



# VERIFICATION AND CERTIFICATION REPORT

- 1ST PERIODIC –

**SOLVAY FLUOR KOREA CO. LTD**

**SF6 RECOVERY AND RECLAMATION PROJECT, SOUTH  
KOREA**

**UNFCCC REF. No. : 4274**

**Monitoring Period: 2011-04-01 to 2012-04-26**  
(incl. both days)

**Report No: QT-SHC06001/12-12/355**

**Date: 2013-10-14**

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	SF <sub>6</sub> recovery and reclamation project, South Korea	2011-04-01	4274	
		<b>Verification No.:</b>	1 <sup>st</sup> periodic verification	
	<b>Crediting period:</b>	<b>From:</b>	<b>To:</b>	
	<input type="checkbox"/> Renewable (7y) <input checked="" type="checkbox"/> Fixed (10y)	2011-04-01	2021-03-31	
	<b>Project Scale:</b>			
	<input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale			
<b>Project Participant(s):</b>	<b>Non Annex 1 country:</b>	<b>Annex 1 country:</b>		
	Republic of Korea	France		
	<b>PP from non Annex 1 country:</b>	<b>PP from Annex 1 country:</b>		
	Solvay Fluor Korea Co. Ltd	Solvay Energy Services SAS		
<b>Applied methodology/ies:</b>	<b>Title:</b>	<b>No.:</b>	<b>Scope(s) / TA(s)</b>	
	Recovery of SF <sub>6</sub> from Gas insulated electrical equipment in testing facilities	AM0079 ver.02	11 / 11.2	
<b>Monitoring period and monitoring report</b>	<b>Monitoring period (MP):</b>		<b>Monitoring Report:</b>	
	<b>From:</b>	<b>To:</b>	<b>No. of days:</b>	<b>Draft version:</b>
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<b>Summary of Verification opinion</b>	<p>Solvay Fluor Korea Co. Ltd has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: "SF<sub>6</sub> recovery and reclamation project, South Korea", with regard to the relevant requirements for CDM project activities.</p> <p>As a result of this verification, the verifier confirms that:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> all operations of the project are implemented and installed as planned and described in the validated project design document,</li> <li><input checked="" type="checkbox"/> the monitoring plan is in accordance with the applied approved CDM methodology,</li> <li><input checked="" type="checkbox"/> the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately,</li> <li><input checked="" type="checkbox"/> the monitoring system is in place and functional. The project has generated GHG emission reductions, and</li> <li><input checked="" type="checkbox"/> the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.</li> </ul> <p>TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as listed below (verified amount).</p>			
<b>Emission reductions: [t CO<sub>2e</sub>]</b>	<b>Verified amount</b>		<b>As per draft MR:</b>	<b>As per PDD:</b>
	101,074		107,686	177,304 based on 165,092 /a
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## **Abbreviations:**

<b>CA</b>	<b>Corrective Action / Clarification Action</b>
<b>CAR</b>	<b>Corrective Action Request</b>
<b>CDM</b>	<b>Clean Development Mechanism</b>
<b>CER</b>	<b>Certified Emission Reduction</b>
<b>CO<sub>2</sub></b>	<b>Carbon dioxide</b>
<b>CO<sub>2eq</sub></b>	<b>Carbon dioxide equivalent</b>
<b>CL</b>	<b>Clarification Request</b>
<b>DCS</b>	<b>Data Collection System</b>
<b>DVerR</b>	<b>Draft Verification Report</b>
<b>ER</b>	<b>Emission Reduction</b>
<b>FAR</b>	<b>Forward Action Request</b>
<b>GC</b>	<b>Gas Chromatograph</b>
<b>GCB</b>	<b>Gas circuit Breaker</b>
<b>GHG</b>	<b>Greenhouse gas(es)</b>
<b>GIS</b>	<b>Gas insulated switchgear</b>
<b>GIEE</b>	<b>Gas Insulated Electrical Equipment</b>
<b>KERI</b>	<b>Korea Electrotechnology Research Institute</b>
<b>MP</b>	<b>Monitoring Plan</b>
<b>MR</b>	<b>Monitoring Report</b>
<b>PA</b>	<b>Project Activity</b>
<b>PDD</b>	<b>Project Design Document</b>
<b>PP</b>	<b>Project Participant</b>
<b>QA/QC</b>	<b>Quality Assurance / Quality Control</b>
<b>SFK</b>	<b>Solvay Fluor Korea Co., Ltd</b>
<b>SF<sub>6</sub></b>	<b>Sulphur Hexafluoride</b>
<b>SOP</b>	<b>Specific Operational Procedure SFK-SOP-SF6-086</b>
<b>UNFCCC</b>	<b>United Nations Framework Convention on Climate Change</b>
<b>VVS</b>	<b>Validation and Verification Standard</b>
<b>XLS</b>	<b>Emission Reduction Calculation Spread Sheet</b>

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## 1. INTRODUCTION

Solvay Fluor Korea Co. Ltd has commissioned the TÜV NORD JI/CDM Certification Program (CP) to carry out the 1st periodic verification of the project

*“SF<sub>6</sub> recovery and reclamation project, South Korea”*

with regard to the relevant requirements for CDM project activities. The verifiers have reviewed the implementation of the monitoring plan (MP) in the registered CDM project.

GHG data for the monitoring period was verified in detailed manner applying the set of requirements, audit practices and principles as required under the Validation and Verification Standard <sup>/VVS/</sup> of the UNFCCC.

This report summarizes the findings and conclusions of this 1st periodic verification of the above mentioned UNFCCC registered project activity.

### 1.1. Objective

The objective of the verification is the review and ex-post determination by an independent entity of the GHG emission reductions. It includes the verification of the:

- implementation and operation of the project activity as given in the original and revised PDD,
- compliance with applied approved methodology, the provisions of the monitoring plan, and post registration changes assessment,
- data given in the monitoring report by checking the monitoring records, the emissions reduction calculation and supporting evidence,
- accuracy of the monitoring equipment,
- quality of evidence,
- significance of reporting risks and risks of material misstatements.

### 1.2. Scope

The verification of this registered project is based on the validated original and revised project design document <sup>/PDD/</sup>, the monitoring report <sup>/MR/</sup>, emission reduction calculation spread sheet <sup>/XLS/</sup>, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The verification is carried out on the basis of the following requirements, applicable for this project activity:

- Article 12 of the Kyoto Protocol <sup>/KP/</sup>,



- guidelines for the implementation of Article 12 of the Kyoto Protocol as presented in the Marrakech Accords under decision 3/CMP.1 <sup>/MA/</sup>, and subsequent decisions made by the Executive Board and COP/MOP,
- other relevant rules, including the host country legislation,
- CDM Validation and Verification Standard <sup>/VVS/</sup>,
- monitoring plan as given in the registered revised PDD <sup>/PDD/</sup>,
- Approved CDM Methodology.

## 2. GHG PROJECT DESCRIPTION

### 2.1. Technical Project Description

The used SF<sub>6</sub> is recovered from GIS/GCB equipment by the piping system. It is then compressed and stored in dedicated cylinders which are weighed and labelled in recovery site i.e. KERI. The cylinders are transported to SF<sub>6</sub> reclamation site i.e. SFK. The SF<sub>6</sub> is analyzed at the laboratory once the cylinders arrived at SFK. Then the used SF<sub>6</sub> which meets the standard i.e. SOP is injected to SF<sub>6</sub> production plant for reclamation.

The project was started on 23 November 2007 and the commissioning at the recovery site started on 29 April 2008. The renewable crediting period (10 years fixed) started on 2011-04-01 (date of registration).

During the 1<sup>st</sup> periodic verification, covering the period 2011-04-01 to 2012-04-26, it was found that the technical process and facilities used under the project activity were identical as described in the registered revised PDD. The project complies with all relevant statutory requirements.

### 2.2. Project Location

The details of the project location are given in Table 2-1:

**Table 2-1:** Project Location

No.	Project Location
Host Country	Republic of Korea
Region:	Solvay Fluor Korea Co. Ltd: Ulsan. Korea Electrotechnology Research Institute: Chang Won.
Project location address:	Solvay Fluor Korea Co. Ltd: 383, Daejung-Ri, Onsan-Eup, Ulju-kun Korea Electrotechnology Research Institute: 28-1 Seongju-dong, Changwon-si, Gyeongsangnamdo
Latitude:	35.426374 N (Solvay Fluor Korea Co. Ltd) 35.189363 N (Korea Electrotechnology Research Institute)
Longitude:	129.340193 E (Solvay Fluor Korea Co. Ltd) 128.718224 E (Korea Electrotechnology Research Institute)

### 2.3. Project Verification History

Essential events since the registration of the project are presented in the following Table 2-2.

**Table 2-2:** Status of previous Monitoring Periods



#	Item	Time	Status
1	1 <sup>st</sup> Monitoring period	2011-04-01 to 2012-04-26	Ongoing

An overview of all Post Registration Changes is given in the following table.

**Table 2-3:** Overview Post Registration Changes

#	Applicable from – to / as of	MP	Type of post registration change <sup>1)</sup>	Description	Status <sup>2)</sup> / Date
1	2011-04-01 to 2011-09-30	1	TDfrMP	Q <sub>SF6,k,y</sub> (total amount of SF <sub>6</sub> filled in the testing of equipments) was not monitored and recorded for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 during the recovery period from 2011-04-02 to 2010-09-30.	2013-08-27
2	2011-04-01 to 2011-09-30	1	TDfMM	Instead of DFTy (discount factor for testing in year y) the value of RT1,y or RT2,y (Ratio of number of eligible testing items in category k (maximum value is set at 1)) is usable as a conservative substitute.	2013-08-27
3	2011-04-01 to 2021-03-31	1	CrPDD	In PDD version 8, Sub-step 3 (a), the ranges of the category k have been changed from 40-419 kV and 420- 800kV to 12-405 kV and 406-800 kV.	2013-08-27
4	N/A		PCfrMP	N/A	N/A
5	N/A		PCfMM	N/A	N/A
6	N/A		CoPD	N/A	N/A

- <sup>1)</sup> TDfrMP : Temporary deviation from registered monitoring plan  
TDfMM : Temporary deviation from the monitoring methodology  
CrPDD : Corrections to the registered PDD  
PCfrMP : Permanent changes from registered Monitoring Plan  
PCfMM : Permanent changes from Monitoring Methodology  
CoPD : Changes to the project design of a registered project activity
- <sup>2)</sup> Approval (by EB)

### 3. METHODOLOGY AND VERIFICATION SEQUENCE

#### 3.1. Verification Steps

The verification consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the monitoring report
- A desk review of the Monitoring Report<sup>/MR/</sup> submitted by the client and additional supporting documents with the use of customised verification protocol<sup>/CPM/</sup> according to the Validation and Verification Standard<sup>/VVS/</sup>,
- Verification planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft verification reporting
- Resolution of corrective actions (if any)
- Final verification reporting
- Technical review
- Final approval of the verification.

#### 3.2. Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM 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 verification team, consisting of one team leader and 2 additional team members, was appointed.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the Table 3-1 below.

**Table 3-1:** Involved Personnel

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence <sup>3)</sup>	Technical competence <sup>4)</sup>	Verification competence <sup>5)</sup>	Host country Competence	On-site visit
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Rainer Winter	TÜV NORD CERT GmbH	TL	SA	<input checked="" type="checkbox"/>	11.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Li, Yongjun	TN China	TM <sup>A)</sup>	SA	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Yu, Miao	TN China	TM <sup>A)</sup>	LA	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Dirk Speyer	TÜV NORD CERT GmbH	TR, FA <sup>B)</sup>	SA	<input checked="" type="checkbox"/>	11.2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-

<sup>1)</sup> TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A: Assessor; LA: Lead Assessor; SA: Senior Assessor; T: Trainee; TE: Technical Expert

<sup>3)</sup> GHG auditor status (at least Assessor)

<sup>4)</sup> As per S01-MU03 or S01-VA070-A2 (such as 1.1, 1.2, ...)

<sup>5)</sup> In case of verification projects

A) Team Member: GHG auditor (at least Assessor status), Technical Expert (incl. Host Country Expert or Verification Expert), not ETE

B) No team member

All team members contributed to the review of documents, the assessment of the project activity and to the preparation of this report under the leadership of the team leader.

Technical experts contributed to the assessment of special aspects of the project activity, e.g. technical or host country aspects.

Statements of competence for the above mentioned team members are enclosed in annex 2 of this report.

### 3.4. Publication of the Monitoring Report

In accordance with the CDM M&P (§ 62) the draft monitoring report, as received from the project participants, has been made publicly available on the dedicated UNFCCC CDM website prior to the verification activity commenced. Comments received are taken into account in the course of the verification, if applicable.

### 3.5. Verification Planning

In order to ensure a complete, transparent and timely execution of the verification task the team leader has planned the complete sequence of events necessary to arrive at a substantiated final verification opinion.

Various tools have been established in order to ensure an effective verification planning.

#### Risk analysis and detailed audit testing planning

For the identification of potential reporting risks and the necessary detailed audit testing procedures for residual risk areas table A-1 is used. The structure and content of this table is given in Table 3-2 below.

**Table 3-2:** Identification of verification risk areas

<b>Table A-1: GHG calculation procedures and management control testing / Detailed audit testing of residual risk areas and random testing</b>				
<b>Identification of potential reporting risk</b>	<b>Identification, assessment and testing of management controls</b>	<b>Areas of residual risks</b>	<b>Additional verification testing performed</b>	<b>Conclusions and Areas Requiring Improvement (including Forward Action Requests)</b>
<i>The following potential risks were identified and divided and structured according to the possible areas of occurrence.</i>	<i>The potential risks of raw data generation have been identified in the course of the monitoring system implementation. The following measures were taken in order to minimize the corresponding risks.  The following measures are implemented:</i>	<i>Despite the measures implemented in order to reduce the occurrence probability the following residual risks remain and have to be addressed in the course of every verification.</i>	<i>The additional verification testing performed is described. Testing may include:</i> <ul style="list-style-type: none"> <li>- Sample cross checking of manual transfers of data</li> <li>- Recalculation</li> <li>- Spreadsheet 'walk throughs' to check links and equations</li> <li>- Inspection of calibration and maintenance records for key equipment</li> <li>- Check sampling analysis results</li> </ul> <i>Discussions with process engineers who have detailed knowledge of process uncertainty/error bands.</i>	<i>Having investigated the residual risks, the conclusions should be noted here. Errors and uncertainties are highlighted.</i>

The completed table A-1 is enclosed in Annex 1 (table A-1) to this report.

### Project specific periodic verification checklist

In order to ensure transparency and consideration of all relevant assessment criteria, a project specific verification protocol has been developed. The protocol shows, in a transparent manner, criteria and requirements, means and results of the verification. The verification protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet for verification
- It ensures a transparent verification process where the verifying DOE documents how a particular requirement has been proved and the result of the verification.

The basic structure of this project specific verification protocol for the periodic verification is described in Table 3-3.

**Table 3-3:** Structure of the project specific periodic verification checklist

<b>Table A-2: Periodic verification checklist</b>				
<b>Checklist Item</b>	<b>Reference</b>	<b>Verification Team Comments</b>	<b>Draft Conclusion</b>	<b>Final Conclusion</b>
<i>The checklist items in Table A-2 are linked to the various requirements the monitoring of the project should meet. The checklist is organised in various sections as per the requirements of the topic and the individual project activity. It further includes guidance for the verification team.</i>	<i>Gives reference to the information source on which the assessment is based on.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the verification team and how the assessment was carried out. The reporting requirements of the VVS shall be covered in this section.</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft verification stage.</i>	<i>In case of a corrective action or a clarification the final assessment at the final verification stage is given.</i>

The periodic verification checklist (verification protocol) is the backbone of the complete verification starting from the desk review until final assessment. Detailed assessments and findings are discussed within this checklist and not necessarily repeated in the main text of this report.

The completed verification protocol is enclosed in Annex 1 (table A-2) to this report.

## **3.6. Desk review**

During the desk review all documents initially provided by the client and publicly available documents relevant for the verification were reviewed. The main documents are listed below:

- the last revision of the original and revised PDD including the monitoring plan<sup>/PDD/</sup>,
- the last revision of the validation report<sup>/VAL/</sup>,
- the monitoring report, including the claimed emission reductions for the project<sup>/MR/</sup>,
- the emission reduction calculation spreadsheet<sup>/XLS/</sup>.

Other supporting documents, such as publicly available information on the UNFCCC website and background information were also reviewed.

### 3.7. On-site assessment

As most essential part of the verification exercise it is indispensable to carry out an inspection on site in order to verify that the project is implemented in accordance with the applicable criteria. Furthermore the on-site assessment is necessary to check the monitoring data with respect to accuracy to ensure the calculation of emission reductions. The main tasks covered during the site visit include, but are not limited to:

- The on-site assessment included an investigation of whether all relevant equipment is installed and works as anticipated.
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures.
- Information processes for generating, aggregating and reporting the selected monitored parameters were reviewed.
- The duly calibration of all metering equipment was checked.
- The monitoring processes, routines and documentations were audited to check their proper application.
- The monitoring data were checked completely.
- The data aggregation trails were checked via spot sample down to the level of the meter recordings.

Before and during the on-site visit the verification team performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Representatives of Solvay Fluor Korea Co. Ltd (project owner) and Korea Electrotechnology Research Institute (SF<sub>6</sub> recovery entity) including the operational staff of the plant were interviewed. The main topics of the interviews are summarised in Table 3-4.

**Table 3-4:** Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
1. Projects & Operations Personnel, Solvay Fluor Korea Co. Ltd. i.e. SFK	<ul style="list-style-type: none"><li>- General aspects of the project</li><li>- Technical equipment and operation</li><li>- Changes since validation / previous verification</li></ul>

Interviewed Persons / Entities	Interview topics
/IM01/ 2. SF <sub>6</sub> recovery entity, Korea Electrotechnology Research Institute i.e. KERI /IM02/	<ul style="list-style-type: none"> <li>- Monitoring and measurement equipment</li> <li>- Remaining issues from validation/ previous verification</li> <li>- Calibration procedures</li> <li>- Quality management system</li> <li>- Involved personnel and responsibilities</li> <li>- Training and practice of the operational personnel</li> <li>- Implementation of the monitoring plan</li> <li>- Monitoring data management</li> <li>- Data uncertainty and residual risks</li> <li>- GHG emission reduction calculation</li> <li>- Procedural aspects of the verification</li> <li>- Maintenance</li> <li>- Environmental aspects</li> </ul>

The list of interviewees is included in chapter 7.4.

### 3.8. Draft verification reporting

On the basis of the desk review, the on-site visit, follow-up interviews and further background investigation the verification protocol is completed. This protocol together with a general project and procedural description of the verification and a detailed list of the verification findings form the draft verification report. This report is sent to the client for resolution of raised CARs, CLs and FARs.

### 3.9. Resolution of CARs, CLs and FARs

Nonconformities raised during the verification can either be seen as a non-fulfilment of criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

Corrective Action Requests (CARs) are issued, if:

1. Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
2. Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
3. Issues identified in a FAR during validation or previous verifications requiring actions by the project participants to be verified during verification have not been resolved.

The verification team uses the term Clarification Request (CL), which is issued if:



4. information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Forward Action Requests (FAR) indicate essential risks for further periodic verifications. Forward Action Requests are issued, if:

5. the monitoring and reporting require attention and / or adjustment for the next verification period.

For a detailed list of all CARs, CLs and FARs raised in the course of the verification pl. refer to chapter 4.

### **3.10. Final reporting**

Upon successful closure of all raised CARs and CLs the final verification report including a positive verification opinion can be issued. In case not all essential issues could finally be resolved, a final report including a negative verification opinion is issued.

The final report summarizes the final assessments w.r.t. all applicable criteria.

### **3.11. Technical review**

Before submission of the final verification report a technical review of the whole verification 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 verification team and thus not involved in the decision making process up to the technical review.

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

### **3.12. Final approval**

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

After this step the request for issuance can be started.



## 4. VERIFICATION FINDINGS

In the following paragraphs the findings from the desk review of the monitoring report<sup>/MR/</sup>, the calculation spreadsheet<sup>/XLS/</sup>, PDD<sup>/PDD/</sup>, the Validation Report<sup>/VAL/</sup> and other supporting documents, as well as from the on-site assessment and the interviews are summarised.

The summary of CAR, CL and FAR issued are shown in Table 4-1:

**Table 4-1:** Summary of CAR, CL and FAR

Verification topic	No. of CAR	No. of CL	No. of FAR
A – Description of project activity	7	2	0
B – Implementation of project activity	1	0	0
C – Description of monitoring system	0	0	0
D – Data and parameters	0	1	0
E - Calculation of Emission Reductions	2	0	0
<b>SUM</b>	<b>10</b>	<b>3</b>	<b>0</b>

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

Finding:	A1		
<b>Classification</b>	<input type="checkbox"/> CAR	<input checked="" type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In monitoring report version 01 Section A.1, the total emission reduction is not consistent with the value in Section E.4 and Emission Reduction calculation sheet.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	It's a typo and has been corrected. Plus, the emission reduction is updated in the MR due to the application of the deviation.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-</i>	The monitoring report version 02 and updated monitoring workbook have been checked. It is confirmed the the total emission reduction is now consistent with the value in Section E.4 and Emission		

Finding:	A1
<i>closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Reduction calculation sheet. Furthermore, due to CAR B1 and CAR E2, the emission reduction has been reduced from 107,686 tCO <sub>2</sub> e to 101,074 tCO <sub>2</sub> e. The reduction can be considered as conservative. The CL A1 is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	A2
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to the FAR 1 raised during the validation <sup>VAL</sup> , the layout of the related equipment/infrastructure at the recovery site (at KERI's facilities) should be improved to ensure the integrity of the system.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Through comparing the diagrams of the original layout and the improved layout, and after the site visit, it's proved that the layout at the KERI site had been improved through broadening the size of the container room at the recovery site, moving the scale platform from one side of the container room to the other side of the container room, having adding one room as control room (for recording the data of MSGas and Mlgas) adjoining the container room and etc.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The updated project layout of the related equipment/infrastructure at the recovery site i.e. KERI's facilities REV-001, issued on 2012-01-04 has been checked. The validation team conducted on site investigation. The previous/initial version of the project layout REV-000, issued on 2008-05-28 has also been checked and compared. It is conformed the layout has been improved to ensure the integrity of the system including the removing of the piping connections, the scale platform location changing, constructed a new control room and etc.. The CAR A2 is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	A3
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to FAR 2 raised during the validation <sup>VAL</sup> , all piping connections into the container with the compressor shall be removed (e.g. connection labelled TC-35)

Finding:	A3
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Through the site inspection and checking the diagrams before and after the layout improvement, it can be proved that the piping connections (e.g. connection labelled TC-35) into the container had been removed.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The updated project layout of the related equipment/infrastructure at the recovery site i.e. KERI's facilities REV-001, issued on 2012-01-04 has been checked. The validation team conducted on site investigation. The previous/initial version of the project layout REV-000, issued on 2008-05-28 has also been checked and compared. It is conformed all piping connections into the container with the compressor have been removed (e.g. connection labeled TC-35). The CAR A3 is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	A4
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to FAR 3 raised during the validation <sup>VAL</sup> , a valve shall be installed at the end of the hose opposite to the container/room for the compressor, for the outside recovery point, to avoid leaking the gas left in the hose.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Through the site visit it's confirmed that a valve had been installed at the end of the hose for the outside recovery point, which can avoid leaking the gas left in the hose.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The validation team conducted on site investigation. It is confirmed a valve has been installed at the end of the hose opposite to the container/room for the compressor, for the outside recovery point, to avoid leaking the gas left in the hose. The CAR A4 is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	A5
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to FAR 4 raised during the validation <sup>VAL</sup> , the CDM Project documentation used in the laboratory in the reclamation site (SFK facilities) shall be kept separately from those documents related to the standard production of SF <sub>6</sub> gas from raw materials.

Finding:	A5
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	It's confirmed through site visiting and documents reviewing that CDM documentation used in the laboratory at the reclamation site had been separately kept from other documents related to the standard production of SF <sub>6</sub> gas from raw materials.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The validation team conducted on site investigation. It is confirmed the CDM Project documentation (such as SF<sub>6</sub> concentration, SF<sub>6</sub> mass) used in the laboratory in the reclamation site (SFK facilities) have been kept separately from those documents related to the standard production of SF<sub>6</sub> gas from raw materials.</p> <p>The CAR A5 is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	A6
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to FAR 5 raised during the validation <sup>VAL</sup> , during the successive verifications it shall be confirm that issuance requests is formulated for periods of at least one year, as the procedures to remove the possibility of gaming are designed on a yearly basis.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	As the 1st monitoring period (from April 1st 2011 to April 26 2012) is longer than one year, this is in line with the methodology applicability requirements
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The monitoring report version 02 has been checked. The monitoring period covers from 2011-04-01 to 2012-04-26, which is more than one year. The requirement from the AM0079 and registered revised PDD has been fulfilled.</p> <p>The CAR A6 is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	A7
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	According to FAR 6 raised during the validation <sup>VAL</sup> , during the first verification it shall be confirmed that the proper procedures are in place and the personnel involved in the CDM project activity properly trained to ensure both: that they are familiar with those procedures highly infrequent to occur (e.g. incineration of highly contaminated used gas, and its corresponding reporting), and that KERI's customer are properly assisted by KERI's personnel, such

Finding:	A7
	that KERI's customers are able to perform properly those tasks included in the CDM project activity involving both the SF <sub>6</sub> gas and their own GIEE equipment
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The standard operation procedures (SOP) were developed for the CDM project and were in place at both recovery and reclamation site. All the personnel involved in the CDM activity were properly trained for the both normal project operation and CDM specific activities. CDM training records and SOP training records were both provided to the verification team.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The validation team conducted on site investigation. The proper procedures are in place, which is called standard operation procedures (SOP) in both recovery and reclamation site. It has been checked by validation team. It can be concluded that the procedures are appropriate for the project and the SOP were used in the processes.</p> <p>The personnel involved in the CDM project activity properly trained. The training records<sup>/RTC/</sup> have been checked by validation team. It ensured people involved are familiar with operation and CDM procedures especially highly infrequent issues occur (e.g. incineration of highly contaminated used gas, and its corresponding reporting).</p> <p>The CAR A7 is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed

Finding:	A8
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In monitoring report version 01 Section A.1, the project participate has been changed according to registered PDD.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	This is because one of the original PPs, EcoSecurities International Limited, has voluntarily withdrawn from the MoC and Solvay Energy Services SAS has been added as a new PP in the MoC.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The updated MR version 03 and the latest MOCs <sup>/MOC/</sup> have been checked. The UNFCCC website has been cross-checked. The correct PP information has been indicated in the MR version 3. It is in line with the requirement. The CL A8 is closed.
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed



Finding:	CAR A9		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	During the course of the Verification progress, the MR template is no longer valid. Thus appropriate corrections are required.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The PP submitted the revised monitoring report which is based on the latest available VVS template.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-2. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The revised MR confirms to the latest template 03.1 available (and acc. Guidelines for completing the monitoring report form , EB 70, Annex 11) and confirms to VVS requirement. Therefore CAR A9 is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

Finding:	B1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In MR version 01 Section B.2, the temporary deviation from registered monitoring plan does not fulfil the requirement of Clean Development Mechanism Project Standard (EB65 Annex5) Appendix 1.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The temporary deviation has been updated in the MR version 02, which is now in line with the requirement of Clean Development Mechanism Project Standard (EB65 Annex5) Appendix 1.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The monitoring report version 02 has been checked. Since the data of <math>Q_{SF6,k,y}</math> was not available for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 i.e. during 2011-04-01 to 2011-09-30, the <math>DFT_y</math> CDM-11003~CDM-11005 calculated from <math>Q_{SF6,k,y}</math> is considered as zero. It is confirmed the action is considered as conservative. According to Clean Development Mechanism Project Standard (EB65 Annex5) Appendix 1 temporary deviations from the registered monitoring plan, in this case prior approval by the Board is not required if project participants report the parameters as zero. The action has been taken appropriately and fulfils the requirement.</p> <p>Nevertheless the PP requested for a temporary deviation of the monitoring plan as a conservative substitute value for <math>DFT_y</math> can be determined and calculated on available data: when <math>RT_{1,y}</math> is bigger than (or equal to) <math>RT_{2,y}</math>, the value of <math>RT_{2,y}</math> can be used as the</p>		

Finding:	B1
	<p>discount factor (<math>DFT_y</math>); when <math>RT_{2,y}</math> is bigger than <math>RT_{1,y}</math>, the value of <math>RT_{1,y}</math> can be used as the discount factor (<math>DFT_y</math>)</p> <p>Furthermore the ranges of the category <math>k</math> have been changed from 40-419 kV and 420- 800kV (as per PDD) to 12-405 kV and 406-800 kV (MR)</p>
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>A deviation from monitoring plan regarding this issue was submitted to EB and approved by EB on 27 Aug 2013. Thereafter the ER calculation and MR was updated related.</p>
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Since the <math>Q_{SF6,k,y} &gt; 0</math> is confirmed, the calculation is assessed as correct. The lower value of <math>DFT_y</math> is applied in the emission reduction calculation which is conservative.</p> <p>According to the requirement of AM0079 ver.2, the maximum number of equal range, had been applied and the categories that contain at least 5 equipments both of the historic and project samples. The corrected categories with regard to parameter <math>NT_{P,J,k,y}</math> are in accordance with the MM and/or MP.</p> <p>The changes of the ranges have no influence on the historic numbers of testing items in each category <math>k</math>. (Therefore there is no influence on <math>NT_{BL,k}</math> (average number of eligible testing items where venting occurred per equipment in the baseline, for category <math>k</math>)).</p> <p>The verification team checked the revised documentation (revised Monitoring Report, Emission reduction calculation, post registration changes assessment/approval) and concludes that changes are correct and the project documentation fulfils the requirement.</p> <p>Therefore CAR B1 has been closed out.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

Finding:	D1
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>In MR version 01 Section D.2, several issues are raised below;</p> <ol style="list-style-type: none"> <li>1. the calibration frequency of Gas Chromatograph is not consistent with the calibration report.</li> <li>2. the information regarding the monitoring equipment for parameter <math>L_{SF6,y,i,j}</math> which measuring the Volume% of SF<sub>6</sub> is missing.</li> </ol>
<b>Corrective Action #1</b> <i>This section shall be filled by</i>	<ol style="list-style-type: none"> <li>1. Regarding the calibration frequency of Gas Chromatograph,</li> </ol>

Finding:	D1
the PP. It shall address the corrective action taken in details.	<p>it's a typo and has been corrected in MR.</p> <p>2. The information regarding the monitoring equipment for the parameter L<sub>SF6,y,i,j</sub> has been added in D.2 of the MR.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The monitoring report version 02 has been checked.</p> <p>1. the calibration frequency of Gas Chromatograph has been revised, it is now consistent with the calibration report. The verifier concludes the instrument is proper calibrated.</p> <p>2. the information regarding the monitoring equipment which measuring the Volume% of SF<sub>6</sub> has been indicated in parameter L<sub>SF6,y,i,j</sub>. The information is correct; the GC and it's calibration report as well the related SOP have been checked by the verification team.</p> <p>The CL D1 is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>

Finding:	E1
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>In MR version 01 Section E, issues are raised below;</p> <p>1. the calculation of R<sub>SF6,y,j,i</sub> is missing.</p> <p>2. the monitoring of the operation hours of operating equipment at the Testing Facility is missing.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>1. The formula and calculation process of R<sub>SF6,y,j,i</sub> has been added in the MR.</p> <p>2. Considering the monitoring of the operation hours of operating equipment at the testing facility is not indicated in the revised PDD, to be conservative, 8760 hours are used as the annual operation hours for project emission calculation.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The monitoring report version 02 has been checked.</p> <p>1. the calculation of R<sub>SF6,y,j,i</sub> has been indicated correctly.</p> <p>2. the monitoring of the operation hours of operating equipment at the Testing Facility is assumed as 8760 hours which can be considered as conservative .</p> <p>The CAR E1 is closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the next periodic verification</p> <p><input type="checkbox"/> Additional action should be taken (finding remains open)</p> <p><input checked="" type="checkbox"/> The finding is closed</p>



Finding:	E2		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In Monitoring workbook, two issues have been raised regarding 'SFK data' sheet, 1. the calculation of U15 (the SF <sub>6</sub> production of CDM-12001) is not correct. 2. the unit of parameter EXC <sub>SF<sub>6</sub>,y</sub> is not correct.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	1. It's a mistake and has been corrected in the monitoring workbook. 2. It's a mistake and has been corrected in the monitoring workbook.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The monitoring report version 02 and updated Monitoring workbook have been checked. 1. the calculation of U15 (the SF <sub>6</sub> production of CDM-12001) is revised and confirmed as correct. 2. the unit of parameter EXC <sub>SF<sub>6</sub>,y</sub> is revised and confirmed as correct. The CAR E2 is closed.		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the next periodic verification <input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed		

## 5. SUMMARY OF VERIFICATION ASSESSMENTS

The following paragraphs include the summary of the final verification assessments after all CARs and CLs are closed out. For details of the assessments please refer to the discussion of the verification findings in chapter 4 and the verification protocol (Annex 1).

### 5.1. Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity.

**Table 5-1:** Project Parties and project participants

Characteristic	Party	Project Participant
Non-Annex 1	Republic of Korea	Solvay Fluor Korea Co. Ltd
Annex 1	France	Solvay Energy Services SAS

### 5.2. Implementation of the project

During the verification a site visit was carried out. On the basis of this site visit and the reviewed project documentation it can be confirmed that w.r.t. the realized technology, the project equipments, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the registered revised PDD<sup>PDD/</sup>.

The used SF<sub>6</sub> is recovered from GIS/GCB equipment by the piping system. It is then compressed and storage in dedicated cylinders which are weighed and labelled in recovery site i.e. KERI. The recovery-reclamation cylinder *i* is used in each recovery-reclamation cycle and not the physical cylinder. The project uses bundles of two interconnected gas cylinders (i.e. cylinder bundle) as one cylinder *i*. During this monitoring period, six cylinder bundles have been defined. The recovery of the first cylinder bundle i.e. CDM-11003 was started from 2 Apr. 2011 and ended on 10 Jun 2011; the recovery of the last cylinder bundle i.e. CDM-12001 was started from 8 Feb. 2012 and ended on 29 March 2012, and the reclamation was started from 19 April 2012 and ended on 26 April 2012.

	SF6 Recovery at KERI site		SF6 Reclamation at SFK site	
<i>i</i>	Recovery Period from	Recovery Period to	Reclamation Period from	Reclamation Period to

CDM-11003	2-Apr-11	10-Jun-11	19-Jul-11	28-Jul-11
CDM-11004	11-Jun-11	13-Jul-11	23-Aug-11	2-Sep-11
CDM-11005	13-Jul-11	30-Sep-11	25-Oct-11	3-Nov-11
CDM-11006	1-10-11	1-Dec-11	20-Dec-11	29-Dec-11
CDM-11007	2-Dec-11	6-Feb-12	29-Feb-12	9-Mar-12
CDM-12001	8-Feb-12	29-Mar-12	19-Apr-12	26-Apr-12

The reclamation occurs at SF<sub>6</sub> reclamation site i.e. SFK. The SF<sub>6</sub> is analyzed at the laboratory once the cylinders arrived at SFK.

All the required equipments and procedures are available and implemented in an appropriate manner.

All necessary monitoring instruments are installed. The measuring devices are well known and state-of-the-art. All required instruments including stand by and operating procedures for the same have been implemented in an appropriate manner.

For the metering purpose at SF<sub>6</sub> recovery site, two mass flow meters are installed in equipment test area to measure the mass of SF<sub>6</sub> filled into the equipment. One mass flow meter is installed to measure the mass of used gas that is recovered into cylinder in the control room at the SF<sub>6</sub> recovery site. A weighing scale with accuracy 0.5kg/5000kg is installed outside of the container room and etc. It measures the mass of used gas stored in recovery cylinder bundle.

For the metering purpose at SF<sub>6</sub> reclamation site, a GC has been installed at the laboratory to measure/analyse the SF<sub>6</sub> concentration for the gas in cylinder bundle arrived at SFK site, SF<sub>6</sub> loss from point j and used gas in the baseline. One mass flow meter is installed before SF<sub>6</sub> production process to measure the mass of used gas from the cylinder bundle injected into the production process, and the quantity of SF<sub>6</sub> which was being injected to the reclamation facility during exceptional events occurred. One mass flow meter is installed to measure the amount of SF<sub>6</sub> loss from point j during the reclamation period.

The calibration certificates of the above monitoring equipment have been checked. The qualifications of the calibration entities have been checked by the validation team. It is confirmed monitoring equipments have been calibrated properly. There is no malfunction occurred during this monitoring period.

**Table 5-1:** Key meters information

	Type	Serial No.	Accuracy	Calibration frequency	Calibration Date	Valid period
Q <sub>SF6,k,j,y</sub>	Mass flow meter	14122007	±0.100%	5 years	05/02/2009	5 years
					25/05/2012	5 years
		14111339		5 years	21/11/2008	5 years
					21/05/2012	5 years
MR <sub>Gas,i,y</sub>	Mass flow	14069408	±0.100%	5 years	27/05/2009	5 years

	meter				25/05/2012	5 years
MS <sub>Gas,i,y</sub>	Weighing Scale	FR3	0.5kg/ 5000kg	2 years	28/05/2009	2 years
					20/10/2010	2 years
					05/01/2012	2 years
					08/06/2009	5 years
MI <sub>Gas,i,y</sub> EXC <sub>Gas,y</sub>	Mass flow meter	14014422	±0.100%	5 years	21/05/2012	5 years
WSF <sub>6,BL,hist,y</sub> WSF <sub>6,i</sub> LSF <sub>6,y,j,j</sub>	Gas Chromatograph	CN10622030	The detection limit of all the gases analysed is at least 50 ppm.	2 years	11/02/2010	2 years
					14/05/2011	2 years
LSF <sub>6,y,j,j</sub>	Mass flow meter	14014074	±0.35%	5 years	08/06/2009	5 years
					24/05/2012	5 years

The submitted monitoring report which forms the basis of the verification was prepared by summarizing consolidated data over the whole monitoring period in accordance with the registered revised PDD<sup>/PDD/</sup>. However, the data of Q<sub>SF<sub>6</sub>,k,y</sub> was not available for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 i.e. during 2011-04-02 to 2011-09-30. A deviation from monitoring plan regarding this issue was approved by EB on 27 Aug 2013<sup>/PDD//PRC/</sup>.

The monitoring records have been checked by validation team.

### 5.3. Project history

During the validation the validating DOE might have raised issues that could not be closed or resolved during the validation stage. For this purpose FARs might have been raised. Such issues were identified for this project. There are 6 FARs have been raised during the validation<sup>/VAL/</sup>. They have been assessed in the Section 4.

Furthermore as this is the 1<sup>st</sup> periodic verification no issues from former verifications are to be considered.

### 5.4. Post registration changes

The post registration changes applicable for this monitoring period have been observed during the monitoring period. The post registration changes (PRC) request was approved by EB on 27 Aug 2013<sup>/PDD//PRC//unfccc/</sup>.

### 5.5. Compliance with the monitoring plan

The monitoring system and all applied procedures are completely in compliance to the registered monitoring plan or according the approved PRC request. (Deviation from monitoring plan: The data of Q<sub>SF<sub>6</sub>,k,y</sub> was not available for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 i.e. during 2011-04-02 to 2011-09-30. A

deviation from monitoring plan regarding this issue was approved by EB on 27 Aug 2013<sup>/PDD//PRC/</sup>. A deviation from monitoring methodology regarding this issue was also approved by EB on 27 Aug 2013<sup>/PDD//PRC/</sup>. The deviation is using the value of RT<sub>1,y</sub> or RT<sub>2,y</sub> under different scenarios to substitute DFT<sub>y</sub> in the calculation. It is confirmed that the action is considered as conservative.

## 5.6. Compliance with the monitoring methodology

The monitoring system is in compliance with the applied monitoring methodology AM0079 (version 02) or according the approved PRC request (deviation from monitoring methodology).

## 5.7. Monitoring parameters

During the verification all relevant monitoring parameters (as listed in chapter 7.1 of the revised PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.

It can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

### *Concentration of SF<sub>6</sub> in used gas in the baseline ( $w_{SF6,BL,hist,y}$ )*

$w_{SF6,BL,hist,y}$  is the concentration of SF<sub>6</sub> in used gas. It is used as a substitute for  $w_{SF6,hist}$  where the record of the concentration of SF<sub>6</sub> in the gas vented in the baseline is not available. Each time the cylinder bundle arrived at SFK site, the gas sample from the cylinder bundle analyzed at the laboratory using Gas Chromatography. The value was measured and recorded by SFK staffs for each analysis according to SOP.

### *Mass of SF<sub>6</sub> that is filled into equipment ( $Q_{SF6,k,j,y}$ )*

$Q_{SF6,k,j,y}$  is mass of SF<sub>6</sub> that is filled into equipment at the SF<sub>6</sub> recovery i.e. KERI site. The value was measured continuously and recorded each time of injection. The value was monitored since 2011-10-01. Therefore, the value of cylinder bundle CDM-11006, CDM-11007 and CDM-12001 injected after the date has been recorded.

### *Mass of used recovered into cylinder bundle ( $MR_{Gas,i,y}$ )*

$MR_{Gas,i,y}$  is mass of used SF<sub>6</sub> recovered into cylinder bundle at the SF<sub>6</sub> recovery i.e. KERI site. The value was measured continuously by mass flow meter and recorded each time of recovery.

### *Mass of used gas stored in recovery cylinder bundle ( $MS_{Gas,i,y}$ )*

$MR_{Gas,i,y}$  is mass of used gas stored in recovery cylinder bundle at the SF<sub>6</sub> recovery i.e. KERI site. The value was measured by weighing scale. It is measured and recorded for each cylinder bundle.

*Mass of used gas from the cylinder bundle ( $MI_{Gas,i,y}$ )*

$MI_{Gas,i,y}$  is the mass of used gas from the cylinder bundle injected into the production process for reclamation process at reclamation i.e. SFK site. The value was measured continuously by mass flow meter and recorded each time of injection to SF<sub>6</sub> production line.

*Amount of SF<sub>6</sub> loss from point j during the reclamation period of cylinder i in year y ( $L_{SF6,y,i,j}$ )*

The value was measured continuously by mass flow meter and recorded daily. The concentration is analyzed by the GC at the laboratory of SFK site.

*Average number of total testing items where recovery was done per equipment in the project ( $NT_{pj,k,y}$ )*

The value is calculated. Two categories have been defined as 12-405kV and 406-800kV. The average number of total testing items where the recovery was done and the number of tested equipment, which was were recorded and counted from 2011-04-01 to 2012-04-26 was provided in MR.

*Quantity of SF<sub>6</sub> which was being injected to the reclamation facility during exceptional events occurred ( $EXC_{SF6,y}$ )*

The concentration of SF<sub>6</sub> is considered as 1 for conservative. The volume of the injected SF<sub>6,y</sub> is measured by mass flow meter. If a cylinder bundle of used gas was being reclaimed when the event occurred, then the total amount of SF<sub>6</sub> injected from the cylinder bundle into the reclamation line between 5 hours prior to the event and until the time that the injection line was shut off must be considered as  $EXC_{SF6,y}$ .

*Production of SF<sub>6</sub> during the reclamation period of cylinder ( $PSF6,i,y$ )*

The value was measured daily by the equipments of level gauge, pressure gauge and temperature sensor. The accuracy of the level gauge, pressure gauge and temperature sensor meet the requirement of the applied standard SOP (SFK-SOP-SF6-086).

It could be evidenced that the monitoring system ensures for continuous operation. It can be confirmed that all monitoring parameters have been measured / determined without material misstatements and in line with all applicable standards and relevant requirements.

## 5.8. Monitoring report

A draft monitoring report was submitted to the verification team by the project participants. The team has made this report publicly available prior to the start of the verification activities. No comments were received.

During the verification, mistakes and needs for clarification were identified. The PP has carried out the requested corrections so that it can be confirmed that the Monitoring report is complete and transparent and in accordance with the registered revised PDD and other relevant requirements.

## 5.9. Sampling

### 5.9.1. Implementation of the sampling plan

No sampling was required to determine the monitored parameters.

### 5.9.2. Sampling approaches during verification

No sampling approaches were taken during the verification.

## 5.10. ER calculation

According to the validated (revised) PDD, the approved baseline and monitoring methodology AM0079 Ver.02 is applied to the project.

GHG emission reduction is calculated as baseline emission minus project emission and leakage emission.

### Step 1: Baseline Emissions:

The formula used for the determination of baseline emissions which is consistent with the registered revised PDD and monitoring plan:

$$BE_y = MIN\{V_{SF6,hist}, DFT_y * EA_y\} * GWP_{SF6}$$

$BE_y$	- Baseline emissions year $y$ , tCO <sub>2</sub> e
$DFT_y$	- Discount factor for testing in year $y$
$EA_y$	- Quantity of SF <sub>6</sub> reclaimed during the year $y$ , tonnes SF <sub>6</sub>
$V_{SF6,hist}$	- Historical annual baseline venting of SF <sub>6</sub> , tonnes SF <sub>6</sub>
$GWP_{SF6}$	- Global warming potential of SF <sub>6</sub> , tCO <sub>2</sub> e/tonnes SF <sub>6</sub>

=

= 105,258 tCO<sub>2</sub>e



**Sub-step 1: The estimated historical annual SF<sub>6</sub> venting ( $V_{SF6,hist}$ ) calculation**

$$V_{SF6,hist} = w_{SF6,hist} \sum_t TI_{SF6,used,t}$$

- $V_{SF6,hist}$  - Historical annual venting of SF<sub>6</sub>, in tonnes SF<sub>6</sub>  
 $TI_{SF6,used,t}$  - Used gas vented during eligible testing item  $t$ , tonnes gas (see Sub-step 1(b))  
 $w_{SF6,hist}$  - Concentration of SF<sub>6</sub> expected in used gas in the historical period, tonnes SF<sub>6</sub>/tonnes gas

$$V_{SF6,hist \text{ CDM-11003-CDM-11005}} = 3.40 \text{ tones}$$

$$V_{SF6,hist \text{ CDM-11006-CDM-12001}} = 3.38 \text{ tones}$$

**Sub-step 2: Determine the quantity of SF<sub>6</sub> reclaimed during the year  $y$  ( $EA_y$ )**

$$EA_y = \sum_i CA_{i,y} * w_{SF6,i}$$

- $EA_y$  - Quantity of SF<sub>6</sub> reclaimed during the year  $y$ , tonnes SF<sub>6</sub>  
 $w_{SF6,i}$  - Concentration of SF<sub>6</sub> in the cylinder  $i$ , tonnes SF<sub>6</sub>/tonnes gas  
 $= \min\{MR_{Gas,i,y}, MS_{Gas,i,y}, MI_{Gas,i,y}\} * w_{SF6,i}$   
 $MR_{Gas,i,y}$  - Mass of used gas recovered into cylinder  $i$  at the SF<sub>6</sub> recovery site in year  $y$   
 $MS_{Gas,i,y}$  - Mass of used gas stored in recovery cylinder  $i$  in year  $y$ , tonnes gas  
 $MI_{Gas,i,y}$  - Mass of used gas from cylinder  $i$  which is injected for reclamation process in year  $y$ , tonnes gas  
 $i$  - Sub-index used for each cylinder that completed a recovery-reclamation cycle included in the estimation of emissions avoided for the year  $y$

$$EA_y \text{ CDM-11003-CDM-11005} = 2.75 \text{ tones}$$

$$EA_y \text{ CDM-11006-CDM-12001} = 3.10 \text{ tones}$$

**Sub-step 3: Discount factor for testing ( $DFT_y$ )**

$$DFT_y = \frac{\sum_k (Q_{SF6,k,y} * RT_{k,y})}{Q_{SF6,y}}$$

$$Q_{SF6,k,y} = \sum_j Q_{SF6,k,j,y}$$

$$Q_{SF6,k,y} = \sum_j Q_{SF6,k,j,y}$$

- $DFT_y$  - Discount factor for testing in year  $y$



- $Q_{SF6,k,y}$  - Total amount of SF<sub>6</sub> filled in the testing of equipments in category  $k$  in year  $y$ , tonnes SF<sub>6</sub>
- $Q_{SF6,y}$  - Total amount of SF<sub>6</sub> filled in testing of all equipments in the project activity
- $RT_{k,y}$  - Ratio of number of eligible testing items in category  $k$  (maximum value is set at 1)
- $Q_{SF6,k,j,y}$  - Amount of SF<sub>6</sub> that is filled into equipment  $j$  of category  $k$  in year  $y$  at the SF<sub>6</sub> recovery site, tonnes SF<sub>6</sub>

The data of  $Q_{SF6,k,y}$  was not available for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 i.e. during 2011-04-02 to 2011-09-30. A deviation from monitoring plan regarding this issue was approved by EB on 27 Aug 2013<sup>/PDD//PRC/</sup>. A deviation from monitoring methodology regarding this issue was also approved by EB on 27 Aug 2013<sup>/PDD//PRC/</sup>. The deviation is using the value of  $RT_{1,y}$  or  $RT_{2,y}$  under different scenarios to substitute  $DFT_y$  in the calculation. It is confirmed the action is considered as conservative.

During the monitoring period, the tested equipments are ranging from 12 to 800 KV. Two categories are identified i.e. 12 to 405 KV and 406 to 800 KV (which is different from 40-419 kV and 420- 800 kV in registered PDD). A correction do not affect the project design; this issue was approved by EB on 27 Aug 2013<sup>/PDD//PRC/</sup>.

- $Q_{SF6,1,y}$  represents the total amount of SF<sub>6</sub> filled in the testing of equipments in category 1(12 to 405KV) in year  $y$
- $Q_{SF6,2,y}$  represents the total amount of SF<sub>6</sub> filled in the testing of equipments in category 2 (406 to 800 KV) in year  $y$ .

$$RT_{k,y} = \frac{NT_{BL,k}}{NT_{PJ,k,y}}$$

- $RT_{k,y}$  - Ratio of number of eligible testing items in category  $k$  (maximum value is set at 1)
- $NT_{BL,k}$  - Average number of eligible testing items where venting occurred per equipment in the baseline, for category  $k$
- $NT_{PJ,k,y}$  - Average number of total testing items where recovery was done per equipment in the project, for category  $k$

In this monitoring period for cylinder bundle CDM-11003, CDM-11004 and CDM-12005,  $DFT_y$  are calculated based on the approved deviations from registered monitoring plan and applied methodology. As per the approved deviation,  $DFT_y = \text{Min}\{RT_{1,y}, RT_{2,y}\}$ .

For cylinder bunble CDM-11003, CDM-11004 and CDM-12005,  $RT_{1,y}$  and  $RT_{2,y}$  are correctly calculated.  $RT_{1,y}=1$ ,  $RT_{2,y}=0,58$ , and therefore the value of  $DFT_y$  is 0.58

In this monitoring period for cylinder bundle CDM-11006, CDM-11007 and CDM-12001, two sets of  $RT_{k,y}$  have been calculated correctly.

- Set One is calculated based on the average number of total testing items where recovery was done per equipment in the project, for category k in the monitoring period for cylinder bundle CDM-11006, CDM-11007 and CDM-12001. The calculated value of  $RT_{1,y}$  and  $RT_{2,y}$  is 1.00 and 0.68 respectively and the value of  $DFT_y$  is 0.92.
- Set Two is based on the data of the whole monitoring period (for cylinder bundle CDM-11003, CDM-11004, CDM-11005, CDM-11006, CDM-11007 and CDM-12001). The calculated value of  $RT_{1,y}$  and  $RT_{2,y}$  is 1.00 and 0.64 respectively and the value of  $DFT_y$  is 0.91.

For cylinder bundle CDM-11006, CDM-11007 and CDM-12001, since the calculation result of Set Two (which is based on the whole monitoring period) is more conservative, it has been used for the baseline emission calculation. Therefore,  $DFT_y=0.91$ .

The monitoring workbook has been checked. It is confirmed the calculation is correct.

## Step 2: Project Emissions:

The determination of project emissions which is consistent with the monitoring plan:

$$PE_y = PE_{RCL,y} + PE_{TF,y} + PE_{RF,y} + PE_{EXC,y}$$

- |              |  |
|--------------|--|
| $PE_y$       | - Project emissions in year y, tCO <sub>2</sub> e  |
| $PE_{RCL,y}$ | - Project emissions from emission of SF <sub>6</sub> during reclamation in year y, tCO <sub>2</sub> e  |
| $PE_{TF,y}$  | - Project emissions as a result of increased electricity consumption at the testing facility attributable to project activity in year y, tCO <sub>2</sub> e (Refer the "data monitored" section)     |
| $PE_{RF,y}$  | - Project emissions as a result of increased electricity consumption at the reclamation facility attributable to project activity in year y, tCO <sub>2</sub> e (Refer the "data monitored" section) |
| $PE_{EXC,y}$ | - Project emissions from exceptional event(s) at the SF <sub>6</sub> reclamation site in year y, tCO <sub>2</sub> e  |

$$= 1,889.75 + 230.95 + 0.08 + 2,062.57 = 4,183 \text{ tCO}_2\text{e}$$

### Sub-step 1: Calculation of $PE_{RCL,y}$

$$PE_{RCL,y} = GWP_{SF6} \cdot \sum_{j,i} (R_{SF6,y,j,i} - R_{SF6,hist,j}) \cdot P_{SF6,y,i}$$

- |                 |  |
|-----------------|--|
| $GWP_{SF6}$     | - Global warming potential of SF <sub>6</sub> , tCO <sub>2</sub> e/t SF <sub>6</sub> |
| $R_{SF6,y,j,i}$ | - Rate of SF <sub>6</sub> loss from point j during the reclamation period of         |

$$\begin{aligned}
 & \text{cylinder } i, \text{ in year } y, \% \\
 R_{SF6,hist,j} & \text{ - Historical rate of SF}_6 \text{ loss from point } j, \% \\
 P_{SF6,y,i} & \text{ - Production of SF}_6 \text{ during reclamation period of cylinder } i \text{ in year } y, \text{ t SF}_6 \\
 & = GWP_{SF6} \cdot \sum_{j,i} \left( \sum_i \frac{L_{SF6,y,j,i}}{P_{SF6,y,i}} - \frac{L_{SF6,hist,j}}{P_{SF6,hist}} \right) \cdot P_{SF6,y,i} \\
 L_{SF6,y,j,i} & \text{ - Amount of SF}_6 \text{ loss from point } j \text{ during the reclamation period of cylinder } i \text{ in year } y, \text{ tonnes SF}_6 \\
 P_{SF6,y,i} & \text{ - Production of SF}_6 \text{ during the reclamation period of cylinder } i, \text{ in year } y, \text{ tonnes SF}_6 \\
 L_{SF6,hist,j} & \text{ - Historical amount of SF}_6 \text{ loss from point } j, \text{ tonnes SF}_6 \\
 P_{SF6,hist} & \text{ - Production of SF}_6 \text{ during the historical period, tonnes SF}_6
 \end{aligned}$$

$R_{SF6,hist,j}$  was determined in the registered revised PDD as 0.058%.

$$PE_{RCL,y} = 1,889.75 \text{ tCO}_2\text{e}$$

#### Sub-step 2: Calculation of $PE_{TF,y}$

According to "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", AM0079 version 02 and registered revised PDD, electricity consumption can be approximated by the rated capacity of the operating equipment multiplied by operating hours of the facility. The maximum operating hours 8760 hours have been applied as conservative.

$$\begin{aligned}
 PE_{TF,y} &= \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y}) \\
 &= 0.0169 * 8760 * 1.3 * (1 + 20\%) = 230.95 \text{ tCO}_2\text{e}
 \end{aligned}$$

#### Sub-step 3: Calculation of $PE_{RF,y}$

According to "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" and AM0079 version 02, electricity consumption can be approximated by the rated capacity of the operating equipment multiplied by operating hours of the facility. The maximum operating hours 8760 hours have been applied as conservative.

$$\begin{aligned}
 PE_{RF,y} &= \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y}) \\
 &= 0.000006 * 8760 * 1.3 * (1 + 20\%) = 0.08 \text{ tCO}_2\text{e}
 \end{aligned}$$

#### Sub-step 4: Calculation of $PE_{EXC,y}$

$$PE_{EXC,y} = GWP_{SF6} \times EXC_{SF6,y}$$

$EXC_{SF6,y}$  - Quantity of SF<sub>6</sub> which was being injected to the reclamation

facility during exceptional events occurred in year  $y$ , tonnes SF<sub>6</sub>. If a recovery cylinder of used gas was being reclaimed when the event occurred, the amount of gas extracted from the cylinder between 5 hours prior to the exceptional event and the time that the injection line was closed is considered as EXC<sub>SF<sub>6</sub>, $y$</sub> .

$$= 23,900 \cdot 86.3 = 2,062.57 \text{ tCO}_2\text{e}$$

### Step 3: Leakage:

In accordance with AM0079 ver. 02, registered revised PDD and validation report, the leakage emissions associated with the project are very marginal as to be negligible compared to the range of uncertainty of the GWP estimate, and they can be ignored during the crediting period i.e.  $LE_y = 0$ .

### Emission Reductions:

$$\begin{aligned} ER_y &= BE_y - PE_y - LE_y \\ &= 105,258 - 4,183 - 0 \\ &= 101,074 \text{ tCO}_2\text{e} \end{aligned}$$

Following documents/records<sup>/DMR/</sup> were verified by the audit team:

All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data.

The data used for the emission reduction calculation were retrieved from the monitoring meter readings. No malfunction of meters was detected during the monitoring period. It is confirmed that the ER calculation is overall correct.

## 5.11. Quality Management

Quality Management procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel in the framework of this CDM project activity have been defined in the monitoring manual and relevant procedures. The procedures defined can be assessed as appropriate for the purposes indicated above. No significant deviations thereof have been observed during the verification.

The data recorder list was established and all monitored data are archived both in physical (daily data) and in electronic form. The data will be kept for the whole crediting period and additional 2 years as given in the revised PDD.

Meters calibration plan was established and followed. The calibration records covering the monitoring period were maintained.

## 5.12. Actual emission reductions during the first commitment period and the period from 1 January 2013 onwards

The MR includes actual ER values achieved up to 31 December 2012 and actual values achieved from 1 January 2013 onwards as follows:

**Table 5-2:** Emission reductions before and after the end of 2012

	until 2012-12-31 <sup>1)</sup>	from 2013-01-01 <sup>1)</sup>	Sum
Emission reductions [tCO <sub>2e</sub> ]	101,074	0	101,074

<sup>1)</sup> Both days included

## 5.13. Comparison with ex-ante estimated emission reductions

During the monitoring period (from 2011-04-01 to 2012-04-26) the actual ER of the project is 101,074 tCO<sub>2e</sub>, which is 42.9% lower than the estimated in registered revised PDD 177,304 tCO<sub>2e</sub> (165,092 tCO<sub>2e</sub> annually).

The calculated value was found to be proportionally lower than the ex-post determined value, thus no further justification was required.

## 5.14. Overall Aspects of the Verification

All necessary and requested documentation was provided by the project participants so that a complete verification of all relevant issues could be carried out.

Access was granted to all installations of the plant which are relevant for the project performance and the monitoring activities.

No issues have been identified indicating that the implementation of the project activity and the steps to claim emission reductions are not compliant with the UNFCCC criteria and relevant guidance provided by the COP/CMP and the CDM EB (clarifications and/or guidance).

## 5.15. Hints for next periodic Verification

There is no hint for next periodic verification.

## 6. VERIFICATION AND CERTIFICATION STATEMENT

Solvay Fluor Korea Co. Ltd has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 1st periodic verification of the project: "SF<sub>6</sub> recovery and reclamation project, South Korea", with regard to the relevant requirements for CDM project activities. The project reduces GHG emissions due to avoiding venting of used SF<sub>6</sub>. This verification covers the period from 2011-04-01 to 2012-04-26(including both days).

In the course of the verification 10 Corrective Action Requests (CAR), 3 Clarification Requests (CL) and 0 Forward Action Requests (FAR) raised during validation were successfully closed. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the registered revised PDD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

6. all operations of the project are implemented and installed as planned and described in the validated project design document.
7. the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AM0079 ver.02.
8. the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
9. the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 1<sup>st</sup> periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: **101,074** t CO<sub>2e</sub>

Essen, 2013-10-14



Rainer Winter

TÜV NORD JI/CDM Certification  
Program

Verification Team Leader

Essen, 2013-10-14



Dirk Speyer

TÜV NORD JI/CDM Certification  
Program

Final Approval

## 7. REFERENCES

Table 7-1: Documents provided by the project participant(s)

Reference	Document
<b>/ATS/</b>	<ul style="list-style-type: none"> <li>- Approval of the reclamation facility commissioning on 2008-04-29</li> </ul>
<b>/BL/</b>	<p>Business License of</p> <ul style="list-style-type: none"> <li>- Korean business registry, SFK incorporation notice</li> <li>- KOLAS (Korea Laboratory Accreditation Scheme), <a href="http://www.kolas.go.kr">www.kolas.go.kr</a>, showing that KERI is the only institution in Korea performing the high voltage tests in question involving pure and contaminated SF<sub>6</sub> gas.</li> </ul>
<b>/CAL/</b>	<ul style="list-style-type: none"> <li>- Calibration Certificate of mass flow meter (14122007, 14111339, 14069408, 14014422, 14014074) covering the monitoring period.</li> <li>- Calibration standard of mass flow meter - FMT-QG-06</li> <li>- Certificate of calibration entity i.e. FMTech Co., Ltd.</li> </ul>
	<ul style="list-style-type: none"> <li>- Calibration Certificate of GC (CN10622030) issued by SFK according to SOP.</li> <li>- Certificate of calibration entity issued by AGILENT Technologies, S/N: YAC080560</li> </ul>
	<ul style="list-style-type: none"> <li>a) Calibration certificate of weight scale for the cylinders (FR3).</li> <li>b) Calibration standard of weight scale - KML-CAL-M05; PH-I003</li> <li>c) Certificate of calibration entity KML</li> <li>d) Certificate of calibration entity Pyunghwa HiTech</li> </ul>
<b>/SP/</b>	<ol style="list-style-type: none"> <li>1. Technical Specification of mass flow meter</li> <li>2. Technical Specification of GC</li> </ol>
<b>/DCS/</b>	DCS system of the weighing scale
<b>/DMR/</b>	<ul style="list-style-type: none"> <li>- SF<sub>6</sub> gas filling records at recovery site</li> <li>- SF<sub>6</sub> gas recovery records at recovery site</li> <li>- SF<sub>6</sub> gas stored in cylinder bundle records</li> <li>- SF<sub>6</sub> gas records for gas from the cylinder bundle injected into the production process</li> <li>- SF<sub>6</sub> gas loss from point j during the reclamation period</li> <li>- SF<sub>6</sub> Contraction of amount of SF<sub>6</sub> loss at SFK site</li> <li>- SF<sub>6</sub> concentration records from GC at SFK site</li> <li>- Records of the number of total testing items where recovery was done per equipment</li> </ul>



Reference	Document
	- Records of the quantity of SF <sub>6</sub> which was being injected to the reclamation facility during exceptional events occurred.
<b>/IAR/</b>	Internal Audit Report
<b>/IEC/</b>	SF <sub>6</sub> Quality standard IEC 60376 International Electrotechnical Commission (IEC), IEC 60480 - Guidelines for the checking and treatment of sulfur hexafluoride (SF <sub>6</sub> ) taken from electrical equipment and specification for its re-use, edition 2.0, Publication Date: 14 October 2004 ( <a href="http://webstore.iec.ch/webstore/webstore.nsf/Artnum_PK/33279">http://webstore.iec.ch/webstore/webstore.nsf/Artnum_PK/33279</a> )
<b>/LOG/</b>	1. Sample copy of project operation records. 2. Equipments daily check log.
<b>/LOA/</b>	- Ministry of Environment, the Republic of Korea (DNA of China), LoA (Ref. no.: 2010-7), 14 April 2010 - UK LoA, 29 April 2010
<b>/MM/</b>	Monitoring Manual
<b>/MOC/</b>	- MoC Annex 1 - MoC valid as of 2013-01-25 - MoC Annex 2 (Withdraw Project Participant) valid as of 2013-06-25 - MoC Annex 2 (Change/update authorized signatory, name or contact details) valid as of 2013-04-30 - MoC Annex 2 (Add Project Participant) valid as of 2013-04-19
<b>/MR/</b>	Monitoring Report "SF <sub>6</sub> recovery and reclamation project, South Korea" version 1 dated 2012-06-27 version 02 dated 2012-08-06 version 03 dated 2013-08-27
<b>/NP/</b>	- Nameplates of the operating equipment (two Compressors, Suctioning pump, Vacuum pump, Evaporator) - Nameplates of weighing scale for cylinder - Nameplates of mass flow meters
<b>/O&amp;M/</b>	Project Operation and Maintenance Records Sample copy of O&M records
<b>/PHT/</b>	Photographs of Project Site



Reference	Document
<b>/PL/</b>	<ul style="list-style-type: none"> <li>- Project layout of the related equipment/infrastructure at the recovery site (at KERI's facilities REV-000, 2008-05-28</li> <li>- Project layout of the related equipment/infrastructure at the recovery site (at KERI's facilities REV-001, 2012-01-04</li> </ul>
<b>/QA/</b>	Monitoring manual and QA/QC procedures
<b>/RTC/</b>	Project Responsibilities, Training and Competence Records 1. Project Organization Chart and responsibilities 2. Staff Training Records 3. Sample Copy of Operator Certificates
<b>/SOC/</b>	Staff operation certificates
<b>/SOP/</b>	Standard operation procedures
<b>/XLS/</b>	ER calculation sheet/SF <sub>6</sub> Monitoring Workbook version 01 ER calculation sheet/SF <sub>6</sub> Monitoring Workbook version 02 ER calculation sheet/SF <sub>6</sub> Monitoring Workbook version 03

**Table 7-2:** Background investigation and assessment documents

Reference	Document
<b>/AM79/</b>	AM0079 ver.02, "Recovery of SF <sub>6</sub> from Gas insulated electrical equipment in testing facilities"
<b>/CPM/</b>	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)
<b>/GLMP/</b>	Guidelines for completing the monitoring report form (EB 70, Annex 11)
<b>/IPCC/</b>	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book
<b>/KP/</b>	Kyoto Protocol (1997)
<b>/MA/</b>	Decision 3/CMP. 1 (Marrakesh – Accords)
<b>/MRT/</b>	Monitoring Report Form (F-CDM-MR) , Version 03.1

Reference	Document
<b>/PDD/</b>	<ul style="list-style-type: none"> <li>– Project Design Document for CDM project: “SF<sub>6</sub> recovery and reclamation project, South Korea” version 7, dated 2011-03-23</li> <li>– Revised Project Design Document for CDM project: “SF<sub>6</sub> recovery and reclamation project, South Korea” version 8, dated 2013-02-26, approved by EB on 27 Aug 2013</li> </ul>
<b>/PRC/</b>	– Post Registration Changes Assessment by DOE for CDM project: “SF <sub>6</sub> recovery and reclamation project, South Korea”, dated 2013-03-17 approved by EB on 27 Aug 2013
<b>/PS/</b>	Project Standard version 04
<b>/VAL/</b>	Validation Report for CDM project “SF <sub>6</sub> recovery and reclamation project, South Korea” version 2, dated 2011-03-28
<b>/VVS/</b>	UNFCCC Validation and Verification Standard (Version 0.4)

**Table 7-3:** Websites used

Reference	Link	Organisation
<b>/dna-HP/</b>	<a href="http://www.mofat.go.kr/ENG/ministry/organization/organizational/index.jsp?menu=m_50_60_20">http://www.mofat.go.kr/ENG/ministry/organization/organizational/index.jsp?menu=m_50_60_20</a>	DNA of Republic of Korea
<b>/dna-SP/</b>	<a href="http://www.environment-agency.gov.uk/business/topics/pollution/129666.aspx">http://www.environment-agency.gov.uk/business/topics/pollution/129666.aspx</a>	DNA of United Kingdom of Great Britain and Northern Ireland
<b>/unfccc/</b>	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	UNFCCC
<b>/ipcc/</b>	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	IPCC publications

**Table 7-4:** List of interviewed persons

Reference	Mol <sup>1</sup>		Name	Organisation / Function
<b>/IM01/</b>	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	HoJin, Jeon	Solvay Fluor Korea Co. Ltd/ Head of production department



Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	HongBo Ha	Solvay Fluor Korea Co. Ltd / Mechanical Engineer
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	Zhang Shoudou	Solvay Energy Services, Orbeo / Project Manager
/IM01/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	Wu Xia	Solvay Energy Services, Orbeo/ Project Manager
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	YongHan Li	Korea Electrotechnology Research Institute/CDH Manager
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	HackDong Yooh	Korea Electrotechnology Research Institute/operator
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	JiHar Choi	Korea Electrotechnology Research Institute/ operator

<sup>1)</sup> Means of Interview: (Telephone, E-Mail, Visit)

# ANNEX

- A1:** Verification Protocol
- A2:** Statements of Competence of  
involved Personnel

## ANNEX 1: VERIFICATION PROTOCOL

**Table A-1:** GHG calculation procedures and management control testing / detailed audit testing of residual risk areas and random testing

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<b>Raw data generation</b>				
<ul style="list-style-type: none"> <li>• Installation of measuring equipment</li> <li>• Dysfunction of installed equipment</li> <li>• Maloperation by operational personnel</li> <li>• Downtimes of equipment</li> <li>• Exchange of equipment</li> <li>• Change of measurement equipment characteristic</li> <li>• Insufficient accuracy</li> <li>• Change of technology</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of modern and state of the art equipment</li> <li>• Process control automation</li> <li>• Internal data review</li> <li>• Regular visual inspections of installed equipment</li> <li>• Only skilled and trained personnel operates the relevant equipment</li> <li>• Daily raw data checks</li> <li>• Immediate exchange of dysfunctional equipment</li> <li>• Stand-by duty is</li> </ul>	<ul style="list-style-type: none"> <li>• Inadequate installation / operation of the monitoring equipment</li> <li>• Inadequate exchange of equipment</li> <li>• Change of personnel</li> <li>• Undetected measurement errors</li> <li>• Inappropriateness of Management system procedures w.r.t. monitoring plan requirements (e.g. substitute value strategies)</li> <li>• Non-application of management system procedures</li> <li>• Insufficient accuracy</li> <li>• Inappropriate QA/QC</li> </ul>	<ul style="list-style-type: none"> <li>• Site – visit</li> <li>• Check of equipment</li> <li>• Check of technical data sheets</li> <li>• Check of suppliers information / guarantees</li> <li>• Check of calibration records, if applicable</li> <li>• Check of maintenance records</li> <li>• Counter-check of raw data and commercial data</li> <li>• Check of CDM management system</li> <li>• Check of CDM related procedures</li> </ul>	<ul style="list-style-type: none"> <li>• <b>See Table A-2</b></li> </ul>

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<ul style="list-style-type: none"> <li>Accuracy of values supplied by Third Parties</li> </ul>	<ul style="list-style-type: none"> <li>organized</li> <li>Training</li> <li>Internal audit procedures</li> <li>Internal check of QA/QC measures of involved Third Parties</li> </ul>	<ul style="list-style-type: none"> <li>measures of Third Parties</li> </ul>	<ul style="list-style-type: none"> <li>Application of CDM management system procedures</li> <li>Check of trainings</li> <li>Check of responsibilities</li> <li>Check of QA/QC documentation / evidences of involved Third Parties</li> </ul>	
<b>Raw data collection and data aggregation</b>				
<ul style="list-style-type: none"> <li>Wrong data transfer from raw data to daily and monthly aggregated reporting forms</li> <li>IT Systems</li> <li>Spread sheet programming</li> <li>Manual data transmission</li> <li>Data protection</li> <li>Responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>Cross-check of data</li> <li>Plausibility checks of various parameters.</li> <li>Appropriate archiving system</li> <li>Clear allocation of responsibilities</li> <li>Application of CDM Management system procedures</li> <li>Usage of standard software solutions</li> </ul>	<ul style="list-style-type: none"> <li>Unintended usage of old data that has been revised</li> <li>Incomplete documentation</li> <li>Ex-post corrections of records</li> <li>Ambiguous sources of information</li> <li>Non-application of management system procedures</li> <li>Manual data transfer mistakes</li> </ul>	<ul style="list-style-type: none"> <li>Check of data aggregation steps</li> <li>Counter-calculation</li> <li>Data integrity checks by means of graphical data analysis and calculation of specific performance figures</li> <li>Check of management system certification</li> <li>Check of data archiving system</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>

Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
	(Spreadsheets) <ul style="list-style-type: none"> <li>Limited access to IT systems</li> <li>Data protection procedures</li> </ul>	<ul style="list-style-type: none"> <li>Unintended change of spread sheet programming or data base entries</li> <li>Problems caused by updating/upgrading or change of applied software</li> </ul>	<ul style="list-style-type: none"> <li>Check of application of Management system procedures</li> </ul>	
<b>Other calculation parameters</b>				
<ul style="list-style-type: none"> <li>Emission factors, oxidation factors, coefficients</li> </ul>	<ul style="list-style-type: none"> <li>The values and data sources applied are defined in the PDD and monitoring plan</li> </ul>	<ul style="list-style-type: none"> <li>Unintended or intended Modification of calculation parameters</li> <li>Wrong application of values</li> <li>Misinterpretations of the applied methodology and/ or the PDD</li> <li>Missing update of applicable regulatory framework (e.g. IPCC values)</li> </ul>	<ul style="list-style-type: none"> <li>Update-check of regulatory framework</li> <li>Countercheck of the applied MP in the MR against the methodology and the PDD</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>
<b>Calculation Methods</b>				



Identification of potential reporting risk	Identification, assessment and testing of management controls	Areas of residual risks	Additional verification testing	Conclusions and Areas Requiring Improvement (including <i>Forward Action Requests</i> )
<ul style="list-style-type: none"> <li>Applied formulae</li> <li>Miscalculation</li> <li>Mistakes in spread-sheet calculation</li> </ul>	<ul style="list-style-type: none"> <li>Advanced calculation and reporting tools</li> <li>A CDM coordinator is in charge of the CDM related calculations</li> <li>Usage of tested / counterchecked Excel spreadsheets</li> <li>Involvement of external consultants</li> </ul>	<ul style="list-style-type: none"> <li>The danger of miscalculation can only be minimized.</li> </ul>	<ul style="list-style-type: none"> <li>Countercheck on the basis of own calculation.</li> <li>Spread sheet walk-through.</li> <li>Plausibility checks</li> <li>Check of plots</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>
<b>Monitoring reporting</b>				
<ul style="list-style-type: none"> <li>Data transfer to the author of the monitoring report</li> <li>Data transfer to the monitoring report</li> <li>Unintended use of outdated versions</li> </ul>	<ul style="list-style-type: none"> <li>An experienced CDM consultant is responsible for monitoring reporting.</li> <li>CDM QMS procedures are defined</li> </ul>	<ul style="list-style-type: none"> <li>The danger of data transfer mistakes can only be minimized</li> <li>Inappropriate application of QMS procedures</li> </ul>	<ul style="list-style-type: none"> <li>Counter check with evidences provided.</li> <li>Audit of procedure application</li> </ul>	<ul style="list-style-type: none"> <li><b>See Table A-2</b></li> </ul>

**Table A-2:** (Project specific) Periodic Verification Checklist

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>A. Description of the project activity</b>				
<b>A.1. Purpose and general description of the project activity</b> <b>(EB 70, Annex 11, A.1)</b> <i>Check if section A.1 of the MR includes the following:</i> <ul style="list-style-type: none"> <li>- Purpose of the PA and the measures taken to reduce GHG emissions</li> <li>- Brief description of the installed technology and equipment</li> <li>- Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.)</li> <li>- Total emission reductions achieved in this monitoring period</li> </ul>	/MR/	<p>The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Purpose of the PA and the measures taken to reduce GHG emissions</li> <li><input checked="" type="checkbox"/> Brief description of the installed technology and equipments</li> <li><input checked="" type="checkbox"/> Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc)</li> <li><input type="checkbox"/> Total emission reductions achieved in this monitoring period</li> </ul> <p>In this context the CL A1, FAR A2, FAR A3 and FAR A4 have been identified:</p>	CL A4 CAR A2 CAR A3 CAR A4	OK
<b>A.2. Location of project activity</b> <b>(EB 70, Annex 11, A.2)</b> <i>Check if section A.2 of the MR reflects correctly the following:</i> <ul style="list-style-type: none"> <li>- Host Party(ies)</li> <li>- Region / State / Province etc.</li> <li>- City / Town / Community etc.</li> </ul>	/MR/ /PDD/	<p>The verification team has checked section A.2 of the MR and confirms by means of comparison with the information given in the Revised PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Host Party(ies)</li> <li><input checked="" type="checkbox"/> Region / State / Province</li> <li><input checked="" type="checkbox"/> City / Town / Community</li> </ul>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
- <i>Physical / geographical location (e.g. Latitude and Longitude)</i>		<input checked="" type="checkbox"/> Physical / Geographical location In this context the following findings have been identified: N/A		
<b>A.3. Parties and Project Participants (EB 70, Annex 11, A.3)</b> Check if section A.3 of the MR includes the following: <ul style="list-style-type: none"> <li>- All PPs as displayed on the UNFCCC website</li> <li>- A correctly filled table as per the MR template</li> </ul>	/MR/ /unfccc/	The verification team has checked section A.3 of the MR as well as the UNFCCC website and confirms that: <ul style="list-style-type: none"> <li><input type="checkbox"/> all PPs as displayed on the project related UNFCCC website are correctly listed</li> <li><input checked="" type="checkbox"/> the table as per the template MR has been correctly filled</li> </ul> In this context the following findings have been identified: CL A8 is raised.	CL A8	OK
<b>A.4. Reference of applied methodology (EB 70, Annex 11, A.4)</b> Check if section A.4 of the MR correctly describes / includes the following: <ul style="list-style-type: none"> <li>- Reference to the applicable version of the methodology</li> <li>- Reference to the applicable version(s) of relevant methodological tools</li> <li>- Relevant EB decisions, if applicable</li> </ul>	/MR/ /PDD/ /unfccc/	The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Number, title and version of the applicable CDM Methodology</li> <li><input checked="" type="checkbox"/> Name and version of applicable CDM methodological tools</li> <li><input checked="" type="checkbox"/> Relevant EB decisions</li> </ul> In this context the following findings have been identified:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		N/A		
<b>A.5. Crediting period of project activity (EB 70, Annex 11, A.5)</b>  <i>Check if section A.5 of the MR correctly includes the following:</i> <ul style="list-style-type: none"> <li>- <i>Start date of the crediting period. In this context please check, if applicable, whether post registration changes to the start date have been accepted by the EB.</i></li> <li>- <i>Length and type of the crediting period</i></li> </ul>	/MR/ /unfccc/	<p>The verification team has checked section A.5 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Start date of the crediting period.</li> <li><input checked="" type="checkbox"/> Type and length of the crediting period</li> </ul> <p>In this context the following findings have been identified: FAR A6 is raised.</p>	CAR A6	OK
<b>A.6. Publication of the Monitoring Report (VVS, § 207)</b>  <i>Check if the monitoring report has been made publicly available on the UNFCCC website before the verification commenced.</i> <i>Check if comments have been received and if yes, how they have been addressed.</i>	/unfccc/	<p>The verification team has ensured and confirms by means of checking the respective project information on the UNFCCC website that:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> The draft monitoring report, as received from the project participants, has been made publicly available prior to the start of the verification activities.</li> <li><input checked="" type="checkbox"/> No comments have been received.</li> </ul> <p>In this context the following findings have been identified: N/A</p>	OK	OK
<b>A.7. Compliance with standardized format of the Monitoring Report</b>	/MRT/	The verification team has checked all sections of the MR and confirms by means of comparison with the MR template that:	CAR A9	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>(VVS, § 212 e)</b>  <i>Check (only) if the latest applicable MR template has been used. For compliance assessment with the MR guideline pl. refer to the respective MR sections.</i>		<input type="checkbox"/> the standardized MR template has been used  In this context the following findings have been identified:  CAR A9: During the course of the Verification progress, the MR template is no longer valid.		
<b>B. Implementation of project activity</b>				
<b>B.1. Description of implemented registered project activity (EB 70, Annex 11, B.1)</b>  <i>Check if section B.1 of the MR correctly describes / includes the following:</i> <ul style="list-style-type: none"> <li>- Implementation status of the PA</li> <li>- Detailed description of installed technology(ies) / technical processes and equipment applied</li> <li>- Diagrams (where appropriate)</li> </ul>	/MR/ /PDD/ /PS/	The verification team has checked section B.1 of the MR and confirms by means of comparison with the information given in the revised PDD, the project standard and information gathered during the site visit that:  <input checked="" type="checkbox"/> the description of the implementation status of the PA is in line with the applicable provisions of the project standard  <input checked="" type="checkbox"/> an appropriate description of the installed technology(ies), technical process and equipment incl. diagrams, where applicable, has been included  In this context the following findings have been identified:  N/A	OK	OK
<b>B.1.1. Initial project implementation (VVS; § 225 a, 226)</b>  <i>Assess whether the project has been implemented and operated as per the registered PDD and are all physical features of the project in place?</i>  <i>Further focus on the potential phase wise implementation and check the reporting on the</i>	/IM01/ /PDD/ /TP/	<i>Description:</i>  The project has been implemented as per the registered revised PDD. The used SF <sub>6</sub> is recovered from GIS/GCB equipment by the piping system. It is then compressed and stored in dedicated cylinders which are weighed and labelled in recovery site i.e. KERI. The cylinders are transported to SF <sub>6</sub> reclamation site i.e. SFK. The SF <sub>6</sub> is analyzed at the laboratory once the cylinders arrived at SFK. Then the used SF <sub>6</sub> which meets the standard i.e.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>corresponding status and starting dates accordingly.</i></p> <p><i>Also, discuss – if applicable – any approvals of the necessary request of notification or request for approval of changes from the project activity as described in the registered PDD (EB 48 Annex 66/67).</i></p>		<p>SOP is injected to SF<sub>6</sub> production plant for reclamation.</p> <p><i>Verifier's action:</i></p> <p>By means of on-site visit and interview, the physical features of the projects are in place. The revised PDD and Technical Specification of monitoring equipment have been checked. The UNFCCC website has been also checked.</p> <p><i>Conclusion:</i></p> <p>The project has been implemented as per the registered (revised) PDD.</p>		
<p><b>B.1.2. Technical equipment changes</b> <b>-(VVS; § 225 a, 226)</b></p> <p><i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i></p> <p><i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i></p> <p><i>In case of post registration changes pl. refer to chapter B.2.</i></p>	<p>/IM01/ /LOG/ /PDD/ /PHT/ /TP/</p>	<p><i>Description:</i></p> <p>The technical equipments such as monitoring equipment and reclamation facility have not been changed and are consistent with those in registered (revised) PDD and previous validation.</p> <p><i>Verifier's action:</i></p> <p>By means of instrument specification checks and interviews during the on-site visit. This was also crosschecked as per the plant operation log, equipments check &amp; maintenance log, Technical Particulars of Turbine, Generator and on-site observation.</p> <p><i>Conclusion:</i></p> <p>No equipment was exchanged or modified within the monitoring period.</p>	OK	OK
<p><b>B.1.3. Operation of the project activity</b></p>	<p>/IM01/</p>	<p><i>Description:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>-(VVS;§ 225 a, 226)</b></p> <p><i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i></p> <p><i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i></p> <p><i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i></p> <p><i>In case of post registration changes pl. refer to chapter B.2.</i></p>	<p>/PDD/ /LOG/</p>	<p>The operation modes for SF<sub>6</sub> recovery, reclamation etc. have not been changed.</p> <p><i>Verifier's action:</i></p> <p>The verification team interviewed the operational personnel, and crosschecked with the plant operation log, equipments check &amp; maintenance log which are assessed as reliable.</p> <p><i>Conclusion:</i></p> <p>No relevant operation modes were exchanged within the monitoring period.</p>		
<p><b>B.1.4. Incidents (VVS;§ 225 a, 226)</b></p> <p><i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i></p> <p><i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i></p>	<p>/IM01/ /LOG/ /PHT/ /XLS/</p>	<p><i>Description:</i></p> <p>No significant incidents deviant operation modes and downtimes of the equipment have occurred. The downtime story regarding the shut-down of the SF<sub>6</sub> production line has been provided in workbook. It is a normal operation of the plant confirmed. The downtime story records are the reference for the calculation of EXE<sub>SF6,y</sub>.</p> <p><i>Verifier's action:</i></p> <p>It was verified through the site observation, the plant operation log check, equipments check &amp; maintenance log audit, interviews with the plant operators. This was also backed up by the data integrity check. The Workbook has been checked<sup>/XLS/</sup>.</p> <p><i>Conclusion:</i></p>	CAR B1	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		Incidents during the monitoring period have not been observed except the situation that data of Q <sub>SF6,k,y</sub> was not available for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 i.e. during 2011-04-01 to 2011-09-30. CAR B1 is relevant		
<b>B.1.5. Legislation</b> Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been changed.  Assess, in case of changes, whether consequences for the PA with regard to relevant CDM requirements have been accounted for.  In case of changes data sources shall be referenced.	/IM01/ /dna-HP/ /BL/	<i>Description:</i> Relevant legislation incl. SF <sub>6</sub> recovery and reclamation, related environmental protection laws, sectoral policies and relevant regulations were not changed. Both companies SFK and KERI are authorized to operate within their business activities and as such have fulfilled/obtained the necessary requirements/permits (Permit for emissions of Air Pollutants, Permit for non-point waste water Pollutants, and Permit for toxic Chemical usage, manufacture and sale) in order to operate within their activities. Since the project activities are only a minor variation to their main activities respectively, the former are therefore also covered within the environmental, legal, operational, and business permits held by each of the companies.  <i>Verifier's action:</i> It was verified through consulting official governmental website and as per the local and sectoral expertise of the verification team.  <i>Conclusion:</i> No relevant changes since the validation were identified.	OK	OK
<b>B.1.6. Open issues from validation</b> -(VVS; § 213)  Check (esp. in case of 1 <sup>st</sup> periodic verification) whether there are any open issues indicated in the	/VAL/	<input type="checkbox"/> There were no open issues addressed in the validation report  <input type="checkbox"/> All open issues from the validation have been appropriately addressed.	<del>CAR</del> A2, <del>CAR</del> A3, <del>CAR</del> A4,	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
validation report (e.g. FAR)?		<input checked="" type="checkbox"/> The following issues related to the validation have not yet been appropriately addressed: CAR A2, CAR A3, CAR A4, CAR A5, CAR A6 and CAR A7 are raised.	CAR A5, CAR A6, CAR A7	
<b>B.1.7. Open issues from previous verification</b> -(VVS; §§ 213; 284 h) Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVS.	/VER/	<input type="checkbox"/> There were no open issues addressed in the previous verification report <input type="checkbox"/> All open issues from the previous verification have been appropriately addressed. <input type="checkbox"/> The following issues related to the previous verification have not yet been appropriately addressed: This is the first verification. It is not applicable.	N/A	N/A
<b>B.2. Post registration changes</b>				
<b>B.2.1. Are post registration changes applicable to the proposed project activity?</b>	/IM01/ /LOG/ /PDD/ /MR/	<input type="checkbox"/> No, by means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered revised PDD and the applied methodology. (Please proceed with section C) <input checked="" type="checkbox"/> Yes, post registration changes have been identified and are assessed in detail in the subsequent steps. (Please proceed with B.2.2.) The CAR B1 is raised.	CAR B1	OK
<b>B.2.2. Temporary deviations from the registered monitoring plan or</b>	/PS/ /unfccc/	<input type="checkbox"/> No TDfrMP or TDfMM have been submitted to the	CAR B1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																																				
<p><b>applied methodology (TDfrMP; TDfMM)</b>  <b>(EB 70, Annex 11, B.2.1; VVS; §§ 251 - 256))</b></p> <p><i>Indicate whether any temporary deviations have been applied during this monitoring periods.  In cases where approval has been sought from the EB please provide reference.  If applied, provide a description of the deviation(s).  This should include the reasons for the deviation(s), how it deviates from the monitoring plan and/or applied methodology(ies), the duration for which the deviation(s) is(are) applicable and justification on the conservativeness of the approach. Indicate if the deviation will lead to a reduction in the accuracy and if so, which conservative assumptions and discount factors have been applied.  For deviation(s) that require prior approval by the Board, include the date of approval and reference number.</i></p>	/IM01/ /LOG/ /PDD/ /MR/	<table border="1"> <tr> <td colspan="3"><input type="checkbox"/> UNFCCC prior to the current monitoring period</td> </tr> <tr> <td colspan="3"><input checked="" type="checkbox"/> The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC</td> </tr> <tr> <td>1</td><td>Title</td><td>Request for post-registration changes to the CDM project activity "SF<sub>6</sub> recovery and reclamation project, South Korea" (4274) - PRC ref No. PRC-4274-001</td></tr> <tr> <td></td><td>Status</td><td><input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved</td></tr> <tr> <td></td><td>Appr.date</td><td>2013-08-27</td></tr> <tr> <td></td><td>Issue</td><td>Q<sub>SF6,k,y</sub> was not monitored and recorded for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 during the recovery period from 02 April 2011 to 30 Sep 2011.</td></tr> <tr> <td></td><td>Ref. No.</td><td>PRC-4274-001 prcp708457339</td></tr> <tr> <td>2</td><td>Title</td><td></td></tr> <tr> <td></td><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr> <tr> <td></td><td>Appr.date</td><td></td></tr> <tr> <td></td><td>Ref.No.</td><td></td></tr> <tr> <td colspan="3"><input type="checkbox"/> During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td> </tr> </table>	<input type="checkbox"/> UNFCCC prior to the current monitoring period			<input checked="" type="checkbox"/> The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC			1	Title	Request for post-registration changes to the CDM project activity "SF <sub>6</sub> recovery and reclamation project, South Korea" (4274) - PRC ref No. PRC-4274-001		Status	<input type="checkbox"/> under approval; <input checked="" type="checkbox"/> approved		Appr.date	2013-08-27		Issue	Q <sub>SF6,k,y</sub> was not monitored and recorded for the cylinder bundle CDM-11003, CDM-11004 and CDM-11005 during the recovery period from 02 April 2011 to 30 Sep 2011.		Ref. No.	PRC-4274-001 prcp708457339	2	Title			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved		Appr.date			Ref.No.		<input type="checkbox"/> During the verification of the current MP no need for a TDfrMP or TDfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA				
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<b>B.2.3. Corrections</b> (EB 70, Annex 11, B.2.2; VVS; §§ 257 - 259)	/PS/ /unfccc/	<div> <input checked="" type="checkbox"/> During the verification of the current MP no need for </div>	CAR B1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)			Draft Concl.	Final Concl.	
<p>Indicate whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report.</p> <p>In cases where the correction(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</p> <p>Please check and report that the corrected information is an accurate reflection of the actual project information and that the corrected parameters are in accordance with the applied methodology and the monitoring plan.</p>	/IM01/ /LOG/ /PDD/ /MR/	corrections has been identified.					
		<input checked="" type="checkbox"/>	The following corrections have been applied:				
			1	Issue:			In PDD version 8, Sub-step 3 (a), the ranges of the category <i>k</i> have been changed from 40-419 kV and 420-800kV to 12-405 kV and 406-800 kV.  The Request for post-registration changes to the CDM project activity "SF6 recovery and reclamation project, South Korea" (4274) is approved by EB- PRC ref No. PRC-4274-001.
			2	Issue:			
		<p><i>Detailed description and justification each correction:</i></p> <p>please see the request for post-registration changes to the CDM project activity "SF6 recovery and reclamation project, South Korea" (4274) which is approved by EB- PRC ref No. PRC-4274-001.</p> <p>In this context the following findings have been identified:</p> <p>CAR B1 has been raised</p>					
B.2.4. Permanent changes from the	/PS/ /unfccc/				OK	OK	

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<p><b>registered monitoring plan or applied methodology (PCfrMP; PCfMM)</b>  <b>(EB 70, Annex 11, B.2.3; VVS; §§ 262 - 268)</b></p> <p><i>Indicate whether any permanent changes from the registered monitoring plan or applied methodologies have been approved during this monitoring period or submitted with this monitoring report.</i></p> <p><i>In cases where the change(s) and the revised PDD are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</i></p>	/IM01/ /LOG/ /PDD/ /MR/	<table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td colspan="2">No PCfrMP or PCfMM have been submitted to the UNFCCC prior to the current monitoring period</td></tr> <tr> <td><input type="checkbox"/></td><td colspan="2">The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC</td></tr> <tr> <td>1</td><td>Title</td><td></td></tr> <tr> <td></td><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr> <tr> <td></td><td>Appr.date</td><td></td></tr> <tr> <td></td><td>Ref. No.</td><td></td></tr> <tr> <td>2</td><td>Title</td><td></td></tr> <tr> <td></td><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr> <tr> <td></td><td>Appr.date</td><td></td></tr> <tr> <td></td><td>Ref.No.</td><td></td></tr> <tr> <td><input checked="" type="checkbox"/></td><td colspan="2">During the verification of the current MP no need for a PCfrMP or PCfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA</td></tr> <tr> <td><input type="checkbox"/></td><td colspan="2">An approval of the following PCfrMP or PCfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.</td></tr> <tr> <td>1</td><td>Issue:</td><td></td></tr> <tr> <td>2</td><td>Issue:</td><td></td></tr> <tr> <td><input type="checkbox"/></td><td colspan="2">The following PCfrMP or PCfMM for which appendix 1 of the PS is applicable have been applied:</td></tr> </table>	<input checked="" type="checkbox"/>	No PCfrMP or PCfMM have been submitted to the UNFCCC prior to the current monitoring period		<input type="checkbox"/>	The following PCfrMP or PCfMM have been approved or are under approval by the UNFCCC		1	Title			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved		Appr.date			Ref. No.		2	Title			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved		Appr.date			Ref.No.		<input checked="" type="checkbox"/>	During the verification of the current MP no need for a PCfrMP or PCfMM has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA		<input type="checkbox"/>	An approval of the following PCfrMP or PCfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.		1	Issue:		2	Issue:		<input type="checkbox"/>	The following PCfrMP or PCfMM for which appendix 1 of the PS is applicable have been applied:			
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	1	Issue:																				
	2	Issue:																				
<b>B.2.5. Changes to the project design of the registered project activity (CoPD)</b> <i>(EB 70, Annex 11, B.2.4; VVS; §§ 269 - 282)</i> <i>Indicate whether any changes to the project design of the project activity have been approved during this monitoring period or submitted with this monitoring report.</i> <i>In cases where the change(s) and the revised PDD</i>	/PS/ /unfccc/ /IM01/ /LOG/ /PDD/ /MR/	<table><tr><td><input checked="" type="checkbox"/></td><td colspan="3">No CoPD has been submitted to the UNFCCC prior to the current monitoring period</td></tr><tr><td><input type="checkbox"/></td><td colspan="3">The following CoPD has been approved or are under approval by the UNFCCC</td></tr><tr><td rowspan="3">1</td><td>Title</td><td colspan="2"></td></tr><tr><td>Status</td><td colspan="2"><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr><tr><td>Appr.date</td><td colspan="2"></td></tr></table>	<input checked="" type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period			<input type="checkbox"/>	The following CoPD has been approved or are under approval by the UNFCCC			1	Title			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved		Appr.date			OK	OK
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<p>are approved prior to the submission of this monitoring report for request for issuance, provide the approval date and reference number. Otherwise, provide the version number and the completion date of the revised PDD.</p>		<table border="1"> <tr> <td></td><td>Ref. No.</td><td></td></tr> <tr> <td>2</td><td>Title</td><td></td></tr> <tr> <td></td><td>Status</td><td><input type="checkbox"/> under approval; <input type="checkbox"/> approved</td></tr> <tr> <td></td><td>Appr.date</td><td></td></tr> <tr> <td></td><td>Ref.No.</td><td></td></tr> </table>		Ref. No.		2	Title			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved		Appr.date			Ref.No.			
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			Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved															
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		<input checked="" type="checkbox"/>	During the verification of the current MP no need for a CoPD has been identified. The monitoring plan is in accordance with the approved methodology applied by the PA																
		<input type="checkbox"/>	An approval of the following CoPD.is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply.																
		1	Issue:																
		2	Issue:																
		<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:																
		1	Issue:																
		2	Issue:																
		<p><i>In cases of approved CoPD the EB guidance has been applied as follows:</i></p> <p>N/A</p>																	

Checklist Item (incl. guidance for the verification team)	Refe- rence	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.		
		<i>Detailed description and justification each CoPD for which appendix 1 is applicable:</i>  N/A  In this context the following findings have been identified:  N/A				
<b>C. Description of monitoring system</b>						
<b>C.1. Monitoring Plan – PDD Compliance (VVS,§ 233-236)</b>  <i>Check if the monitoring plan is in accordance with the monitoring plan contained in the registered PDD (or any accepted revised MP).</i>  <i>Please check esp. if</i> <ul style="list-style-type: none"><li>- <i>all parameters stated in the MP of the registered PDD have been monitored and updated as applicable</i></li><li>- <i>the monitoring equipment has been controlled and calibrated as per the MP</i></li><li>- <i>the monitoring results are consistently recorded as per the approved frequency</i></li><li>- <i>QA/QC procedures have been applied in accordance with the MP</i></li></ul>	/MR/ /PDD/	By means of comparison of the MR with the registered revised PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered PDD. The outcome is as follows: <table border="1"><tr><td><input checked="" type="checkbox"/></td><td>The MP is completely in accordance with the last registered/approved version of the revised PDD / MP.</td></tr></table> <i>All parameters stated in the MP of the registered revised PDD have been monitored and updated as applicable.</i>  <i>The monitoring equipment has been controlled and calibrated as per the MP.</i>  <i>The monitoring results are consistently recorded as per the approved frequency.</i>  <i>QA/QC procedures have been applied in accordance with the MP</i>  In this context the following findings have been identified:  N/A	<input checked="" type="checkbox"/>	The MP is completely in accordance with the last registered/approved version of the revised PDD / MP.	OK	OK
<input checked="" type="checkbox"/>	The MP is completely in accordance with the last registered/approved version of the revised PDD / MP.					

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.																				
<b>C.2. Monitoring Plan – Meth Compliance (VVS, § 229-232)</b>  <i>Check if the monitoring plan is in accordance with the applied methodology.</i>  <i>In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.</i>  <i>Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.</i>	/MR/ /PDD/ /AM79/	<div>By means of comparison of the MR with the applied CDM methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows:</div> <table><tr><td><input checked="" type="checkbox"/></td><td colspan="2">The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the revised PDD)</td></tr><tr><td><input checked="" type="checkbox"/></td><td colspan="2">The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:</td></tr><tr><td rowspan="3">1</td><td>Title (of the tool)</td><td>Combined tool to identify the baseline scenario and demonstrate additionality</td></tr><tr><td>Version</td><td>02.2</td></tr><tr><td>MP compliance</td><td><input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)</td></tr><tr><td rowspan="3">2</td><td>Title (of the tool)</td><td>Tool to calculate project or leakage CO2 emissions from fossil fuel combustion</td></tr><tr><td>Version</td><td>2</td></tr><tr><td>MP compliance</td><td><input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised</td></tr></table>	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the revised PDD)		<input checked="" type="checkbox"/>	The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:		1	Title (of the tool)	Combined tool to identify the baseline scenario and demonstrate additionality	Version	02.2	MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)	2	Title (of the tool)	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion	Version	2	MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised	OK	OK
<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the revised PDD)																							
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Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)				Draft Concl.	Final Concl.
					<input checked="" type="checkbox"/> N/A (for MP)		
			2	Title (of the tool)	Tool to calculate baseline, project and/or leakage emissions from electricity consumption		
				Version	1		
				MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)		
		In this context the following findings have been identified: N/A					
<b>C.3. Management System (VVS, § 217 (iii))</b>  <i>Check if the GHG data monitoring system can be assessed as appropriate.</i>  <i>In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system.</i>  <i>In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.</i>	/QA/ /IM01/ /IM02/ /MM/	<i>Description:</i> All applicable procedures within the GHG monitoring system have been summarized in a CDM Monitoring Manual and relevant QC/QA procedures. This CDM Monitoring Manual addresses procedures for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel.  <i>Verifier's action:</i> The MM was assessed by the verification team to ensure the GHG management to be implemented. Furthermore an experienced CDM consulting company has been contracted by the PP in order to heighten the quality monitoring process.  <i>Conclusion:</i>				OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The GHG management system has been implemented.		
<b>C.4. Metering diagram</b> <b>(EB 70, Annex 11, C; EB 65 Annex 5 §190)</b> <i>Check first if the MR includes a metering diagram showing all relevant monitoring points.</i> <i>Check further if this diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology.</i>	/PS/ /PDD/ /MR/ /IM01/	<i>Description:</i> The MR includes metering diagram with all relevant monitoring points, and the diagram reflects the actual situation and is in line with registered (revised) PDD and the applied methodology. <i>Verifier's action:</i> The MR has been verified against on-site observation and interview with project operators. <i>Conclusion:</i> The metering diagram correctly reflects the real situation.	GL-C4	OK
<b>C.5. Roles and Responsibilities</b> <b>(EB 70, Annex 11, C; EB 65 Annex 5 §190)</b> <i>Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data.</i> <i>Identify, if relevant personnel w.r.t. monitoring has been exchanged?</i> <i>If so, have appropriate training measures been carried out.</i> <i>In case of changes, assure that the implemented monitoring procedures have not been affected.</i>	/PS/ /IM01/ /QA/ /MM/ /RTC/	<i>Description:</i> Responsibilities for measurements, collection and compilation of data, data storage and archiving, calibration, maintenance and training of personnel have been introduced. <i>Verifier's action:</i> Besides interviews with the management, the consultants and key operational personnel the certificates of the appointed persons have been checked. <i>Conclusion:</i> All appointed persons involved are duly qualified for the task assigned. The roles and positions of each person have been clearly defined and implemented.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>C.6. Emergency procedures for the monitoring system</b> <b>(EB 54 Annex 34, C; EB 65 Annex 5 §190)</b> <i>Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required</i>	/PS/ /QA/ /IM01/ /LOG/ /O&M/	<p><i>Description:</i></p> <p>Emergency procedures for CDM purposes are in this case considered as essential part of ordinary plant operations.</p> <p><i>Verifier's action:</i></p> <p>The project operation records have been checked and responsible stuff has been interviewed.</p> <p><i>Conclusion:</i></p> <p>Emergency procedures are involved in monitoring system. There is no malfunction of main meters, it is not necessary to implement the emergency procedures during this monitoring period.</p>	OK	OK
<b>C.7. Data archive and data protection</b> <b>(EB 65 Annex 5 §56 b)</b> Check whether all records of monitoring parameters are archived according to the monitoring plan. Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.	/QA/ /IM01/ /DMR/	<p><i>Description:</i></p> <p>All relevant monitoring data was available; monitoring procedures are in place.</p> <p>The danger of unintended or intended data manipulation can be considered as low, since:</p> <ul style="list-style-type: none"> <li>On-line monitoring system retrieves data from the meters to the data assembly point and recorded.</li> <li>All data stored on-site are archived in forms of hardcopy and softcopy. The monitoring section is responsible for records control. The corresponding IT-Systems work within limitation of user authorisation.</li> </ul> <p><i>Verifier's action:</i></p> <p>The records of the monitoring data and the hard &amp; soft copy have been checked.</p>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The operational daily log, daily and monthly record are checked. <i>Conclusion:</i> The data is assessed to be appropriate. All data has been archived according to monitoring plan.		
<b>D. Data and parameters</b>				
<b>D.1. Data and Parameters fixed ex ante</b>				



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>a) Compliance with registered PDD (EB66 Annex 20; D1)</b>  Check whether the value applied is in compliance with the registered PDD.	/PDD/ /MR/ /TA/ /TFE/ /TEE/	<p><i>Description:</i></p> <p>The eight parameters have been involved in MR, which have been indicated in the registered revised PDD and used during this monitoring period.</p> <ol style="list-style-type: none"> <li>1. The Global warming potential of SF<sub>6</sub> (GWP<sub>SF6</sub>),</li> <li>2. Rated capacity of the operating equipment of the testing facilities at recovery site and reclamation site,</li> <li>3. Emissions factor for electricity (EF<sub>elec,j,y</sub>),</li> <li>4. Average technical transmission and distribution losses for providing electricity (TDL<sub>j,y</sub>),</li> <li>5. Used gas vented during eligible testing item t for the historical baseline year (TI<sub>SF6,used,t</sub>),</li> <li>6. Average number of eligible testing items where venting occurred per equipment in the baseline (NT<sub>BL,k</sub>),</li> <li>7. Historical amount of SF<sub>6</sub> loss from point j (L<sub>SF6,hist,j</sub>),</li> <li>8. Production of SF<sub>6</sub> during the historical period (P<sub>SF6,hist</sub>).</li> </ol> <p><i>Verifier's action:</i></p> <p>The registered revised PDD and MR have been checked. The nameplates of the operating equipment of the testing facilities at recovery site and reclamation site have been checked on-site.</p> <p><i>Conclusion:</i></p> <p>The value applied is in compliance with the registered PDD.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>b) Compliance with the applied methodology (EB66 Annex 20; D1)</b>  <i>Check whether the value applied is in compliance with the applied methodology or any other tool.</i>	/PDD/ /MR/ /AM79/ /TA/ /TFE/ /TEE/	<i>Description:</i> The eight parameters have been involved in MR, which have been indicated in the registered revised PDD and used during this monitoring period.  <i>Verifier's action:</i> The registered revised PDD, applied methodology AM0079 and MR have been checked.  <i>Conclusion:</i> The value applied is in compliance with the applied methodology and tools.	OK	OK
<b>D.2. Data and Parameters monitored</b>				
<b>D.2.1. GWP<sub>SF6</sub></b>				
<b>a) Measurement / Determination method (VVS, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>  <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/PDD/ /AM79/ /MR/	<i>Description:</i> GWP <sub>SF6</sub> is Global warming potential of SF <sub>6</sub> . The value of the parameter is fixed for the first commitment period  <i>Verifier's action:</i> The applied methodology AM0079, revised PDD and MR have been checked.  <i>Conclusion:</i> The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/PDD/ /AM79/ /MR/	<i>Description:</i> Not required as per methodology.  <i>Verifier's action:</i> N/A  <i>Conclusion:</i> N/A	OK	OK
<b>c) Correctness (VVS, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /DMR/ /MMR/ /CAL/ /INO/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)  <i>Description:</i> The value from the methodology AM0079 has been used.  <i>Verifier's action:</i> The applied methodology AM0079, revised PDD and MR have been checked.  <i>Conclusion:</i> The value given in the monitoring report is assessed to be reliable and correct.	OK	OK
<b>D.2.2. W<sub>SF6,BL,hist,y</sub></b>				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>a) Measurement / Determination method</b> (VVS, § 233, 236)</p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/IM01/ /PDD/ /AM79/ /SOP/ /CAL/ /SP/ /DMR/	<p><i>Description:</i></p> <p>W<sub>SF6,BL,hist,y</sub> is the concentration of SF<sub>6</sub> in used gas. Each time the cylinder bundle arrived at SFK site, the gas sample from the cylinder bundle analyzed at the laboratory using Gas Chromatography. The value was measured and recorded by SFK staffs for each analysis according to SOP.</p> <p>No device exchanges and malfunction were detected during the monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The detection limit/accuracy of GC was checked against the GC calibration report and GC specification. The characteristics including measuring conditions and accuracy of the meter are consistent with those described in SOP.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2. However, the CL D1 is raised.</p>	CL-D1	OK
<p><b>b) Accuracy and QA/QC Procedure</b> (VVS, §§ 237-241)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures</i></p>	/IM01/ /PDD/ /AM79/ /SOP/ /CAL/ /SP/ /DMR/	<p><i>Description:</i></p> <p>The SF6 concentration value in the project was measured by GC. The detection limit/accuracy of GC for all the gases analysed is at least 50 ppm and it meets the requirement of the applied standard SOP.</p> <p>The GC calibrations were performed every 2 year by SFK, which is authorized by AGILENT Technologies and they are in line with the applied standard SOP.</p> <p>The GC is in normal operational condition during this monitoring period.</p>	CL-D1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.		<p>Verifier's action:</p> <p>The detection limit/accuracy of GC met with the applied standard SOP. The GC calibration records covering the monitoring period were available during the onsite visit and have been checked.</p> <p>Conclusion:</p> <p>CL D1 is raised.</p>		
<p><b>c) Correctness</b> (VVS, §§ 233, 236)</p> <p>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</p> <p>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</p> <p>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</p>	<p>/MR/ /DMR/ /CAL/ /PHT/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p>Description:</p> <p>The SF<sub>6</sub> concentration value is measured by the GC from 2011-04-01 to 2012-04-26 as provided in MR.</p> <p>Verifier's action:</p> <p>The records were checked and the detailed laboratory results in DCS system have been checked.</p> <p>Conclusion:</p> <p>CL D1 is raised.</p>	CL D1	OK
<b>D.2.3. Q<sub>SF6,k,i,y</sub></b>				
<p><b>a) Measurement / Determination method</b> (VVS, § 233, 236)</p> <p>Describe how the monitoring parameter was measured / determined.</p> <p>Check if relevant equipment has been exchanged</p>	<p>/IM01/ /PDD/ /AM79/ /DMR/ /SP/</p>	<p>Description:</p> <p>Q<sub>SF6,k,i,y</sub> is mass of SF<sub>6</sub> that is filled into equipment at the SF<sub>6</sub> recovery i.e. KERI site. The value was measured continuously by mass flow meter with accuracy ±0.100% and recorded each time of injection. The value was monitored since 2011-10-01. Therefore, the value of cylinder bundle CDM-11006, CDM-</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>		<p>11007 and CDM-12001 injected after the date has been recorded.</p> <p>No meters exchanges and malfunction were detected during the monitoring period.</p> <p>Two categories have been defined based on the voltage range (12-800kV) being tested. The categories that contain at least 5 equipments. <math>Q_{SF6,1,y}</math> represents the total amount of SF6 filled in the testing of equipments in category 1(12- 405KV) in year y and <math>Q_{SF6,2,y}</math> represents the total amount of SF6 filled in the testing of equipments in category 2 (406- 800 KV). The method to define the category is based on the revised PDD p.25.</p> <p><i>Verifier's action:</i></p> <p>The SF6 filling records were verified by the verification team. The PDD and MR have been reviewed. The specification of the mass flow meter has been checked.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have</i></p>	<p>/CAL/ /MM/ /PDD/ /AM79/</p>	<p><i>Description:</i></p> <p>The accuracy of mass flow meter is <math>\pm 0.100\%</math> and meets the requirement of the applied national standard FMT-QG-06. The calibrations of meters were performed every 5 years by a qualified third party FMTECH Co., Ltd. and in line with the industry requirement. All the meters are in normal operational condition during this monitoring period.</p> <p><i>Verifier's action:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>		<p>The applied standard (FMT-QG-06) has been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The meters calibration records covering the monitoring period were checked.</p> <p><i>Conclusion:</i></p> <p>The mass flow meters are in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p>		
<p><b>c) Correctness</b> <b>(VVS, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /XLS/ /DMR/ /CAL/</p>	<p><input checked="" type="checkbox"/> Correct      <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The mass of SF<sub>6</sub> which was measured by mass flow meter from 2011-04-01 to 2012-04-26 was provided in MR. Certain input values of the Monitoring workbook.</p> <p><i>Verifier's action:</i></p> <p>The SF<sub>6</sub> filling records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i></p> <p>The value applied in the project is correct.</p>	OK	OK
<b>D.2.4. MR<sub>Gas,i,y</sub></b>				
<p><b>a) Measurement / Determination method</b> <b>(VVS, § 233, 236)</b></p>	<p>/IM01/ /PDD/</p>	<p><i>Description:</i></p> <p>MR<sub>Gas,i,y</sub> is mass of used SF<sub>6</sub> recovered into cylinder bundle at</p>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/AM79/ /DMR/ /SP/	<p>the SF<sub>6</sub> recovery i.e. KERI site. The value was measured continuously by mass flow meter with accuracy <math>\pm 0.100\%</math> and recorded each time of recovery.</p> <p>No meters exchanges and malfunction were detected during the monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The SF<sub>6</sub> recovery records were verified by the verification team. The revised PDD and MR have been reviewed. The specification of the mass flow meter has been checked.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/CAL/ /MM/ /PDD/ /AM79/	<p><i>Description:</i></p> <p>The accuracy of mass flow meter is <math>\pm 0.100\%</math> and meets the requirement of the applied standard FMT-QG-06.</p> <p>The calibrations of meters were performed every 5 years by a qualified third party FMTech Co., Ltd. and in line with the industry requirement. The meter is in normal operational condition during this monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The applied standard (FMT-QG-06) has been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The meters calibration records covering the monitoring period were checked.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Conclusion:</i></p> <p>The mass flow meter is in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p>		
<p><b>c) Correctness</b> <b>(VVS, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /XLS/ /DMR/ /CAL/</p>	<p><input checked="" type="checkbox"/> Correct      <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The mass of SF<sub>6</sub> recovered which was measured by mass flow meter from 2011-04-01 to 2012-04-26 was provided in MR.</p> <p><i>Verifier's action:</i></p> <p>The SF<sub>6</sub> recovery records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i></p> <p>The value applied in the project is correct.</p>	OK	OK
<b>D.2.5. MS<sub>Gas,i,y</sub></b>				
<p><b>a) Measurement / Determination method</b> <b>(VVS, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination</i></p>	<p>/IM01/ /PDD/ /AM79/ /DMR/ /NP/</p>	<p><i>Description:</i></p> <p>MR<sub>Gas,i,y</sub> is mass of used gas stored in recovery cylinder bundle at the SF<sub>6</sub> recovery i.e. KERI site. The value was measured by weighing scale with accuracy 0.5kg/5000kg. It is measured and recorded for each cylinder bundle.</p> <p>No weighing scale exchanges and malfunction were detected during the monitoring period.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>		<p><i>Verifier's action:</i></p> <p>The records of mass of used SF<sub>6</sub> stored were verified by the verification team. The revised PDD and MR have been reviewed. The nameplate of the weighing scale has been checked.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/CAL/ /MM/ /PDD/ /AM79/</p>	<p><i>Description:</i></p> <p>The accuracy of weighing scale is 0.5kg/5000kg and meets the requirement of the applied standard KML-CAL-M05 and PH-I003.</p> <p>The calibrations of weighing scale were performed every 2 years by a qualified third party KML and Pyunghwa HiTech, which is in line with the industry requirement. The weighing scale is in normal operational condition during this monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The applied standards (KML-CAL-M05 and PH-I003) have been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The weighing scale calibration records covering the monitoring period were checked.</p> <p><i>Conclusion:</i></p> <p>The weighing scale is in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		the monitoring equipment have been carried out appropriately.		
<b>c) Correctness</b> <b>(VVS, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/ MR / / XLS / / DMR / / CAL /	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The mass of used SF <sub>6</sub> stored which was measured by weighing scale from 2011-04-01 to 2012-04-26 was provided in MR. <i>Verifier's action:</i> The records of the mass of used SF <sub>6</sub> stored were checked. The value given in the monitoring report and the corresponding Excel sheet were checked. <i>Conclusion:</i> The value applied in the project is correct.	OK	OK
<b>D.2.6. MI<sub>Gas,i,y</sub></b>				
<b>a) Measurement / Determination method</b> <b>(VVS, § 233, 236)</b> <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/ IM01 / / PDD / / AM79 / / DMR / / SP /	<i>Description:</i> MI <sub>Gas,i,y</sub> is the mass of used gas from the cylinder bundle injected into the production process for reclamation process at reclamation i.e. SFK site. The value was measured continuously by mass flow meter with accuracy $\pm 0.100\%$ and recorded each time of injection to SF <sub>6</sub> production line. No meters exchanges and malfunction were detected during the monitoring period. <i>Verifier's action:</i> The records of the mass of used gas from the cylinder bundle injected into the production process were verified by the verification team. The revised PDD and MR have been	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p>reviewed. The specification of the mass flow meter has been checked.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	<p>/CAL/ /MM/ /PDD/ /AM79/</p>	<p><i>Description:</i></p> <p>The accuracy of mass flow meter is <math>\pm 0.100\%</math> and meets the requirement of the applied standard FMT-QG-06. The calibrations of meters were performed every 5 years by a qualified third party FMTech Co., Ltd. and in line with the industry requirement. The meter is in normal operational condition during this monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The applied standard (FMT-QG-06) has been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The meters calibration records covering the monitoring period were checked.</p> <p><i>Conclusion:</i></p> <p>The mass flow meter is in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p>	OK	OK
<b>c) Correctness</b>	/MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>(VVS, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/XLS/ /DMR/ /CAL/</p>	<p><i>Description:</i></p> <p>The mass of used gas from the cylinder bundle injected into the production process, which was measured by mass flow meter from 2011-04-01 to 2012-04-26 was provided in MR.</p> <p><i>Verifier's action:</i></p> <p>The records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i></p> <p>The value applied in the project is correct.</p>		
<b>D.2.7. L<sub>SF6,y,i,j</sub></b>				
<p><b>a) Measurement / Determination method</b></p> <p><b>(VVS, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/IM01/ /PDD/ /AM79/ /DMR/ /SP/</p>	<p><i>Description:</i></p> <p>L<sub>SF6,y,i,j</sub> is amount of SF<sub>6</sub> loss from point j during the reclamation period at reclamation i.e. SFK site. The value was measured continuously by mass flow meter and recorded daily. The GC accuracy is the detection limit of all the gases analysed being at least 50 ppm.</p> <p>No meters exchanges and malfunction were detected during the monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The records of the amount of SF<sub>6</sub> loss and its concentration were verified by the verification team. The PDD and MR have been reviewed. The specifications of the mass flow meter and GC have been checked.</p> <p><i>Conclusion:</i></p>	CL D1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		CL D1 is raised.		
<b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/CAL/ /MM/ /PDD/ /AM79/ /SOP/	<p><i>Description:</i></p> <p>The accuracy of mass flow meter is <math>\pm 0.35\%</math> and meets the requirement of the applied standard FMT-QG-06. The detection limit accuracy of the GC of all the gases analysed will be at least 50 ppm, which meets the requirement of the applied standard SOP.</p> <p>The calibrations of mass flow meter were performed every 5 years by a qualified third party FMTech Co., Ltd. and in line with the industry requirement. The meter is in normal operational condition during this monitoring period.</p> <p>The GC calibrations were performed every 2 year by SFK, which is authorized by AGILENT Technologies and they are in line with the applied standard SOP.</p> <p><i>Verifier's action:</i></p> <p>The applied standard (FMT-QG-06) and SOP have been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The meters calibration records covering the monitoring period were checked.</p> <p><i>Conclusion:</i></p> <p>CL D1 is raised.</p>	CL D1	OK
<b>c) Correctness</b>	/MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)	CL D1	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>(VVS, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/XLS/ /DMR/ /CAL/</p>	<p><i>Description:</i></p> <p>The amount of SF<sub>6</sub> loss was measured by mass flow meter and GC from 2011-04-01 to 2012-04-26 was provided in MR.</p> <p><i>Verifier's action:</i></p> <p>The records of amount of SF<sub>6</sub> loss and concentration were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i></p> <p>CL D1 is raised.</p>		
<b>D.2.8. P<sub>SF6,y,i</sub></b>				
<p><b>a) Measurement / Determination method</b></p> <p><b>(VVS, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/IM01/ /PDD/ /AM79/ /DMR/ /SP/ /PHT/</p>	<p><i>Description:</i></p> <p>P<sub>SF6,y,i</sub> is production of SF<sub>6</sub> during the reclamation period at reclamation i.e. SFK site. The value was measured daily by the following equipments and accuracy</p> <ul style="list-style-type: none"> <li>➤ level gauge: ± 50mm</li> <li>➤ pressure gauge: ± 0.5%</li> <li>➤ Temperature: ± 0.5%</li> </ul> <p>No meters exchanges and malfunction were detected during the monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The records of production of SF<sub>6</sub> were verified by the verification team. The revised PDD and MR have been reviewed.</p> <p><i>Conclusion:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.		
<b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/CAL/ /MM/ /PDD/ /AM79/ /SOP/	<i>Description:</i> The accuracy of the level gauge, pressure gauge and temperature sensor meet the requirement of the applied standard SOP (SFK-SOP-SF6-086).  <i>Verifier's action:</i> The applied standard (SFK-SOP-SF6-086) has been checked.  <i>Conclusion:</i> The level gauge, pressure gauge and temperature sensor are in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.	OK	OK
<b>c) Correctness (VVS, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details</i>	/MR/ /XLS/ /DMR/ /CAL/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)  <i>Description:</i> The production of SF <sub>6</sub> , which was calculated by level gauge, pressure gauge and temperature sensor from 2011-04-01 to 2012-04-26 was provided in MR.  <i>Verifier's action:</i> The records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.  <i>Conclusion:</i> The value applied in the project is correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>and descriptions of the CARs raised.</i>				
<b>D.2.9. NT<sub>PJ,k,y</sub></b>				
<b>a) Measurement / Determination method (VVS, § 233, 236)</b>  <i>Describe how the monitoring parameter was measured / determined.</i>  <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i>  <i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>	/IM01/ /PDD/ /AM79/ /DMR/	<i>Description:</i> NT <sub>PJ,k,y</sub> is the average number of total testing items where recovery was done per equipment at recovery i.e. KERI site. The value was recorded and aggregated. Two categories have been defined as 12-405kV and 406-800kV. <i>Verifier's action:</i> The records were verified by the verification team. The revised PDD and MR have been reviewed. <i>Conclusion:</i> The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.	OK	OK
<b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the</i>	/CAL/ /MM/ /PDD/ /DMR/ /AM79/ /XLS/	<i>Description:</i> The records are from SF <sub>6</sub> recovery site <i>Verifier's action:</i> The records were verified by the verification team. The revised PDD, Excel sheet and MR have been reviewed. <i>Conclusion:</i> No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>monitoring equipment has been carried out in line with the latest EB guidance.</i>				
<b>c) Correctness</b> <b>(VVS, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/ MR / / XLS / / DMR / / CAL /	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The number of total testing items where the recovery was done and the number of tested equipment, which were recorded and counted from 2011-04-01 to 2012-04-26 provided in MR. <i>Verifier's action:</i> The records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked. <i>Conclusion:</i> The value applied in the project is correct.	OK	OK
<b>D.2.10. i</b>				
<b>a) Measurement / Determination method</b> <b>(VVS, § 233, 236)</b> <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i> <i>Assess whether the measurement / determination method is in line with the registered monitoring plan</i>	/ IM01 / / PDD / / AM79 / / DMR / / SP /	<i>Description:</i> i is the sub-index used for each cylinder bundle that completed a recovery-reclamation cycle. The value was recorded by staffs on SF <sub>6</sub> recovery and reclamation site. Each recovery cylinder bundle has been clearly identified and marked. It can be uniquely identified and associated with gas recovery operations (MR <sub>gas,i</sub> ), gas weight (MS <sub>gas,i</sub> ), w <sub>SF6,i</sub> , and gas injected (MI <sub>gas,i</sub> ), which are following; - CDM-11003 - CDM-11004 - CDM-11005	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>of the PDD and the applied methodology.</i>		<ul style="list-style-type: none"> <li>- CDM-11006</li> <li>- CDM-11007</li> <li>- CDM-12001</li> </ul> <p><i>Verifier's action:</i></p> <p>The sub-index was verified by the verification team. The revised PDD and MR have been reviewed.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/MM/ /PDD/ /AM79/	<p><i>Description:</i></p> <p>The recovery cylinder bundles have been visibly distinguishable from new gas cylinder bundles. When used gas is filled into a recovery cylinder bundle, weighed, and sent for reclaiming, the sub-index is used to label the cylinder bundle for identification information. The label for each cylinder bundle is used identically during the recovery-reclamation process.</p> <p><i>Verifier's action:</i></p> <p>The sub-index and the label were verified by the verification team. The revised PDD and MR have been reviewed.</p> <p><i>Conclusion:</i></p> <p>No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p>	OK	OK
<b>c) Correctness</b>	/MR/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>(VVS, §§ 233, 236)</b> Determine whether the value given in the monitoring report is correct or determined in a conservative manner.  In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.  In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.	/DMR/	<b>Description:</b> The sub-index is correctly used, and labeled on each cylinder bundle from 2011-04-01 to 2012-04-26 provided in MR.  <b>Verifier's action:</b> The sub-index and the label were verified by the verification team. The value given in the monitoring report and the corresponding Excel sheet were checked.  <b>Conclusion:</b> The value applied in the project is correct.		
<b>D.2.11. n</b>				
<b>a) Measurement / Determination method</b> <b>(VVS, § 233, 236)</b> Describe how the monitoring parameter was measured / determined.  Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.  Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.	/IM01/ /PDD/ /AM79/ /DMR/	<b>Description:</b> n is the number of cylinder bundles that completed a recovery-reclamation cycle in the year y. During this monitoring period. The cylinder number 0001, 0003 and 0004 were used.  <b>Verifier's action:</b> The labels of cylinder bundle using were verified by the verification team.  <b>Conclusion:</b> The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.	OK	OK
<b>b) Accuracy and QA/QC Procedure</b>	/MM/ /PDD/	<b>Description:</b>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>(VVS, §§ 237-241)</b> <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i> <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/AM79/	<p>The site keeps records of each cylinder bundle for which recovery and reclamation has been completed. All individual identification and dates information are available for a clear definition of each year y the process was finished.</p> <p><i>Verifier's action:</i></p> <p>The labels of cylinder bundle using were verified by the verification team.</p> <p><i>Conclusion:</i></p> <p>No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p>		
<b>c) Correctness</b> <b>(VVS, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /XLS/ /DMR/	<p><input checked="" type="checkbox"/> Correct      <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The number is correctly counted during 2011-04-01 to 2012-04-26 provided in MR.</p> <p><i>Verifier's action:</i></p> <p>The labels of cylinder bundle using were verified by the verification team.</p> <p><i>Conclusion:</i></p> <p>The value applied in the project is correct.</p>	OK	OK
<b>D.2.12. W<sub>SF6,i</sub></b>				
<b>a) Measurement / Determination method</b>	/IM01/ /PDD/	<i>Description:</i>	CL-D4	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><b>(VVS, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/AM79/ /SOP/ /CAL/ /SP/ /DMR/</p>	<p><math>w_{SF_6,i}</math> is the concentration of SF<sub>6</sub> in the cylinder bundle. Each time the cylinder bundle arrived at SFK site, the gas sample from the cylinder bundle analyzed at the laboratory using Gas Chromatography. The value is measured and recorded by SFK staffs for each analysis according to SOP.</p> <p>No device exchanges and malfunction were detected during the monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The detection limit/accuracy of GC was checked against the GC calibration report and GC specification. The characteristics including measuring conditions and accuracy of the meter are consistent with those described in SOP.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2. However, the CL D1 is raised.</p>		
<p><b>b) Accuracy and QA/QC Procedure</b></p> <p><b>(VVS, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the</i></p>	<p>/IM01/ /PDD/ /AM79/ /SOP/ /CAL/ /SP/ /DMR/</p>	<p><i>Description:</i></p> <p>The SF<sub>6</sub> concentration value in the project was measured by GC. The detection limit/accuracy of GC for all the gases analysed is at least 50 ppm and it meets the requirement of the applied standard SOP.</p> <p>The GC calibrations were performed every 2 year by SFK, which is authorized by AGILENT Technologies and they are in line with the applied standard SOP.</p> <p>The GC is in normal operational condition during this monitoring period.</p> <p><i>Verifier's action:</i></p>	CL-D1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>monitoring equipment has been carried out in line with the latest EB guidance.</i>		The detection limit/accuracy of GC met with the applied standard SOP. The GC calibration records covering the monitoring period were available during the onsite visit and have been checked.  <i>Conclusion:</i> CL D1 is raised.		
<b>c) Correctness</b> <b>(VVS, §§ 233, 236)</b> <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i> <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i> <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /DMR/ /CAL/ /PHT/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The SF6 concentration value is measured by a GC from 2011-04-01 to 2012-04-26 as provided in MR. <i>Verifier's action:</i> The records were checked and the detailed laboratory results in DCS system have been checked. <i>Conclusion:</i> CL D1 is raised.	CL D1	OK
<b>D.2.13. PE<sub>TF,y</sub></b>				
<b>a) Measurement / Determination method</b> <b>(VVS, § 233, 236)</b> <i>Describe how the monitoring parameter was measured / determined.</i> <i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination</i>	/IM01/ /PDD/ /AM79/ /SOP/ /NP/ /SP/ /TEE/	<i>Description:</i> PE <sub>TF,y</sub> is project emissions as a result of increased electricity consumption at the testing facility attributable to project activity $PE_{TF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y})$ The "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" version 01 is applied.	CAR E1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/DMR/	<p><i>Verifier's action:</i></p> <p>The methodology, tool and the registered revised PDD have been checked to confirm the correctness. The installed capacity of the operating equipments has been cross-checked with the nameplates.</p> <p><i>Conclusion:</i></p> <p>The CAR E1 is raised.</p>		
<p><b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b></p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/IM01/ /PDD/ /AM79/	<p><i>Description:</i></p> <p>As per the methodology QA/QC procedures are not necessary.</p> <p><i>Verifier's action:</i></p> <p>N/A</p> <p><i>Conclusion:</i></p> <p>CAR E1 is raised.</p>	CAR E1	OK
<p><b>c) Correctness (VVS, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p>	/MR/ /DMR/ /CAL/ /NP/	<p><input checked="" type="checkbox"/> Correct      <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The parameters applied for the calculation were verified in the above tables, which are assessed as correct.</p> <p><i>Verifier's action:</i></p>	CAR E1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>		<p>The installed capacities have been checked though the nameplates. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i> CAR E1 is raised.</p>		
<b>D.2.14. PE<sub>RF,y</sub></b>				
<p><b>a) Measurement / Determination method</b> <b>(VVS, § 233, 236)</b></p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/IM01/ /PDD/ /AM79/ /NP/ /SP/ /TEE/ /DMR/</p>	<p><i>Description:</i></p> <p>PE<sub>RF,y</sub> is Project emissions as a result of increased electricity consumption at the reclamation facility attributable to project activity</p> $PE_{RF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y})$ <p>The “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” version 01 is applied. The increased electricity consumption due to the operation of one mass flow meter with installed capacity of 6W. The conservative operating hour 8760 has been applied.</p> <p><i>Verifier’s action:</i></p> <p>The methodology, tool and the registered revised PDD have been checked to confirm the correctness. The installed capacity of the mass flow meter has been cross-checked with the nameplate.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		AM0079, Ver.2.		
<b>b) Accuracy and QA/QC Procedure (VVS, §§ 237-241)</b>  <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i>  <i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>	/IM01/ /PDD/ /AM79/	Description: As per the methodology QA/QC procedures are not necessary.  Verifier's action: N/A Conclusion: N/A	N/A	N/A
<b>c) Correctness (VVS, §§ 233, 236)</b>  <i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i>  <i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i>  <i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>	/MR/ /DMR/ /CAL/ /NP/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)  Description: The parameters applied for the calculation were verified in the above tables, which are assessed as correct.  Verifier's action: The installed capacity has been checked though the nameplate. The value given in the monitoring report and the corresponding Excel sheet were checked. Conclusion: The value given in the monitoring report is correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>D.2.15. EXC<sub>SF6,y</sub></b>				
<p><b>a) Measurement / Determination method</b> (VVS, § 233, 236)</p> <p><i>Describe how the monitoring parameter was measured / determined.</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements.</i></p> <p><i>Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/IM01/ /PDD/ /AM79/ /DMR/ /SP/	<p><i>Description:</i></p> <p>EXC<sub>SF6,y</sub> is quantity of SF<sub>6</sub> which was being injected to the reclamation facility during exceptional events occurred. The concentration of SF<sub>6</sub> is considered as 1 for conservative. The volume of the injected SF<sub>6,y</sub> is measured by mass flow meter. If a cylinder bundle of used gas was being reclaimed when the event occurred, then the total amount of SF<sub>6</sub> injected from the cylinder bundle into the reclamation line between 5 hours prior to the event and until the time that the injection line was shut off must be considered as EXC<sub>SF6,y</sub>.</p> <p><i>Verifier's action:</i></p> <p>The records of the quantity of SF6 were verified by the verification team. The revised PDD and MR have been reviewed.</p> <p><i>Conclusion:</i></p> <p>CAR E1 is raised.</p>	CAR E1	OK
<p><b>b) Accuracy and QA/QC Procedure</b> (VVS, §§ 237-241)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p>	/CAL/ /MM/ /PDD/ /AM79/ /SOP/ /XLS/	<p><i>Description:</i></p> <p>The project owner records the date and time of any exceptional event that occurs. The total amount of gas injected from the cylinder bundle into the reclamation line between 5 hours prior to the event and until the time that the injection line was shut off is considered as EXC<sub>SF6,y</sub>. The total amount of gas taken from the continuous measurement of the flow meter on the injection line is determined from MI<sub>Gas,i</sub>.</p> <p><i>Verifier's action:</i></p>	CAR E1	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i>		<p>The applied standard (FMT-QG-06) and SOP have been checked. The measured value and the qualification of calibration entity were also checked. The workbook regarding the downtime records have been checked.</p> <p>The meters calibration records covering the monitoring period were checked.</p> <p><i>Conclusion:</i> CAR E1 is raised.</p>		
<p><b>c) Correctness</b> <b>(VVS, §§ 233, 236)</b></p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/MR/ /XLS/ /DMR/ /CAL/</p>	<p><input checked="" type="checkbox"/> Correct      <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The amount of SF<sub>6</sub> was measured by mass flow meter from 2011-04-01 to 2012-04-26 was provided in MR. The calculation of total amount of gas injected (from the cylinder bundle into the reclamation line between 5 hours prior to the event and until the time that the injection line was shut off) has been also provided in the workbook.</p> <p><i>Verifier's action:</i> The records of amount of SF<sub>6</sub> and concentration were checked. The value given in the monitoring report and the corresponding calculation in Excel sheet were checked.</p> <p><i>Conclusion:</i> CL D1 is raised.</p>	CAR E1	OK
<b>Sampling</b>				
<p><b>a) Implementation of sampling plan</b> <b>(EB70 Annex 11; D3)</b></p>	<p>/MR/ /PDD/</p>	<p><input checked="" type="checkbox"/> No sampling approach has been used by the PP to determine the monitored parameters</p>	N/A	N/A



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Check whether the PP has applied a sampling approach to determine the monitored values (as per section D.2 above).</i></p> <p><i>If this is the case, please provide an assessment whether the PPs have correctly and sufficiently described the implemented sampling plan including</i></p> <p><i>a) Description of the implemented sampling design</i></p> <p><i>b) Collected data</i></p> <p><i>c) Analysis of collected data</i></p> <p><i>Demonstration on whether the required confidence/precision has been met.</i></p>		<p><b>OR.</b></p> <p><input type="checkbox"/> A sampling approach has been taken for the following monitored parameter:</p> <p><b>Parameter: Name_of Parameter</b></p> <p>Description:</p> <p>Verifier's action:</p> <p>Conclusion:</p>		
<p><b>b) Sampling during verification</b></p> <p><i>In case the VT has applied a sampling approach in the course of the verification the approach shall be described for each parameter.</i></p>	<p>/MR/ /PDD/</p>	<p><input checked="" type="checkbox"/> No sampling approach has been used by the VT to verify the monitored parameters</p> <p><b>OR.</b></p> <p><input type="checkbox"/> A sampling approach has been applied by the VT for the following monitored parameter:</p> <p><b>Parameter: Name_of Parameter</b></p> <p>Description:</p> <p>Conclusion:</p>	N/A	N/A

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<b>E. Calculation of Emission reductions</b>				
<b>E.1. Traceability</b> <b>(VVS, EB 70 Annex3 § 212, 214)</b> <i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i>	/XLS/	<i>Description:</i> An unprotected Excel calculation sheet was used. All applied formulae are visible. No information gaps have been identified. <i>Verifier's action:</i> The Monitoring workbook has been checked. <i>Conclusion:</i> The calculation is completely traceable.	OK	OK
<b>E.2. Parameter consistency</b> <b>(VVS, EB 70 Annex3 § 214)</b> <i>Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet?</i> <i>Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR, calculation spreadsheet.</i>	/XLS/ /MR/ /PDD/	<i>Description:</i> All the internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet. <i>Verifier's action:</i> The MR and Monitoring workbook were checked to be appropriate and consistent with those in registered PDD. <i>Conclusion:</i> The Excel – calculation sheet is completely in line with the MR. No deviant parameter values have been used in the calculation sheet.	OK	OK
<b>E.3. Correctness of calculation</b> <b>(EB 70 Annex 3, §§ 235-236)</b> <i>Check if the applied formulae and methods for calculating baseline emissions, project emissions and</i>	/XLS/ /AM79/ /PDD/ /MR/	<i>Description:</i> According to AM0079 (Version 2), the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and the	CAR B1 CAR E1	OK


Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>leakage are in accordance with the monitoring plan and / or the approved methodology.</i></p> <p><i>Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</i></p> <p><i>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</i></p>		<p>approved methodology</p> <p><i>Verifier's action:</i></p> <p>The MR, MP of the project, ER spreadsheet and the methodology AM0079 version 2 were checked.</p> <p><i>Conclusion:</i></p> <p>CAR B1 and CAR E1 are raised.</p>		
<p><b>E.4. Emission reductions table (EB 70, Annex 11, E.4)</b></p> <p><i>Check if the MR includes a summary table of the emission reductions calculation specifying separately</i></p> <ul style="list-style-type: none"> <li>- Total baseline emissions</li> <li>- Total project emissions:</li> <li>- Total leakage</li> <li>- Total emission reductions.</li> </ul> <p><i>Assess whether the values are correct or need to be revised as a consequence of issues identified above.</i></p>	<p>/MR/ /XLS/ /AM79/</p>	<p><input checked="" type="checkbox"/> The MR includes in section E.4 a summary table of the emission reductions calculation.</p> <p><input checked="" type="checkbox"/> The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.</p> <p><input type="checkbox"/> The values as specified in the ER summary table are correct; no issues have been identified during the verification which require changes in the Monitoring workbook.</p> <p><input checked="" type="checkbox"/> During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in E.4 needs to be revised.</p> <p>In this context the CAR B1 and CAR E1 have been identified.</p>	<p><del>CAR B1</del></p> <p><del>CAR E1</del></p>	OK
<p><b>E.5. Comparison with ex-ante determined emission reductions (EB 70, Annex 11, E.5; E.6)</b></p>	<p>/XLS/ /MR/ /PDD/</p>	<p><i>Description:</i></p> <p>The actual emission reduction from 2011-04-01 to 2012-04-26 compared to the estimated ER in registered revised PDD (392</p>	<p><del>CAR B1</del></p>	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</p> <p>Check further whether in case of an increase an appropriate explanation is included in the MR.</p> <p>Assess in case of a significant increase whether this is due to technical or organisational changes within or outside the control of the PP which might require a notification / approval of changes (as per EB 48 Annex 66/67).</p>		<p>days) is not clear due to the CAR B1 raised.</p> <p>Verifier's action: The relevant documents incl. meter reading records, MR, PDD have been checked.</p> <p>Conclusion: The CAR B1 is raised.</p>		
<p><b>E.6. ER during the 1<sup>st</sup> commitment period and the period from 1 January 2013 onwards</b> (EB 70, Annex 11, E.7)</p> <p>Check if the MR includes in chapter E.7 a breakdown of the actual ER into</p> <p>a) ER up to 2012-12-31 and</p> <p>b) ER from 2013-01-01 onwards</p> <p><b>E.7.</b> The ERs for each period should be determined as per the actual generation. In cases where this is not possible or a cap has been applied a proportional (time related) approach should be chosen.</p>	<p>/XLS/ /MR/ /PDD/</p>	<p><input checked="" type="checkbox"/> The MR in section E.7 includes a summary table of the ER breakdown</p> <p>a) ER up to 2012-12-31 and</p> <p>b) ER from 2013-01-01 onwards</p> <p><input checked="" type="checkbox"/> The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows:</p> <p><input checked="" type="checkbox"/> The ER have completely been generated during the first commitment period</p> <p><input type="checkbox"/> The ERs have completely been generated from 2013-01-01 onwards,</p> <p><input type="checkbox"/> The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards.</p> <p><input type="checkbox"/> The breakdown of the ERs is correct, considering the</p>	OK	OK



Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		applicable guidance. In this context the following additional findings have been identified: N/A		

## ANNEX 2: STATEMENTS OF COMPETENCE OF INVOLVED PERSONNEL



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Rainer Winter**


SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-07-01
J1	Senior Assessor Technical Reviewer	2016-07-01
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2016-07-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.1	Thermal Energy Generation	
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
4.1	Cement Sector	
4.3	Iron and Steel	
4.5	Waste Heat Recovery	
4.8	Glass	
5.1	Chemical Process Industries	
9.1	Metal Production	
11.1	Chemical Process Industries	
11.2	GHG Capture and Destruction	
12.1	Chemical Process Industries	
13.1	Waste Handling and Disposal	13.1.1 Waste Management

003 - Rev. 7, Date: 2013-07-02

003\_S01-VA060-F20\_2012-10-12\_rev7.doc S01-VA060-F20 rev3 / 2012-10-25



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Yongjun Li**

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2013-06-26
VCS / ISO 14064-2	Senior Assessor (Validation, Verification) Technical Reviewer	2013-06-26

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA	TR SUBCATEGORIES
1.2	Renewable Energies	1.2.1 Hydro 1.2.2 Wind 1.2.3 Geothermal 1.2.4 Solar 1.2.5 Tidal
13.1	Waste Handling and Disposal	

039 - Rev. 1, Date: 2012-09-11

039\_S01-F003\_2012-09-11\_rev1.doc S01-F003 rev2 / 2012-04-05



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Ms. Miao Yu**

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2015-06-27
VCS / ISO 14064-2	Lead Assessor	2015-06-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewable Energies

164 - Rev. 3, Date: 2012-06-28

164\_S01-F003\_2012-06-28\_rev3.doc

S01-F003 rev2 / 2012-04-05



**Statement of Competence**  
Appointment and authorization according to the procedures  
of the TÜV NORD JI/CDM Certification Program

**Mr. Dirk Speyer**

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-04-16
VCS / ISO 14064-2	Senior Assessor	2016-04-16

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
4.4	Refinery
5.1	Chemical Process Industries
11.1	Chemical Process Industries
11.2	GHG Capture and Destruction
12.1	Chemical Process Industries
16.1.1	Carbon Capture

244 - Rev. 7, Date: 2013-04-17

244\_S01-VA060-F20\_2013-04-17\_rev7.doc

S01-VA060-F20 rev3 / 2012-10-25