boundary defined in the PDD encompass all anthropogenic emissions by sources of GHGs that are	*Description:* The PDD describes the project boundary, including the physical delineation of the proposed JI project activity. *Means of determination:* Based on provided evidences and corroborated by a site visit it could be determined that the delineation of the project boundary is correct and meets the	PDD CR8			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		requirements of the relevant JI rules – DVM and Guidance on criteria for baseline setting and monitoring. As evident from the PDD the project boundary includes GHG emission sources attributed to the project activity. In particular, the project boundary includes all electrolysis facilities where aluminium is produced. As per the PDD *"It is only those sources are taken into account emissions from which are above (1%) in the overall quantity of GHG emissions.*" This is in line with the requirements of the Guidance on criteria for baseline setting and monitoring version 03. The PDD summarizes the emission sources and GHG types in a table format. *Conclusion:* The requirement is fulfilled.				
D.2	(i) Under the control of the project participants?	*Description:* All emissions and corresponding sources are under control of project participant (PP). *Means of determination:* The project boundary includes only PFC emissions. PFC emissions in the project and in the baseline scenario depend mainly on the aluminium production, which is under control of PP. *Conclusion:* The requirement is fulfilled.	PDD			OK
D.3	(ii) Reasonably attributable to the project?	*Description:* The project boundary includes PFC emissions resulted from anode effect in the aluminium production.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Means of determination: It is obvious that these emission sources are attributable to the project activity. *Conclusion:* The requirement is fulfilled				
D.4	(iii) Significant?	*Description:* As per the PDD *"It is only those sources are taken into account emissions from which are above (1%) in the overall quantity of GHG emissions.*" *Means of determination:* This is in line with the requirements of the Guidance on criteria for baseline setting and monitoring version 03. *Conclusion:* The requirement is fulfilled	PDD			OK
D.5	*DVM § 32* *(b) Is the project boundary defined on the basis of a case-by-case assessment with regard to the criteria referred to in 32 (a) above?*	*Description:* The project boundary is defined on the basis of a case-by-case assessment with regard to the criteria referred to in 32 (a) above *Means of determination:* Please refer to the assessments under D.1 – D.4 above. *Conclusion:* The requirement is fulfilled	PDD			OK
D.6	*DVM § 32* (c) Are the delineation of the project boundary and the gases and sources included appropriately described and	*Description:* The PDD describes the project boundary by using a figure that shows the physical delineation of the proposed JI project activity. *Means of determination:* Based on provided evidences and corroborated by a site visit it could be determined that the	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	justified in the PDD by using a figure or flow chart as appropriate?	delineation of the project boundary is correct and meets the requirements of the relevant JI rules – DVM and Guidance on criteria for baseline setting and monitoring. *Conclusion:* The requirement is fulfilled.				
D.7	*DVM § 32* (d) Are all gases and sources included explicitly stated, and the exclusions of any sources related to the baseline or the project are appropriately justified?	*Description:* All gases and sources included are explicitly stated, and the exclusions of any sources related to the baseline or the project are appropriately justified. *Means of determination:* The PFC emissions are the main emission source. As already noted *"It is only those sources are taken into account emissions from which are above (1%) in the overall quantity of GHG emissions.*" This is in line with the requirements of the Guidance on criteria for baseline setting and monitoring version 03. The CO_2 emissions from power grid due to the savings of the electricity consumptions were excluded. This conservative and, hence, was accepted. *Conclusion: The requirement is fulfilled*	PDD			OK
	Approved CDM methodology approach only	DVM §33 is not applicable because JI specific approach was used.				
E	***Crediting period***					
E.1	*DVM § 34* (a) - Does the PDD state the	*Description:* The project starting date is 11 February 2002 – this is the time period where real implementation of the	PDD PS			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	starting date of the project as the date on which the implementation or construction or real action of the project will begin or began? - Is the starting date after the beginning of 2000?	scheduled measures began. *Means of determination:* As already noted on 01.02.2002 the decision to go ahead with the project activity was taken. Afterwards the responsible personnel have directly started with implementation of the measures. The implementation involved different tests with electrolyte and cryolite ratio as well as some organizational measures. As the first measures were performed by the personnel of the smelter there are no contracts with third parties to evidence the starting date. However the implementation of the measures directly after the management decision could be duly evidenced by means of various internal reports. Therefore the project starting date was assessed as appropriate. *Conclusion: The requirement is fulfilled*				
E.2	*DVM § 34* (b) Does the PDD state the expected operational lifetime of the project in years and months?	*Description:* As per the PDD the expected operational lifetime is 20 years. *Means of determination:* The operational lifetime depends mainly on the lifetime of the equipment. The lifetime of the aluminium smelters is up to 50 years. Therefore the assumed lifetime was accepted. It is plausible as compared to the operational lifetime (between 10-30 years) indicated in other registered CDM projects (Ref: 1610, 1860, 3019).	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Conclusion: The requirement is fulfilled.				
E.3	*DVM § 34* (c) Does the PDD state the length of the crediting period in years and months?	*Description:* Please refer to section C.3 of the PDD. As per the PDD the length of the first crediting period is 5 years, i.e. 60 months. In addition the PDD states that in case the second commitment period will be established under Kyoto Protocol, and further to recent Russian government recognition, emission reductions for the subsequent period will be applied. *Means of determination:* The choice of the crediting period between 2008 and 2012 is appropriate because the project was operational in 2008. In addition the PDD states that in case the second commitment period will be established under Kyoto Protocol, and further to recent Russian government recognition, emission reductions for the subsequent period will be applied. The crediting period will not exceed the project operational lifetime. This is in line with Glossary of Joint Implementation Terms (Version 2).	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
E.4	*DVM § 34* (c) Is the starting date of the crediting period on or after the date of the first emission reductions or enhancements of net removals generated by the project?	The starting date of the crediting period will be on or after the date the first emission reductions. This is in line with §34 DVM.	PDD			OK
E.5	*DVM § 34* (d) Does the PDD state that the crediting period for issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project?	Please refer to E.3.	PDD			OK
E.6	*DVM § 34* (d) *If the crediting period extends beyond 2012,* does the PDD state that the extension is subject to the host Party approval?	Yes, the PDD states that the extension is subject to the host Party approval. Please refer to E.3.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
E.7	Are the estimates of emission reductions or enhancements of net removals presented separately for those until 2012 and those after 2012?	*Description:* The PDD provides estimates of emission reductions presented separately for those until 2012 and those after 2012. *Means of determination:* This is evident from the separate tables in PDD section A.4.3.1 and section E. *Conclusion:* The requirement is fulfilled	PDD			OK
F	***Monitoring plan***					
F.1	*DVM § 35* Does the PDD explicitly indicate which of the following approaches is used? – JI specific approach – Approved CDM methodology approach	*Description:* The PDD explicitly indicates that a JI specific approach was used. *Means of determination:* This is evident from the PDD section D.1. As per the PDD the applied approach is based on the requirements of the "Guidance on criteria for baseline and monitoring" version 03. This is the most recent version and hence appropriate. *Conclusion:* The requirement is fulfilled	PDD GBM			OK
	JI specific approach only					
F.2	*DVM § 36* (a) Does the monitoring plan describe	*Description:* The monitoring plan is elaborated in detail in section D of the PDD.	PDD GBM			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Means of determination: As per the PDD the applied approach is based on the requirements of the "Guidance on criteria for baseline and monitoring" version 03. This is the most recent version and hence appropriate. As per the PDD the technologies and formulas for defining emissions are based on the requirements and provisions of the 2006 Aluminium Sector greenhouse gas protocol developed by International Aluminium Institute, which were included in the 2006 IPCC Guidelines (chapter 4.4. Primary Aluminium production. The determination team has crosschecked the applied approach with the approach included in the IPCC guidelines and found it consistent. Also the fixed parameters and variables were found consistent with the IPCC data. The applied approach was assessed as appropriate because it is based on the requirements of the IPCC guidelines. In addition, it should be noted that approved CDM methodologies, which were elaborated for similar measures also explicitly refer to the IPCC guidelines. Finally, it is worth to note that such approach was elaborated for another very similar JI project ("*Reduction of PFC emissions from Krasnoyarsk Aluminium smelter") and* positively determined by another Independent Entity. The referenced project belongs to same group of Rusal projects	IPCC CDM-P /iai/			

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		and involves measures similar to those that were implemented in the considered project. *Conclusion:* The requirement is fulfilled				
F.2.1	– *All relevant factors and key characteristics that will be monitored?*	*Description:* The monitoring plan describes all relevant factors and key characteristics that will be monitored. *Means of determination:* The main factors are the aluminium production, the frequency of anode effect and duration of anode effect. All these factors are included in the monitoring plan. The key characteristics are the slope coefficient and the weight fraction of C_2F_6/CF_4. For these two parameters the reference data as per the 2006 IPCC Guidelines will be used. The use of IPCC data was assessed as appropriate. Also the monitoring plan for Krasnoyarsk project[8], which was positively determined, refers to the same IPCC data. *Conclusion:* The requirement is fulfilled. Please refer to CL D1 and CL D2.	PDD IPCC	CL D1 CL D2	CL D1 CL D2	OK
F.2.2	– *The period in which they will be monitored?*	*Description:* The monitoring period depends on the monitoring parameter and is either constantly, monthly or	PDD	CL D2	CL D2	OK

[8] Reduction of PFC emissions from Krasnoyarsk Aluminium smelter

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		default values. *Means of determination:* The period in which the parameters will be monitored was assessed as appropriate. *Conclusion:* The requirement is fulfilled	IPCC CDM-P			
F.2.3	– *All decisive factors for the control and reporting of project performance?*	*Description:* The monitoring plan describes the monitoring procedures including all decisive factors for the control and reporting of the project performance. *Means of determination:* Within the on-site assessment it was observed that all parameters are monitored by the plant according to its internal reporting procedures and would have been monitored also in absence of the project activity. The project activity does not require monitoring of new or additional parameters. *Conclusion:* The requirement is fulfilled.	PDD			OK
F.3	*DVM § 36* (b) Does the monitoring plan specify the indicators, constants and variables used that are reliable, valid and provide transparent picture of the emission reductions or enhancements of net removals	*Description:* The monitoring plan specifies the indicators, constants and variables. *Means of determination:* Most importantly are the indicators like the slope coefficient and the weight fraction of C_2F_6/CF_4. For these two parameters the reference data as per the 2006 IPCC guidelines will be used. The use of IPCC data was assessed as appropriate	PDD IPCC CDM-P	CL D2	CL D2	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	to be monitored?	because it is an internationally accepted source. Also the monitoring plan for Krasnoyarsk project[9], which was positively determined, refers to the IPCC data. *Conclusion:* The requirement is fulfilled.				
F.4	*DVM § 36* (b) *If default values are used*	*Description:* The monitoring plan specifies the following default values: • GHG potential of Global Warming Potential of CF_4=6,500 • Global Warming Potential of C_2F_6 = 9,200 *Means of determination:* The applied values are in line with the IPCC values and are used in relevant approved CDM methodologies (like AM0030). Therefore the default values were accepted. *Conclusion:* The requirement is fulfilled.	PDD IPCC CDM-P			OK
F.4.1	- *Are accuracy and reasonableness carefully balanced in their selection?*	IPCC values are used. Please refer to the comment under F.4.	PDD IPCC			OK
F.4.2	– *Do the default values originate from recognized sources?*	IPCC values are used. Please refer to the comment under F.4.	PDD			OK

[9] Reduction of PFC emissions from Krasnoyarsk Aluminium smelter

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
			IPCC			
F.4.3	– *Are the default values supported by statistical analyses providing reasonable confidence levels?*	IPCC values are used that represent internationally accepted data source. Please refer to the comment under F.4.	PDD IPCC			OK
F.4.4	– *Are the default values presented in a transparent manner?*	The PDD clearly indicate the values and the applied data source. Please refer to the comment under F.4.	PDD			OK
F.5	*DVM § 36* (b) (i) For those values that are to be provided by the project participants, does the monitoring plan clearly indicate how the values are to be selected and justified?	*Description:* Values that are included in the monitoring plan and that will be monitored by PP the monitoring plan clearly indicates how these values will be selected and justified. *Means of determination:* As per the PDD all monitoring parameters have to be monitored according to the requirements of the authority that is responsible of supervising the ecological aspects of the company. The PDD states that "*monitoring of emissions is based on a special control schemes, including standards, metering, operators, control periods, measuring methods and parameters that were elaborated in line with the requirements of the Federal Service for Ecological,*	PDD ATT ATT1 ATT2	CL D4 CL D2	CL D4 CL D2	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Technological and Atomic Supervision in accordance with the Decree № 182 of March 31, 2005. The same could be verified based on the information provided in the maximum allowable emissions defined by the relevant authority provided for the years 2008 – 2012. Based on this it could be confirmed that the monitoring procedure is in line with the requirements of the Host Country. In response to the finding the PP explained that the frequency and duration of the anode effect in the baseline scenario are based on the historical values for the years 2000-2002. The PP also explained that an increase of the frequency was observed. The same could be verified based on the internal reports. However the increasing tendency of the anode effect frequency was not taken into account. This is conservative and was accepted by the determination team. Within the estimation the aluminium amount as well as the anode effect duration and frequency are taken from the internal reports extracted from the IT supported system. It should be noted that the estimation is based on the actual figures for the years 2008-2011 and estimate for the year 2012. Bearing in mind that the final version of the PDD was developed in 2012 the use of actual figures was accepted.				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Furthermore the PDD specifies for each parameter the relevant norm that regulates its monitoring method. The particular norms were checked and it could be confirmed that they are appropriate for measurements of the corresponding parameters. In particular GOST standards referenced in the PDD were reviewed and found appropriate. *Conclusion:* The requirement is fulfilled.				
F.6	*DVM § 36* (b) (ii) For other values,	For other values IPCC data will be applied. Please refer to the comments above.	PDD IPCC			OK
F.6.1	– *Does the monitoring plan clearly indicate the precise references from which these values are taken?*	Yes the reference to the IPCC data specifies the chapter and page.	PDD IPCC			OK
F.6.2	– *Is the conservativeness of the values provided justified?*	IPCC data was assessed to be the most reliable and suitable data.	PDD IPCC			OK
F.7	*DVM § 36* (b) (iii) For all data sources,	CL D4 was raised in this context.	PDD	CL D4	CL D4	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	does the monitoring plan specify the procedures to be followed if expected data are unavailable?					
F.8	*DVM § 36* (b) (iv) Are International System Unit (SI units) used?	*Description:* Within the measurements the international system units are used. *Means of determination:* The PDD was crosschecked against the Guidance on criteria for baseline setting and monitoring and it could be confirmed that international system units are used. *Conclusion:* The requirement is fulfilled.	PDD			OK
F.9	*DVM § 36* (b) (v) Does the monitoring plan note any parameters, coefficients, variables, etc. that are used to calculate baseline emissions or net removals but are obtained through monitoring?	*Please refer to comments under F.1.-F.8.*	PDD			OK
F.10	*DVM § 36* (b) (v) Is the use of parameters,	The monitoring plan was checked and it could be confirmed that parameters, coefficients, variables, etc. Are consistent between the baseline and monitoring plan.	PDD XLS			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	coefficients, variables, etc. consistent between the baseline and monitoring plan?					
F.11	*DVM § 36* (c) Does the monitoring plan draw on the list of standard variables contained in appendix B of .Guidance on criteria for baseline setting and monitoring.?	Please refer to the comments above.	PDD			OK
F.12	*DVM § 36* (d) Does the monitoring plan explicitly and clearly distinguish:					
F.12.1	*(i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination?*	The main monitoring parameters are the aluminium production, the frequency of anode effect and duration of anode effect. All these factors are included in the monitoring plan. Further variables will be sourced from IPCC guidelines. These are the slope coefficient and the weight fraction of C_2F_6/CF_4.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Finally, the PDD clearly states that Global Warming Potential of CF_4 = 6,500 and the Global Warming Potential of C_2F_6 = 9,200 will remain fixed throughout the crediting period.				
F.12.2	*(ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination?*	N/A				
F.12.3	*(iii) Data and parameters that are monitored throughout the crediting period?*	Please refer to the comment under F.1. – F.12.	PDD			OK
F.13	*DVM § 36* (e) Does the monitoring plan describe the methods employed for data monitoring (including its frequency) and recording?	*Description:* The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording. *Means of determination:* The monitoring plan as described in section D specifies the methods like Russian Norms (e.g. method for determining the amount of aluminium in	PDD ATT1 ATT2 CAL-IT Cal-PRK			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		electrolytic pots KPVO 440.01.01.15.02-2008. Also provisions related to monitoring frequency and recording (e.g. monthly, constantly, etc.) is specified in section D. *Conclusion:* The requirement is fulfilled.	Cal-Sc CS-TS CS-Cal ES-TS ES-Cal GOST LMD MR-TS PDV MLA			
F.14	*DVM § 36* (f) Does the monitoring plan elaborate all algorithms and formulae used for the estimation/calculation of baseline emissions/removals and project emissions/removals or direct monitoring of emission reductions from the project, leakage, as appropriate?	Please refer to F.2.	PDD IPCC			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
F.15	*DVM § 36* (f) (i) Is the underlying rationale for the algorithms/formulae explained?	Please refer to F.2.	PDD			OK
F.16	*DVM § 36* (f) (ii) Are consistent variables, equation formats, subscripts etc. used?	The determination team has checked the monitoring plan and was able to confirm that variables, equation formats, subscripts were consistently used.	PDD			OK
F.17	*DVM § 36* (f) (iii) Are all equations numbered?	There are only few equations. Though the few equations are not numbered the algorithm is clearly elaborated in the monitoring plan.	PDD			OK
F.18	*DVM § 36* (f) (iv) Are all variables, with units indicated defined?	As evident from the PDD all variables are clearly defined. The units are specified for all variables.	PDD			OK
F.19	*DVM § 36*	Please refer to the comment under F 14	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	(f) (v) Is the conservativeness of the algorithms/procedures justified?					
F.20	*DVM § 36* (f) (v) To the extent possible, are methods to quantitatively account for uncertainty in key parameters included?	Please refer to the comment under F 14	PDD			OK
F.21	*DVM § 36* (f) (vi) Is consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions or net removals of the baseline ensured?	*Description:* Yes, the consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions of the baseline is ensured. *Means of determination:* Most important is the average frequency and duration of anode effect in the baseline. This data was presented in the PDD in a detailed manner. The same could be confirmed within the determination based on the internal reports The same is evident from the IT supported system of the plant. *Conclusion:* The requirement is fulfilled.	PDD IPCC AE			OK
F.22	*DVM § 36* (f) (vii) Are any parts of the	All formulae are explained. Further explanation can be found in the IPCC guidelines.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	algorithms or formulae that are not self-evident explained?					
F.23	*DVM § 36* Is it justified that the procedure is consistent with standard technical procedures in the relevant sector?	As already noted the formulae and algorithm are based on the internationally accepted IPCC guidelines.	PDD			OK
F.24	*DVM § 36* (f) (vii) Are references provided as necessary?	As evident from the PDD all references are provided.	PDD			OK
F.25	*DVM § 36* (f) (vii) Are implicit and explicit key assumptions explained in a transparent manner?	All key assumptions are explained in a transparent manner and are in line with IPCC guidelines.	PDD			OK
F.26	*DVM § 36* (f) (vii) Is it clearly stated which assumptions and procedures	Please refer to the comments above.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	have significant uncertainty associated with them, and how such uncertainty is to be addressed?					
F.27	*DVM § 36* (f) (vii) Is the uncertainty of key parameters described and, where possible, is an uncertainty range at 95% confidence level for key parameters for the calculation of emission reductions or enhancements of net removals provided?	*N/A*	PDD			OK
F.28	*DVM § 36* (g) Does the monitoring plan identify a national or international monitoring standard if such standard has to be and/or is applied to certain aspects of the project?	As already noted the monitoring of particular parameters will take into account the relevant national monitoring norms.	PDD GOST			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
F.29	*Does the monitoring plan provide a reference as to where a detailed description of the standard can be found?*	The names of the relevant Russian norms are clearly provided in the PDD.	PDD GOST			OK
F.30	*DVM § 36* (h) Does the monitoring plan document statistical techniques, if used for monitoring, and that they are used in a conservative manner?	*N/A*	PDD			OK
F.31	*DVM § 36* (i) Does the monitoring plan present the quality assurance and control procedures for the monitoring process, including, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available upon request?	*Description:* The monitoring plan specifies quality assurance and quality control procedures for the main parameters. *Means of determination:* In particular, **Amount of aluminium** Amount of aluminium will be measured by scales. The measurement method described in the PDD is in line with the method used by the plant.	PDD ATT1 ATT2 CAL-IT Cal-PRK Cal-Sc CS-TS CS-Cal	CL D2	CL D2	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		The physical installation of the applied scales could be verified during the on-site assessment. The nomenclature number of the applied scales as well as the maximum permissible error (+/- 20kg) was crosschecked with provided technical specification (technical passport) of the scales and found consistent. The calibration of the scales is regulated by the official technical norm (GOST). The calibration frequency is one year. The timely calibration could be verified based on the provided calibration certificates. For technical specification and calibration evidences please refer to the referenced evidences in the table 7.1 of this report. The amount of aluminium in liquid form in electrolysers is determined according to the official guidelines. Therefore the applied method was accepted. **Anode effect frequency and duration** Anode effect frequency and duration is measured by the IT supported system – automated control system of electrolysis aluminium. The details of the measurement method including the applied procedures are described in the PDD. The same could be confirmed within the on-site assessment. In particular it was observed that all electrolyte cells are connected to the centralized IT supported system. The uncertainty of measurements taken as 2% could be	ES-TS ES-Cal GOST LMD MR-TS PDV MLA			

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		duly evidenced within the on-site assessment. The calibration of the system, i.e. the calibration of the measurement channel[10] and control system performance is performed according to the internal Rules of calibration of measurement equipment. All monitoring parameters are measured automatically, so that a human error is kept to a minimum. Furthermore it should be noted that according to annual environmental reporting regulations the PP calculates and reports PFC emissions to the International Aluminium Institute. This further ensures a high level of accuracy of the measurements. All monitored parameters are archived in electronic form. Finally it should be noted that PP has provided technical specifications of all applied measurement devices. For all measurement devices the corresponding timely calibration could be evidenced based on the calibration certificates. For calibrations that are performed by the plant's own laboratory the corresponding accreditation certificates were provided. *Conclusion:* The requirement is fulfilled. Please also refer to CL D2.				

[10] The calibration is based on the measuremnt of the voltage on the anode-cathode area

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
F.32	*DVM § 36* (j) Does the monitoring plan clearly identify the responsibilities and the authority regarding the monitoring activities?	*Description:* The monitoring plan clearly specifies the responsibilities for the monitoring activities. *Means of determination:* The operation and management structure is described in the section D.3 of the PDD. The described structure could be confirmed during the on-site assessment based on the interviews with responsible personnel. The correctness of the described structure could be further verified by the names of departments and responsible personnel evident from the internal reports/approvals. It is important to note that project monitoring is a part of the plant's entire monitoring system, i.e. all parameters are monitored by the plant due to relevant laws or other obligations (e.g. reporting to International Aluminium Institute). Therefore the project monitoring does not require measurements of new/additional parameters. *Conclusion:* The requirement is fulfilled.	PDD IM01			OK
F.33	*DVM § 36* (k) Does the monitoring plan, on the whole, reflect good monitoring practices appropriate	Yes, the monitoring plan, on the whole, reflects good monitoring practices appropriate to the project type because the monitoring methods are based on the official norms of the Host country.	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	to the project type?					
F.34	*If it is a JI LULUCF project, is the good practice guidance developed by IPCC applied?*	*N/A*				
F.35	*DVM § 36* (l) Does the monitoring plan provide, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources but not including data that are calculated with equations?	*Description:* The monitoring plan provides in tabular form, a complete compilation of the data that has to be collected and measured. *Means of determination:* This is evident from the PDD. The table has been checked against the elaborated formulae and monitoring concept. It could be concluded that all required information is summarized in the relevant tables. *Conclusion:* The requirement is fulfilled.	PDD			OK
F.36	*DVM § 36* *(m) Does the monitoring plan indicate that the data monitored and required for verification are to be kept for two years after the*	As per the PDD "The data on the emission reductions achieved, and the original data will be available for project participants 2 years after the last transfer of ERUs". Therefore this requirement is fulfilled. See CAR D3.	PDD	CAR D3	CAR D3	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	last transfer of ERUs for the project?					
F.37	*DVM § 37* *If selected elements or combinations of approved CDM methodologies or methodological tools are used for establishing the monitoring plan,* are the selected elements or combination, together with elements supplementary developed by the project participants in line with 36 above?	*N/A*				
	Approved CDM methodology approach only	DVM § 38 is not applicable because a JI specific approach was used.				
	Applicable to both JI specific approach and approved CDM methodology approach					
F.43	*DVM § 39* *If the monitoring plan indicates*	*N/A because an overlapping of monitoring periods is not indicated.*				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	overlapping monitoring periods during the crediting period,					
G	***Leakage***					
	JI specific approach only					
G.1	*DVM § 40* (a) Does the PDD appropriately describe an assessment of the potential leakage of the project and appropriately explain which sources of leakage are to be calculated and which can be neglected?	*Description:* As per the PDD the project activity will not result in leakage emissions. *Means of determination:* The CO_2 emissions from power grid due to the savings of the electricity consumptions were not considered. This conservative and, hence, was accepted. Conclusion: The requirement is fulfilled	PDD			OK
G.2	*DVM § 40* (b) Does the PDD provide a procedure for an ex ante estimate of leakage?	*N/A:*				
	Approved CDM methodology approach only					
G.3	*DVM § 41*	*N/A*				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	Are the leakage and the procedure for its estimation defined in accordance with the approved CDM methodology?					
H	***Estimation of emission reductions or enhancements of net removals***					
H.1	*DVM § 42* Does the PDD indicate which of the following approaches it chooses? (a) Assessment of emissions or net removals in the baseline scenario and in the project scenario (b) Direct assessment of emission reductions	*Description:* The PDD indicates that estimates are based on the assessment of emissions or net removals in the baseline scenario and in the project scenario *Means of determination:* This is evident from the PDD *Conclusion:* The requirement is fulfilled.	PDD	CL D2	CLD2	OK
H.2	*DVM § 43* *If the approach (a) in 42 is chosen,* does the PDD provide ex ante estimates of:					

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
H.2.1	(a) Emissions or net removals for the project scenario (within the project boundary)?	*Description:* PDD provide ex ante estimates of emissions for the project scenario (within the project boundary). *Means of determination:* The estimation of the project emissions is based on the formulae specified in the monitoring plan. In doing so, the **aluminium amount as well as the anode effect duration and frequency** are taken from the internal reports extracted from the IT supported system. It should be noted that the estimation is based on the actual figures for the years 2008-2011. The values for the year 2012 are based on the historical values. Bearing in mind that the final version of the PDD was developed in 2012 the use of actual figures was accepted. **S_{CF4} – the slope coefficient for CF_4**, (kg of CF_4 /tonne of aluminium)/(number of minutes of anode effect/pot per day) taken 0.092 is in line with the IPCC values. The same value was used in the similar project – please refer to PDD for Krasnoyarsk project. **$F_{C2F6\ /\ CF4}$ – the weight fraction of C_2F_6/CF_4** taken as 0.053 is in line with the IPCC values. The same value was used in the similar project – please refer to PDD for Krasnoyarsk project. **Global Warming Potential for CF_4** taken as 6500 is in line with IPCC data.	PDD AE AL	CAR E1	CAR E1	OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Global Warming Potential for C_2F_6 taken as 9200 is in line with IPCC data. The determination team has checked the calculation as given in the Excel spreadsheet and found it correct. *Conclusion:* The requirement is fulfilled				
H.2.2	(b) Leakage, as applicable?	*No leakage emissions are claimed.*				OK
H.2.3	(c) Emissions or net removals for the baseline scenario (within the project boundary)?	*Description:* PDD provide ex ante estimates of emissions for the baseline scenario (within the project boundary). *Means of determination:* The estimation of the baseline emissions is based on the formulae specified in the monitoring plan. In doing so the **aluminium amount as well as the anode effect duration and frequency** are taken from the internal reports extracted from the IT supported system. It should be noted that the estimation is based on the actual figures for the years 2008-2011 and estimate for the year 2012. Bearing in mind that the final version of the PDD was developed in 2012 the use of actual figures was accepted. **S_{CF4} – the slope coefficient for CF_4**, (kg of CF4 /tonne of aluminium)/(number of minutes of anode effect/pot per day) taken 0.092 is in line with the IPCC values. The same value	PDD AE AL			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		was used in the similar project – please refer to PDD for Krasnoyarsk project. **$F_{C2F6\ /\ CF4}$ – the weight fraction of C_2F_6/CF_4** taken as 0.053 is in line with the IPCC values. The same value was used in the similar project – please refer to PDD for Krasnoyarsk project. **Global Warming Potential for CF_4** taken as 6500 is in line with IPCC data. **Global Warming Potential for C_2F_6** taken as 9200 is in line with IPCC data. The determination team has checked the calculation as given in the Excel spreadsheet and found it correct. *Conclusion:* The requirement is fulfilled				
H.2.4	(d) Emission reductions or enhancements of net removals adjusted by leakage?	*n/a:*				
H.3	*DVM § 44* *If the approach (b) in §42 is chosen,* does the PDD provide ex ante estimates of:	*n/a:*				

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
H.3.1	(a) Emission reductions or enhancements of net removals (within the project boundary)?	*n/a:*				
H.3.2	(b) Leakage, as applicable?	*n/a:*				
H.3.3	(c) Emission reductions or enhancements of net removals adjusted by leakage?	*n/a:*				
H.4	*DVM § 45* *For both approaches in 42* (a) Are the estimates in 43 or 44 given:					
H.4.1	(i) On a periodic basis?	As evident from the PDD the estimates are presented on	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		annual basis. This is appropriate.	XLS			
H.4.2	(ii) At least from the beginning until the end of the crediting period?	As evident from the PDD the estimates are from 01.01.2008 until 31.12.2012 - from the beginning until the end of the crediting period. This is correct.	PDD XLS			OK
H.4.3	(iii) On a source-by-source/sink-by-sink basis?	Yes, for each source. In fact there is only one source – the anode effect within the aluminium production.	PDD XLS			OK
H.4.4	(iv) For each GHG?	As evident from the PDD the estimates are for each GHG- CF_4 and C_2F_6.	PDD XLS			OK
H.4.5	(v) In tons of CO_2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol?	Yes, the final emission reductions are presented in tonnes of CO_2 equivalent.	PDD XLS			OK
H.4.6	(b) Are the formula used for calculating the estimates in 43 or 44 consistent throughout the PDD?	The determination team has checked the estimates by reproducing the calculation and was able to confirm that formula used for calculating the estimates in 43 or 44 are consistent throughout the PDD.	PDD XLS			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
H.4.7	(c) For calculating estimates in 43 or 44, are key factors influencing the baseline emissions or removals and the activity level of the project and the emissions or net removals as well as risks associated with the project taken into account, as appropriate?	Yes, please refer to H.2.1 and H.2.3.	PDD XLS IPCC AE AL			OK
H.4.8	(d) Are data sources used for calculating the estimates in 43 or 44 clearly identified,reliable and transparent?	Yes, please refer to H.2.1 and H.2.3.	PDD XLS IPCC			OK
H.4.9	(e) Are emission factors (including default emission factors) if used for calculating the estimates in 43 or 44 selected by carefully balancing accuracy	Yes, please refer to H.2.1 and H.2.3.	PDD XLS IPCC AE			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	and reasonableness, and appropriately justified of the choice?		AL			
H.4.10	(f) Is the estimation in 43 or 44 based on conservative assumptions and the most plausible scenarios in a transparent manner?	Yes, please refer to H.2.1 and H.2.3.	PDD			OK
H.4.11	(g) Are the estimates in 43 or 44 consistent throughout the PDD?	Yes, please refer to H.2.1 and H.2.3.	PDD			OK
H.4.12	(h) Is the annual average of estimated emission re-ductions or enhancements of net removals calculated by dividing the total estimated emission re-ductions or enhancements of net removals over the crediting period by the total months of the crediting	ok	PDD EIA			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	period and multiplying by twelve?					
H.5	*DVM § 46* *If the calculation of the baseline emissions or net removals is to be performed ex post,* does the PDD include an illustrative ex ante emissions or net removals calculation?	The estimation of the baseline emissions is based on the actual figures for the years 2008-2011 and estimates for the year 2012.	PDD			OK
	Approved CDM methodology approach only	Not applicable because a JI specific approach is used.				
I	***Environmental impacts***					
I.1	*DVM § 48* (a) Does the PDD list and attach documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party?	*Description:* As per the PDD an EIA is not required by the Host Party. *Means of determination:* The PDD explains that project measures does not fall under the relevant regulation - "Regulations regarding the assessment of environmental impacts (planned commercial and other activities in the Russian Federation", approved by order of the State Commission for the Protection of the	PDD PDV ACT CDM-P			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
		Environment of the Russian Federation № 372 of May 16, 2000. The above mentioned regulation was checked. It could be confirmed that project measures do not require an EIA. The determination team has checked similar projects and it was observed that such activities do not require an EIA. The PDD correctly explains that project measures will not lead to negative impacts on environment. *Conclusion:* The requirement is fulfilled.				
I.2	(b) *If the analysis in 48 (a) indicates that the environmental impacts are considered significant by the project participants or the host Party,* does the PDD provide conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party?	No negative significant impacts on the environment are expected. Please refer to the comment above.	PDD PDV EIA			OK
J	***Stakeholder consultations***					

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
J.1	*DVM § 49* *If stakeholder consultation was undertaken in accordance with the procedure as required by the host Party,* does the PDD provide:	*Description:* As explained in the PDD consultations with stakeholders on the project activity have not been carried out because such consultations are not required by Russian legislation. *Means of determination:* The determination team has checked relevant regulations inter alia *Regulations for the assessment of environmental impacts*. It could be confirmed that stakeholder consultation is not required by the host Party legislation. The same was confirmed in the PDD for the Krasnoyarsk project. Though the stakeholder consultation was not performed it should be noted that relevant local authorities were informed about the measures. *Conclusion:* The requirement is fulfilled.	PDD EIA			OK
J.1.1	(a) A list of stakeholders from whom comments on the projects have been received, if any?	*Please refer to comment under J.1.*	PDD EIA			OK
J.1.2	(b) The nature of the comments?	*Please refer to comment under J.1.*	PDD EIA			OK
J.1.3	(c) A description on whether	*Please refer to comment under J.1.*	PDD			OK

No.	DVM[7] paragraph / Checklist Item (incl. guidance for the determination team)	Initial Finding (Means and results of assessment)	Ref.	Action requested to PPs (CAR, CL, FAR)	Review of PP´s action	Con-clu-sion
	and how the comments have been addressed?					
K	***Determination regarding small-scale projects (additional elements for assessment)*** ☐ **Applicable** ☒ **Not applicable**					
L	***Determination regarding land use, land-use change and forestry projects (additional/alternative elements for assessment)*** ☐ **Applicable** ☒ **Not applicable**					
M	***Determination regarding programmes of activities (additional/alternative elements for assessment)*** ☐ **Applicable** ☒ **Not applicable**					

ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

Table A-2: Assessment of Baseline Identification

☐	Baseline is not identified
☒	Assessment of baseline see below

Baseline Alternatives identified	In line with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evi-dence used	AIE Assessment	
					Appro-priateness of elimination	Assessment of determination team (results and means of assessment)
Continuation of smelter activity according to a standard Russian practice of Soderberg technology (VSS) application without measures specifically designed for reduction of frequency of anode effects **(baseline scenario)**	☒	☐	Within the Step1 this alternative has been identified as a **plausible** scenario because it represents the current practice in the Host Country and is not prohibited by any national laws and/or regulation.	PDD PDC Reg	☐	**Step 1 Identification of alternatives to the project activity consistent with current laws and regulations** Within the Step 1 this alternative has been appropriately identified as a plausible scenario because it represents the current practice in the Host Country. It is important to note that the same technology was used in the pre-project situation. **Sub-step 1b) Compliance with current laws and regulations** The „Russian law of the environmental protection“ does not regulate PFC emissions. This could be verified based on the certificate of the maximum allowable emissions issued by the relevant official ecological administration. Only some hygienic norms contain regulations of the

			Step 2 key factor review Key factor analysis shows that the continuation of the pre-project situation is not affected by the identified key factors.			PFC emissions. The Hygienic/sanitary norm (HN 2.1.6.2309-07) defines approximate safe exposure level for CF_4 = 10 mg/м3, C_2F_6 = 20 mg/м3. However the actual emissions are far below this level. This could be confirmed within the determination. There are no binding requirements that forbid the continuation of the pre-project situation. As already noted the baseline scenario represents the technology used by PP since many years and represents the most commonly used technology for treatment of anode effects in Russia. The same is supported by the results of the common practice analysis. **Step 2 Barrier analysis** As per the barrier analysis this practice is the most commonly used in Russia and was also applied in other aluminium smelters. Therefore there are no significant barriers, which would prevent this alternative. The same was explained within the interviews with responsible personnel. It is obvious that continuation of the current practice does not require any additional expenses as compared to the introduction of a new technology within the project scenario.

Scenario 2. Implementation of the project with cryolite reduction measures designed for reduction of frequency of anode effects without being registered as a JI-project activity (**project activity**)	☒	☒	Within the Step 1 this alternative was identified as a **plausible** scenario because it is the project activity and is not prohibited by any national laws and/or regulation. **Step 2 key factor review** In the context of the key factor analysis the PP explained that the implementation of this alternative faces barriers due to technical feasibility. Most importantly are (a) uncertainty with regards to the energy	PDD PDV INV B-5 B-6 B-7	☒	**Step 1 Identification of alternatives to the project activity consistent with current laws and regulations** Within the Step1 this alternative has been appropriately identified as a **plausible** scenario because it represents the project activity itself. It could be verified that this alternative is not prohibited by any national laws and regulations. **Sub-step 1b) Compliance with current laws and regulations** The project activity is in line with the relevant laws and regulation. Please refer to the explanation provided for scenario 1 above. **Step 2 Key factor analysis** According to the PDD the implementation of this alternative would result in additional expenses as compared to the continuation of the pre-project situation. In essence it is explained that introduction of a new technology requires a number of technical and organizational measures. Such measures require inter alia performing of the feasibility study and various tests, additional resources like special technical equipment as well as manpower. The explanation given in the PDD was assessed as plausible. The same was confirmed within the interviews

			savings and (b) very low economic benefit from the achieved energy savings.			with responsible personnel during the on-site assessment. In addition the determination team has checked independent data sources and was able to confirm that measures as described in the PDD requires a number of additional arrangements. For example the study *Control of anode effect at aluminium pot*[/B-5/] explains the most important technical and organizational measures that are required to use the technology with low cryolite ratio. Also other independent data sources[/B-6//B-7/] confirm that using technologies with low cryolite ration requires a number of additional investments in measures to ensure appropriate working of the aluminium pots. The need for additional investments can be found in the determination report for the Krasnoyarsk project. Though the investment costs and relevant expenses of the project activity were not specified as a lump sum contract, the evidences provided confirm that there were substantial investments made by PP to achieve reduction of the frequency of anode effects. The particular costs could be duly evidenced by means of financial statements of the company and internal accounting notifications[/INV/]. Bearing this in mind it could be concluded that project activity is more cost-intensive as the continuation of the pre-project practice, which does not require any additional expenses. Furthermore, in the context of the key factor review the PP explained that the implementation of this alternative faces technological barriers.

						In particular, difficulty to assess economic benefits of the project measures is claimed as a key factor that prevent project from implementation. The PDD indicates that theoretically the reduction of frequency of anode effect will lead to energy savings at a certain level. However it is very difficult to exactly estimate the amount of the energy savings. The difficulty to provide a well-elaborated estimation of potential energy savings lead to a situation where measures to reduce anode effects are considered low priority by the management. Due to this the management is reluctant towards introducing such measures. The lack of exact predictability of the energy savings deemed to be a plausible argument for management not to invest in measures to reduce anode effects. This is found plausible because it is widely observed that management business strategies often focused on other issues and do not focused on anode effect mitigation measures. Due to this the project activity is considered low priority by management. The same is explained in positively determined PDD and confirmed in the determination report for JI project in Krasnoyarsk aluminium smelter[11] - one of the five RUSAL smelters, where such measures were introduced.[12]. The low priority for such investments by the management was also reported in almost all registered CDM projects (Ref. 1610, 1860, 3019) that involve similar measures to reduce anode effect. Nevertheless, the PP has provided an analysis of

[11] Please refer to: http://ji.unfccc.int/JIITLProject/DB/6FU0T3C7WY5XWTR9EM5JQD5RDVHDSI/details

[12] RUSAL is the largest alumium producer in Russia. There were several projects implement by Rusal managment in 5 alumium smelters in Krasnoyarsk, Irkutsk, Bratsk, Novokuznetsk, Sayanogorsk. The measures to reduce anode effects in Krasnoyarsk were positively determined and approved as a JI project by the DFP of Russian Federation.

						potential energy savings in the PDD and showed that they are disproportional low as compared to the required investment costs. The analysis of the potential energy savings was crosschecked by the determination team and found correct. In particular, the applied assumptions could be verified as follows: k - electrochemical equivalent of aluminium equal to 0.336 g/Ah reflects the amount of aluminium produced at the cell cathode for an hour after passage of one Ampere electric current. This is a default value and can be confirmed through various data sources e.g. (http://environmentalchemistry.com/yogi/periodic/Al.html). The calculated electricity consumption 10,800 kWh could be further supported by internal reports and is plausible with regards to the technical specification of the applied equipment. Also the specific power rate calculated as 15474 kWh/t is plausible as compared to the specific rates (min. 13000 KWh/t) indicated in third party sources /B-4/. Furthermore it was assumed that at the electrolytic pot once a day anode effect with voltage of 40 V for 2 min is observed. This is in line with internal measurement reports of the company. The measurements could be verified based on data archived in the IT supported system of the plant. The value is plausible with regards to the frequency of anode effect reported by different independent sources /B-1/B-2//B-3/. As a result of the analysis it was estimated that reducing the frequency of anode effect from 1 to 0.8 per day power consumption will reduce the specific energy consumption for aluminium production (kWh/tAl) by 0.22%. The identified value is plausible as compared to

						the value (0.17%) reported in a similar registered CDM project (Ref. 1860). It is also worth to note that very low effect from reducing the frequency of the anode effect was reported in the PDD for the Krasnoyarsk project, which belongs to the same group of RUSAL smelters. The low effect from reducing the frequency of the anode effect is also reported in almost all registered CDM projects (Ref, 1610, 1860, 3019). In addition, the determination team has reviewed actual figures and found that the project measures can theoretically reduce the specific power consumption in average by 40kWh/tAl, which is slightly higher than estimated above. Applying the electricity tariff of 0.2 Rubel/kWh[13] the reduction of anode effect leads to savings of approximately 2 Mio Rubel per annum. This is disproportional as compared to the investment sum of 26.9 Mio Rubel. T Though there is a certain economy resulted from the reduced electricity consumption, these saving are very theoretical and cannot be considered as a suitable basis for investment decisions (please refer to detailed assessment above). Additionally it should be noted that even in case these theoretical savings had occurred their value would have been disproportional low (2 Mio. Rub.) as compared to the required investments 26.9 Mio.Rub) and correspond to a quite long amortisation time period. Therefore it is reasonable to assume that theoretical electricity savings cannot be considered as a suitable motivation for investing in such measures. As a result the determination team confirms that the

[13] The tariff was taken from the official notification of the company.

						project activity faces barriers of uncertainty with regards to the energy savings and very low economic benefit from the achieved energy savings. Most importantly is the fact that project activity is less economically attractive as compared to the scenario 1 (continuation of the pre-project situation) Therefore this alternative is not the most plausible one and can be excluded from further consideration. In addition, it should be noted few years after the decision to go ahead with the project activity the PP saw that additional capacities are necessary to meet the increasing aluminium demand. Due to this a new capacities (5^{th} potline) were added. The new capacities are using so called pre-backed anodes. As per the PDD the installation of additional capacities does not influence the baseline scenario. This is because in the baseline scenario the PP would have met the increasing aluminium demand though the installation of the same technology (Soderberg VSS). This assumption deemed to be plausible because it is reasonable to assume that using more than 2000 aluminium pots of one technology the PP would install additional 136 aluminium cells of the same technology. Furthermore this assumption was supported by the costs estimates provided by independent source. According to the estimates made by the specialist of independent Institute the specific aluminium investment costs linked to the installation of the another technology (pre-backed anodes) would be higher than the installation of the additional cells of the existing technology. The corresponding estimates were provided and the cost comparison as presented in the PDD could be confirmed. As a result it could be concluded that increasing of the production capacities

						after the management decision has no influence on the elaborated baseline scenario.

ANNEX 3: ASSESSMENT OF FINANCIAL PARAMETERS

Table A-3: Assessment of Financial Parameters

☐	No financial parameters are used for additionality justification
☒	Assessment of all financial parameters see below

Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	AIE ASSESSMENT	
					Correctness of value applied	Comment
Investment costs of the project activity	26.9	Mio Rub.	Financial statements	INV	☒	The applied investments costs were taken from the financial statements of the company. The financial statements of the company were checked during the on-site assessment. In doing so, the representatives of the financial departments as well as the responsible managers were interviewed regarding the value of the investment costs. The applied value could be duly evidenced. In this context it is important to note that the baseline scenario does not require any additional costs.
					☐	

ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

Table A-4: Assessment of Barrier Analysis

☒	No barrier parameters are used for additionality justification
☐	Assessment of barriers see below

Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of determination team	
			Appropriateness of information source	Explanation of final result
			☐	

ANNEX 5: OUTCOME OF THE GSCP

Table A-5: Outcome of the Global Stakeholder Consultation Process

☒	No comments were received during the global stakeholder consultation period
☐	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the determination team are presented below:

Comment No.:	Comment by:	Inserted on:	Subject	Comment *)	Response determination team *)	Conclusion (incl. CARs CLs or FARs)

*) In case clarifications have been requested by the determination team corresponding rows shall be added