



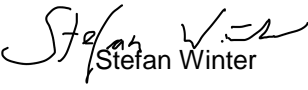
Verification and certification report form for CDM project activities

(Version 02.1)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	SF ₆ recovery and reclamation project, South Korea UNFCCC ID: 4274
Version number of the verification and certification report	1.0 TN P-No. : 19/012
Completion date of the verification and certification report	05/04/2019
Monitoring period number and duration of this monitoring period	MP 06 01/01/2018 - to 31/01/2019(including both days)
Version number of monitoring report to which this report applies	3.0
Crediting period of the project activity corresponding to this monitoring period	Fixed crediting period 01/04/2011- to 31/03/2021
Project participant(s)	Solvay Fluor Korea Co. Ltd Solvay Energy Services SAS
Host Party	Republic of Korea
Applied methodologies and standardized baselines	CDM Methodology: AM0079: Recovery of SF ₆ from Gas insulated electrical equipment in testing facilities version 02
Mandatory sectoral scopes linked to the applied methodologies	Scope: 11 / Technical area: 11.1
Conditional sectoral scope(s) linked to the applied methodologies	N/A
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	179,114 tCO _{2e}
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	110,826 tCO _{2e}
Name and UNFCCC reference number of the DOE	TÜV NORD CERT GmbH; E-0022

Name, position and signature of the approver of the verification and certification report	 Stefan Winter Final Approval
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SECTION A. Executive summary

Solvay Fluor Korea Co. Ltd. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 06th periodic verification of the project:

“SF₆ recovery and reclamation project, South Korea”

with regard to the relevant requirements for CDM project activities.

This verification covers the period from 01/01/2018 to 31/01/2019 (including both days).

The used SF₆ 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 SF₆ reclamation site i.e. SFK. The SF₆ is analyzed at the laboratory once the cylinders arrived at SFK. Then the used SF₆ which meets the standard i.e. SOP is injected to SF₆ production plant for reclamation.

The project 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 01/04/2011 (date of registration).

Details of the project location are given in table A-1 below:

Table A-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)

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

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AM0079: Recovery of SF₆ from Gas insulated electrical equipment in testing facilities” (version 02)
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 6th periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

Emission reductions: **110,826 tCO₂e**

SECTION B. Verification team, technical reviewer and approver**B.1. Verification team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	EI	YU	MIAO	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2.	Verifier	EI	JANG	Sang-yong	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Winter	Rainer	TÜV NORD CERT
2	Observer reviewer	IR	Stöhr	Christina	TÜV NORD CERT
3	Approver	IR	Winter	Stefan	TÜV NORD CERT

SECTION C. Application of materiality**C.1. Consideration of materiality in planning the verification**

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.

Materiality Threshold

The verification is based on the materiality threshold identified in table C-1 below:

Table C-1: Applied Materiality Threshold

	Threshold	Related to
<input type="checkbox"/>	0.5 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal equal to or more than 500,000 tonnes of carbon dioxide equivalent per year ¹ ;
<input type="checkbox"/>	1 %	Emission reductions or removals for registered CDM project activities achieving a total emission reduction or removal of between 300,000 and 500,000 tonnes of carbon dioxide equivalent per year;
<input checked="" type="checkbox"/>	2 %	Emission reductions or removals for registered large-scale CDM project activities achieving a total emission reduction

¹ A year refers to a period of 12 consecutive months.

	Threshold	Related to
		or removal of 300,000 tonnes of carbon dioxide equivalent per year or less;
<input type="checkbox"/>	5 %	Emission reductions or removals for registered small-scale CDM project activities other than registered CDM project activities covered under next category below;
<input type="checkbox"/>	10 %	Emission reductions or removals for the type of registered CDM project activities referred to in decision 3/CMP.6, paragraph 38 (referred to as microscale project activities).

Strategic Analysis

At the beginning of the verification the verification team leader has assessed the nature, scale and complexity of the verification tasks by carrying out a strategic analysis of all activities relevant to the project activity. The team leader has collected and reviewed the information relevant to assess that the designated verification team is sufficiently competent to carry out the verification and to ensure that it is able to conduct the necessary risk analysis.

Risk analysis and detailed audit testing planning

For the identification and assessment of potential reporting risks and to determine the necessary detailed audit testing procedures for residual risk areas the following table is used.

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human error in the quantification of emissions	Low	Human error is likely to occur if personnel are unfamiliar with, or not well trained regarding, emissions processes or data recording	Depending on the monitoring period being verified, conduct increased verifying during the months when there is a greater likelihood of errors and issues with data quality control due to project participants' leave schedules
2.	Undue reliance on a poorly designed information system, which may have few effective quality controls	Low	Use of spreadsheets without adequate controls related to data changes/updates, version tracking, traceability, security	Depending on how data is generated, processed, and reported, place greater emphasis on verifying data captured and processed manually and/or in spreadsheets versus those that are generated from an automated system
3.	Malfunction of monitoring meters, unduly calibrations	Low	Data accuracy and reliability might be occurred on metering system, due to the reasons like, broken, replacement, change of measurement approach and frequency, unduly calibration etc.	<ul style="list-style-type: none"> - Verify the calibration records - Check the operation log sheet - Verify the status of meters - Verify the relevant QA/QC procedure
4	Omissions and misstatements in data transfer from hand	Medium	Ineffective quality control of data transfer	Check QM procedure/manual. PP may demonstrate how to

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
	written notes into digital Excel ER spreadsheet		due to unclear QA/QC procedure	transfer data and how this is crosschecked. Conduct interview with related personnel whether procedure is actually conducted but not adequately described.
5	Missing data due to failure of measurement equipment	Medium	The monitoring plan defines emergency procedures in case a meter fails. No back-up meters are installed or available onsite.	Check if related Main Meters are installed as per monitoring plan. Check if emergency procedure is known across related personnel via interviews. Check if the equipment is malfunctioning and the accuracy and reliability of data for this period cannot be ensured, the relevant emission reductions has been claimed or not.

On the basis of the risk analysis the verification has been planned. A detailed audit/verification plan has been prepared and submitted to the project participant(s) in due time before the site visit.

C.2. Consideration of materiality in conducting the verification

Based on the verification planning the verification has been carried out. The concept of materiality has been considered. A breakdown of the chosen approaches is included in the following table.

Parameter	Approach*	Errors* detected	Findings reference	Corrected	Remaining verification risk
GWP_{SF6}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
W_{SF6,BL,hist,y}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
Q_{SF6,k,j,y}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
MR_{Gas,i,y}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
MS_{Gas,i,y}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
MI_{Gas,i,y}	CDC	<input checked="" type="checkbox"/>	CAR1	<input checked="" type="checkbox"/>	Not material
L_{SF6,y,i,j}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
P_{SF6,y,i}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
NT_{PJ,k,y}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
i	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
n	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
W_{SF6,i}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
PE_{TF,y}	CDC	<input checked="" type="checkbox"/>	CAR2	<input checked="" type="checkbox"/>	Not material
PE_{RF,y}	CDC	<input checked="" type="checkbox"/>	CAR2	<input checked="" type="checkbox"/>	Not material
EXC_{SF6,y}	CDC	<input type="checkbox"/>		<input type="checkbox"/>	Not material
Aggregate					Materiality threshold not exceeded

*) incl. omissions and misstatements

+)Verification Approaches:

CDC:	Complete data check of data including all data aggregation steps
NDC:	Non-complete data check – omissions not material
SPL:	Sampling approach (all data available)
ASP:	Acceptance Sampling
COM:	Data check at higher data aggregation levels and sampling at original data levels

The verification was basically carried out as per the verification plan.

SECTION D. Means of verification

D.1. 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 PDD including the monitoring plan^{/PDD/},
- the last revision of the validation report^{/VAL/},
- documentation of previous verifications^{/VER/}
- the monitoring report, including the claimed emission reductions for the project^{/MR/},
- the emission reduction calculation spreadsheet^{/XLS/}.

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

D.2. On-site inspection

Duration of on-site inspection: 19/03/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	<ul style="list-style-type: none"> ➤ Opening meeting ➤ On-site inspection Interview with PP Representative and Operation Staff (covering but not limited to) <ul style="list-style-type: none"> - Project technology installation - Monitoring system - Data collection process 	Solvay Fluor Korea Co. Ltd., Ulsan.	19/03/2019 am.	JANG, SANG-YONG YU, MIAO
2	On-site inspection Interview with PP Representative and Operation Staff (covering but not limited to) <ul style="list-style-type: none"> - Project technology installation - Monitoring system - Data collection process 	Korea Electrotechnology Research Institute: Chang Won.	19/03/2019 pm.	JANG, SANG-YONG YU, MIAO
3	<ul style="list-style-type: none"> ➤ Documents check(covering but not limited to) - Emission reduction calculation - QA/QC system - Raw data flow - Calibration - Training and competence 	Solvay Fluor Korea Co. Ltd., Ulsan./ Korea	19/03/2019 am.	JANG, SANG-YONG YU, MIAO
4	<ul style="list-style-type: none"> ➤ Documents check(covering but not limited to) - Emission reduction calculation - QA/QC system - Raw data flow - Calibration - Training and competence ➤ Closing Meeting 	Electrotechnology Research Institute: Chang Won.	19/03/2019 pm.	JANG, SANG-YONG YU, MIAO

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Hong-Bo Hye-Jin Sung-Ho	Ha Kim Park	Solvay Fluor Korea Co. Ltd	19/03/2019	<ul style="list-style-type: none"> - General aspects of the project - Changes since validation / previous verifications - Calibration procedures - Power and heat generation situation - Quality management system - Involved personnel and responsibilities - Training and practice of the operational personnel - Implementation of the monitoring plan - Monitoring data management - Data uncertainty and residual risks - Procedural aspects of the verification - Emission reduction calculation 	JANG, SANG-YONG; YU, MIAO
2	Shoudou	Zhang	Solvay Energy Services	19/03/2019	<ul style="list-style-type: none"> - Monitoring report - Monitoring and measurement equipment - Quality management system - Implementation of the monitoring plan - Monitoring data management 	JANG, SANG-YONG; YU, MIAO
3	Dae-Hee	Lee	Korea Electrotechnology Research Institute	19/03/2019	<ul style="list-style-type: none"> - Data collection - Emission reduction calculation 	JANG, SANG-YONG Yu, Miao

D.4. Sampling approach**D.4.1 Sampling during monitoring**

<input checked="" type="checkbox"/>	No sampling approach has been used by the PP to determine the monitored parameters				
<input type="checkbox"/>	A sampling approach has been taken for the following monitored parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	-	-	-		

¹⁾Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾Sampling Types:

PS: Parameter Sampling

D.4.2 Sampling approaches during verification

<input checked="" type="checkbox"/>	No sampling approach has been used by the VT to verify the monitored parameters				
<input type="checkbox"/>	A sampling approach has been applied by the VT for the following monitored parameter(s):				
	Parameter	Sampling approach ¹⁾	Sampling Type ²⁾	Population	Sample Size
	-	-	-		

¹⁾Sampling Approaches:

SiRS: Simple Random Sampling
 StRS: Stratified Random Sampling
 SS: Systematic Sampling
 CS: Cluster Sampling
 MSS: Multi-stage Sampling

²⁾Sampling Types:

AS: Acceptance Sampling
 PS: Parameter Sampling
 COM: Full data check at higher data aggregation levels and sampling at original data levels

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form (E.1)	-	-	-
Compliance of the project implementation with the registered PDD (E.3)	-	-	-
Post-registration changes (E.4)	-	-	-
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline (E.5)	-	-	-
Compliance of monitoring activities with the registered monitoring plan (E.6)	-	-	-
Compliance with the calibration frequency requirements for measuring instruments (E.7)	-	-	-
Assessment of data and calculation of emission reductions or net removals (E.8)	-	2	-
Others (please specify)	-	-	-
Total	0	2	0

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	A draft monitoring report was submitted to the verification team by the project participants. The DOE has made this report publicly available prior to the start of the verification activities. No comments were received.
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	<p>By means of the UNFCCC website it has been checked whether the latest applicable MR template CDM-MR-FORM has been used.</p> <p>Further, it has been checked whether the latest instructions for filling out the MR template have been followed. Every section has been checked against the respective guidance.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /MRT/ • /unfccc/
Findings	<input checked="" type="checkbox"/> The latest reporting template CDM-MR-FORM as listed on the UNFCCC website has been used for the Monitoring Report to be uploaded.
	<input checked="" type="checkbox"/> The latest instructions for filling out the MR have been followed. No adverse finding has been identified in the course of this verification.
	<input type="checkbox"/> The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:
Conclusion	<input checked="" type="checkbox"/> No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.
	<input type="checkbox"/> The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	-

E.2. Remaining forward action requests from validation and/or previous verification

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. Likewise FARs might have been raised in the course of previous verifications.

In the course of this verification the latest version of the PDD ^{/PDD/} and the previous verification report ^{/VER/}, where applicable, have been checked in order to identify any remaining forward action requests. For the current monitoring period the following applies:

(i) Open issues from validation:

<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the latest version of the validation report.
<input type="checkbox"/>	All open issues from the validation have been appropriately addressed in the context of previous verifications.
<input type="checkbox"/>	All issues related to the validation have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the validation have not yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

(ii) Open issues from previous verifications:

<input type="checkbox"/>	N/A – as this is the first monitoring period for this CDM project activity.
<input checked="" type="checkbox"/>	There were no open issues which have been addressed in the previous verification report
<input type="checkbox"/>	All issues related to the previous verification have been appropriately addressed in the course of the current monitoring period (for details please refer to appendix 4)
<input type="checkbox"/>	The following issues related to the previous verification have not yet been appropriately addressed (for details please refer to appendix 4):
	- N/A

E.3. Compliance of the project implementation with the registered project design document

Means of verification	<p>By means of an in-depth review of the PDD in its latest form – as downloaded from the UNFCCC project site - and the checks carried out during the on-site visit an assessment has been carried out whether the project has been implemented and operated in line with the latest approved version of the PDD and whether all physical features of the project are in place. The following has been checked: implemented technology, project equipment as well as monitoring and metering equipment.</p> <p>Further, it has been checked if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period and consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied.</p> <p>Interviews with operational personnel have been carried out, QMS records, maintenance records, instrument specifications were checked in this context. Special focus has further been laid to determine whether a potential phase wise implementation has occurred within the crediting period or any delays with respect to the starting dates have occurred.</p> <p>Further, it has been checked whether any observed deviations from the registered project design have been correctly addressed as PRCs.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /PDD/ • /MR/ • /VVS/ • /XLS/ • /unfccc/ 																
Findings	<table border="1"> <tr> <td data-bbox="472 1106 539 1227"><input checked="" type="checkbox"/></td><td data-bbox="539 1106 1396 1227">The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.</td></tr> <tr> <td data-bbox="472 1227 539 1384"><input type="checkbox"/></td><td data-bbox="539 1227 1396 1384">The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A</td></tr> <tr> <td data-bbox="472 1384 539 1456"><input type="checkbox"/></td><td data-bbox="539 1384 1396 1456">- In this context the following CARs, CLs have been raised: - N/A</td></tr> <tr> <td colspan="2" data-bbox="472 1456 1396 1496"><i>In case of phased implementation:</i></td></tr> <tr> <td data-bbox="472 1496 539 1554"><input checked="" type="checkbox"/></td><td data-bbox="539 1496 1396 1554">N/A</td></tr> <tr> <td data-bbox="472 1554 539 1626"><input type="checkbox"/></td><td data-bbox="539 1554 1396 1626">The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.</td></tr> <tr> <td data-bbox="472 1626 539 1747"><input type="checkbox"/></td><td data-bbox="539 1626 1396 1747">The description in section 3.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection.</td></tr> <tr> <td data-bbox="472 1747 539 1809"><input type="checkbox"/></td><td data-bbox="539 1747 1396 1809">The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows:</td></tr> </table>	<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.	<input type="checkbox"/>	The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A	<input type="checkbox"/>	- In this context the following CARs, CLs have been raised: - N/A	<i>In case of phased implementation:</i>		<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.	<input type="checkbox"/>	The description in section 3.1 of the MR differs in content or the level of detail from the latest version of the PDD. However, the description in the MR is correct and reflects the situation during the site inspection.	<input type="checkbox"/>	The project description in the PDD/MR is not deemed sufficient. The detailed implementation timeline is as follows:
<input checked="" type="checkbox"/>	The project has been implemented as described in the latest version of the PDD as well as in section B.1 of the monitoring report. No deviations thereof have been identified in the course of this verification.																
<input type="checkbox"/>	The following deviations from the registered / approved project design and or the project description in the MR have been identified in the course of this verification (for further details please refer to section E.4): - N/A																
<input type="checkbox"/>	- In this context the following CARs, CLs have been raised: - N/A																
<i>In case of phased implementation:</i>																	
<input checked="" type="checkbox"/>	N/A																
<input type="checkbox"/>	The phased implementation has correctly and in sufficient detail been described in the latest version of the PDD.																
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Conclusion	<table border="1"> <tr> <td data-bbox="472 1809 539 1904"><input checked="" type="checkbox"/></td><td data-bbox="539 1809 1396 1904">No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.</td></tr> <tr> <td data-bbox="472 1904 539 1998"><input type="checkbox"/></td><td data-bbox="539 1904 1396 1998">The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</td></tr> <tr> <td colspan="2" data-bbox="472 1998 1396 2056">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</td></tr> </table>	<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.	<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	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											
<input checked="" type="checkbox"/>	No CARs/CLs have been raised in this context. No correction was required in the context. The project is in line with the respective requirements.																
<input type="checkbox"/>	The raised CARs/CLs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.																
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 equipment, as well as the monitoring and metering equipment, the project has been implemented and operated as described in the latest approved PDD.
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E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

It has been checked whether Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been applied during this monitoring period. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No Temporary deviations from the registered monitoring plan (TDfrMP) or Temporary deviations from monitoring methodology or standardized baseline (TDfMM) have been submitted to the UNFCCC prior to the current monitoring period.									
<input type="checkbox"/>	The following TDfrMP or TDfMM have been approved or are under approval by the UNFCCC									
	1	<table border="1"> <tr> <td>Title</td> <td></td> </tr> <tr> <td>Status</td> <td><input type="checkbox"/>under approval;<input type="checkbox"/>approved (approval No.:)</td> </tr> <tr> <td>Appr.date</td> <td></td> </tr> <tr> <td>Ref. No.</td> <td></td> </tr> </table>	Title		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)	Appr.date		Ref. No.	
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Title										
Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)									
Appr.date										
Ref.No.										
<input checked="" 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									
<input type="checkbox"/>	An approval of the following TDfrMP or TDfMM is to be requested from the EB for the current MP as appendix 1 of the project standard does not apply. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.									
	1	Issue: N/A								
	2	Issue: N/A								
<input type="checkbox"/>	The following TDfrMP or TDfMM for which appendix 1 of the PS is applicable have been applied:									
	1	Issue: N/A								
	2	Issue: N/A								

E.4.2. Corrections

It has been checked whether any corrections to project information or parameters fixed at validation have been approved during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	During the verification of the current MP no need for corrections has been identified.	
<input type="checkbox"/>	The following corrections have been applied:	
	1	Issue:

2	Issue:	
The PDD has been revised accordingly: (New) version No.: Revision date:		
It is confirmed that the updated / 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.		
<input type="checkbox"/> A related post registration change has been submitted prior to the issuance request. The approval has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z. <input type="checkbox"/> A related post registration change is submitted along with this issuance request. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC.		

E.4.3. Changes to the start date of the crediting period of the project activity

<input checked="" type="checkbox"/>	N/A - as this is not the first verification within the crediting period
<input type="checkbox"/>	The PPs do not intend to change the start date of the crediting period.
<input type="checkbox"/>	As the change in the start date was below the related time period as indicated in PS § 277 and § 278 no prior approval was required but only a notification. This notification has been submitted by the PP without involvement of the DOE. The change and new start date has been checked from the related UNFCCC project webpage.
<input type="checkbox"/>	The PPs intend to change the start date of the crediting period. As the intended change in start date beyond the related time period as indicated in PS § 279 prior approval by the Board is required. For detailed assessment of the change please refer to related PRC validation report. As per assessment in this report the DOE confirms that the change to the start date of the crediting period are in line with the related requirements of the VVS and PS.
<input type="checkbox"/>	The approval to change the start date of the crediting period has been received on DD/MM/YYYY via approval number PRC-XXXX-00Z

E.4.4. Inclusion of a monitoring plan

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered PDD
<input type="checkbox"/>	In line with PS § 281 or § 282 the PP has forwarded a monitoring plan to the DOE for validation. No prior approval of the monitoring plan was required as the PP in line with PS § 282 wished to submit the monitoring plan together with the request for issuance for the first monitoring period. Please refer to the related PRC report submitted along with this issuance request for further details w.r.t. the assessment of the PRC..
<input type="checkbox"/>	In line with § 282 the PP submitted a monitoring plan prior to the submission of the request for issuance for validation to the DOE. A DOE has assessed the monitoring plan in line with related VVS requirements and submitted a related PRC report for prior approval.

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other applied standards or tools

It has been checked whether any permanent changes from the registered monitoring plan (PCfMP) or applied methodologies (PCfMM) including standardized baselines (PCfSB) have

been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No PCfrMP, PCfMMor PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following PCfrMP, PCfMMor PCfSB 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, PCfMMor PCfSB 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, PCfMMor PCfSB 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, PCfMMor PCfSB for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

E.4.6. Changes to the project design

It has been checked whether any changes to the project design (CoPD) have been approved prior or during this monitoring period or submitted with this monitoring report. The result is summarized in the table below.

<input checked="" type="checkbox"/>	No CoPD has been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following CoPD 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 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: <input type="text"/>
	2	Issue: <input type="text"/>
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:	
	1	Issue: <input type="text"/>
	2	Issue: <input type="text"/>

E.4.7. Types of changes specific to afforestation and reforestation project activities

<input checked="" type="checkbox"/>	N/A - as this monitoring plan was part of the registered PDD
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E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	By means of comparison of the MR with (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /AM0079/ • /unfccc/ Please refer to following checklist items in Appendix 5 Table A-2								
Findings	<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 PDD)							
	<input checked="" type="checkbox"/>	The breakdown of MP accordance of the referenced tools is as follows:							
		1	<table border="1"> <tr> <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>02.0</td> </tr> <tr> <td>MP compliance</td> <td> <input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP) </td> </tr> </table>	Title (of the tool)	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion.	Version	02.0	MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)
Title (of the tool)	Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion.								
Version	02.0								
MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A (for MP)								
		2	<table border="1"> <tr> <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 type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A </td> </tr> </table>	Title (of the tool)	Combined tool to identify the baseline scenario and demonstrate additionality	Version	02.2	MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A
Title (of the tool)	Combined tool to identify the baseline scenario and demonstrate additionality								
Version	02.2								
MP compliance	<input type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A								
		3	<table border="1"> <tr> <td>Title (of the tool)</td> <td>Tool to calculate baseline, project and/or leakage emissions from electricity consumption</td> </tr> <tr> <td>Version</td> <td>01</td> </tr> <tr> <td>MP compliance</td> <td><input type="checkbox"/> full compliance</td> </tr> </table>	Title (of the tool)	Tool to calculate baseline, project and/or leakage emissions from electricity consumption	Version	01	MP compliance	<input type="checkbox"/> full compliance
Title (of the tool)	Tool to calculate baseline, project and/or leakage emissions from electricity consumption								
Version	01								
MP compliance	<input type="checkbox"/> full compliance								

			<input type="checkbox"/> findings have been raised <input checked="" type="checkbox"/> N/A	
	<input type="checkbox"/>	The breakdown of MP accordance of the applicable SB is as follows:		
		1	Title (of the SB)	
			Version	
			MP compliance	
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: - N/A		
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.		
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.		
	The monitoring plan complies with the applied methodology and the monitoring system and all applied procedures are completely in compliance to the latest approved monitoring plan and the methodology AM0079 (version 2).			

E.6. Compliance of monitoring activities with the registered monitoring plan

E.6.1. Data and parameters fixed ex ante or at renewal of crediting period

Means of verification	By means of comparison of the MR and the ER calculation with the latest version of the registered PDD the verification team has checked whether all parameters fixed ex-ante or at renewal of the crediting period have been applied correctly. Further, it has been checked whether the GWP for the respective period have been correctly applied. The following sources of information have been used in this context: <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/ • /PS/ • /VVS/ • /unfccc/ 		
Findings	<input checked="" type="checkbox"/>	The MR and the ER calculation have considered the parameters fixed ex-ante or at the renewal of the crediting period correctly, no deviations have been observed.	
	<input type="checkbox"/>	The following deviations from the parameters fixed ex-ante or at renewal of crediting period have been identified in the course of this verification: - N/A	
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: - N/A	
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	
	The parameters fixed ex ante have been indicated in the latest approved PDD. And the MR is checked as in line with the PDD.		

E.6.2. Data and parameters monitored

Means of verification	During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the PDD) have been verified with regard to the <ul style="list-style-type: none"> (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation, (iii) the accuracy, and applied QA/QC measures.
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	The results as well as the verification procedure are described parameter-wise in the project specific verification checklist (Appendix 5).	
Findings	For details please refer to appendix 5	
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	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.	

E.6.3. Implementation of sampling plan

Means of verification	<p>The verification team has checked whether the PPs have applied a sampling approach to determine the monitored values.</p> <p>Further it has been checked whether the PPs have correctly applied the implemented sampling plan including</p> <ul style="list-style-type: none"> (i) description of the implemented sampling design (ii) collected data (iii) analysis of collected data (iv) demonstration on whether the required confidence/precision has been met. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/ 		
Findings	<input checked="" type="checkbox"/>	The PPs have not applied sampling approaches for the parameters monitored.	
	<input type="checkbox"/>	The PPs have applied sampling approaches for the following parameters monitored.	
		1	Parameter:
			Name:
			Description on how the sampling efforts and survey comply with the validated sampling plan:
		2	Parameter:
			Name:
			Description on how the sampling efforts and survey comply with the validated sampling plan:
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:	
		-	
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.	
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.	

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is
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		<p>in line with the requirements of the validated PDD and/or the applicable calibration standards.</p> <p>The results as well as the verification procedure are described equipment-wise in the project specific verification checklist (Appendix 6).</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /CAL/
Findings	<input checked="" type="checkbox"/>	Based on the details listed in Appendix 6 the verification team can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.
	<input type="checkbox"/>	<p>Based on the assessment and information as per Appendix 6 delay(s) in calibration have been identified. The PP has applied the maximum permissible error of the instrument to the measured values taken during the period between the scheduled date of calibration and the actual date of calibration.</p> <p>From the related calibration certificates and emission reduction calculation the verification team confirms that the maximum permissible error has been applied in a conservative manner so that the adjusted measured values due to the delayed calibration result in fewer claimed emission reductions.</p> <p>For details please refer to Appendix 6</p>
	<input type="checkbox"/>	<p>In this context the following CARs, CLs, FARs have been raised:</p> <p>-</p>
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		<p>The accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan and relevant national rules. The calibrations of all monitoring equipment installed have been verified as listed in table given in Appendix 6 to this report.</p> <p>Based on that the DOE can confirm that all installed monitoring equipment has been duly calibrated for this entire monitoring period.</p>

E.8. Assessment of data and calculation of emission reductions or net removals

E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks

Means of verification	<p>During the verification the calculation of baseline GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> • <i>Transparency:</i> It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • <i>Parameter consistency:</i> It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • <i>Correctness:</i> It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology. • <i>Completeness:</i> It has been checked whether all calculations are complete and without omissions. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/ <p>Please refer to following checklist items in Appendix 5 Table A-2: D.2.1 b) to D.2.21 b)</p> <p>Further the baseline emissions are calculated as following:</p>
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$$BE_y = \min\{V_{SF6,hist}, DFT_y * EA_y\} * GWP_{SF6}$$

$$= \min(7.45 \text{ t}, 5.0442 \text{ t}) \times 22800 \text{ tCO}_2\text{e/t}_{SF6}$$

$$= 115,008 \text{ tCO}_2\text{e}$$

Where:

- BE_y – Baseline emissions year y , tCO₂e
- DFT_y – Discount factor for testing in year y
- EA_y – Quantity of SF₆ reclaimed during the year y , tonnes SF₆
- $V_{SF6,hist}$ – Historical annual baseline venting of SF₆, tonnes SF₆
- GWP_{SF6} – Global warming potential of SF₆, tCO₂e/tonnes SF₆

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

Where:

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

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

Where:

- EA_y – Quantity of SF₆ reclaimed during the year y , tonnes SF₆
- $w_{SF6,i}$ – Concentration of SF₆ in the cylinder i , tonnes SF₆/tonnes gas

$$CA_{i,y} = \min\{MR_{Gas,i,y}, MS_{Gas,i,y}, MI_{Gas,i,y}\}$$

Where:

- $MR_{Gas,i,y}$ – Mass of used gas recovered into cylinder i at the SF₆ 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

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

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

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

Where:

- DFT_y – Discount factor for testing in year y
- $Q_{SF6,k,y}$ – Total amount of SF₆ filled in the testing of equipments in category k in year y , tonnes SF₆
- $Q_{SF6,y}$ – Total amount of SF₆ 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_6 that is filled into equipment j of category k in year y at the SF_6 recovery site, tonnes SF_6 $RT_{k,y} = \frac{NT_{BL,k}}{NT_{PJ,k,y}}$ $RT_{k,y}$ - 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
Findings	<div> <input type="checkbox"/> The calculation of the baseline emissions was found to be fully compliant with the above stated principles. The calculations of baseline GHG emissions or baseline net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information has been identified. </div> <div> <input checked="" type="checkbox"/> The verification team has identified mistakes in the baseline emissions calculation or the underlying calculation approaches. </div> <div> <input checked="" type="checkbox"/> In this context the following CARs, CLs, FARs have been raised: CAR1. </div>
Conclusion	<div> <input type="checkbox"/> No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements. </div> <div> <input checked="" type="checkbox"/> The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4. </div> <p>Where corrections were required a revised baseline emissions calculation was prepared by the PPs and presented to the verification team. All raised issues were addressed appropriately so that it can be confirmed that the baseline emission calculation is overall correct.</p>

E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	<p>During the verification the calculation of project GHG emissions has been checked. In detail the following has been verified:</p> <ul style="list-style-type: none"> • Transparency: It has been checked whether the calculation of project emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae. • Parameter consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet. • Correctness: It has been checked whether the applied formulae and methods for calculating project emissions are in accordance with the monitoring plan and the approved methodology. • Completeness: It has been checked whether all calculations are complete and without omissions. <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/. <p>Please refer to following checklist items in Appendix 5 Table A-2: D.2.1 b) to D.2.21 b)</p>
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	<p>Further the project emissions are calculated as following: The formulae used for determination of the project emissions as described in registered PDD has been applied: the project emission is calculated as bellows:</p> $PE_y = PE_{RCL,y} + PE_{TF,y} + PE_{RF,y} + PE_{EXC,y}$ $= 3,156.28 \text{ tCO}_2\text{e} + 250.56 \text{ tCO}_2\text{e} + 0.09 \text{ tCO}_2\text{e} + 775.2 \text{ tCO}_2\text{e}$ $= 4,182 \text{ tCO}_2\text{e}$ <p>$PE_{RCL,y}$: Project emissions from emission of SF₆ during reclamation in year y, tCO₂e</p> $PE_{RCL,y} = GWP_{SF_6} \cdot \sum_{j,i} (R_{SF_6,y,j,i} - R_{SF_6,hist,j}) \cdot P_{SF_6,y,i}$ <p>Where:</p> <ul style="list-style-type: none"> GWP_{SF_6} - Global warming potential of SF₆, tCO₂e/t SF₆ $R_{SF_6,y,j,i}$ - Rate of SF₆ loss from point j during the reclamation period of cylinder i, in year y, % $R_{SF_6,hist,j}$ - Historical rate of SF₆ loss from point j, % $P_{SF_6,y,i}$ - Production of SF₆ during reclamation period of cylinder i in year y, t SF₆ <p>$PE_{TF,y}$: Project emissions as a result of increased electricity consumption at the testing facility attributable to project activity in year y, tCO₂e (Refer the “data monitored” section)</p> $PE_{TF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y})$ <p>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/year (9504 hours for this MP) have been applied as conservative.</p> <p>$PE_{RF,y}$: Project emissions as a result of increased electricity consumption at the reclamation facility attributable to project activity in year y, tCO₂e (Refer the “data monitored” section)</p> $PE_{RF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y})$ <p>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/year (9504 hours for this MP) have been applied as conservative.</p> <p>$PE_{EXC,y}$: Project emissions from exceptional event(s) at the SF₆ reclamation site in year y, tCO₂e</p> $PE_{EXC,y} = GWP_{SF_6} \times EXC_{SF_6,y}$ <p>Where:</p> <ul style="list-style-type: none"> $EXC_{SF_6,y}$ - Quantity of SF₆ which was being injected to the reclamation facility during exceptional events occurred in year y, tonnes SF₆. 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 $EXC_{SF_6,y}$.
Findings	<div style="display: flex; align-items: flex-start;"> <input style="margin-right: 10px;" type="checkbox"/> <div> <p>The calculation of the project emissions was found to be fully compliant with the above stated principles.</p> <p>The calculations of project GHG emissions or actual net GHG removals have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where</p> </div> </div>

		applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	<input checked="" type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input checked="" type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: CAR 2
Conclusion	<input type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input checked="" type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		It can be confirmed that the project emission calculation is overall correct.

E.8.3. Calculation of leakage GHG emissions

Means of verification		<p>During the verification it has been checked whether leakage emissions have to be considered and, in cases where leakage emissions have to be calculated, the respective calculation of leakage GHG emissions has been checked. In such cases the same verification principles have been considered as for the baseline and project emissions calculation. Please refer to E.8.1 and E.8.2.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/. <p>Please refer to following checklist items in Appendix 5 Table A-2: D.2.1 b) to D.2.21 b)</p> <p>Leakage emission are zero.</p> <ul style="list-style-type: none"> • This is in line with the registered PDD as indicated in the related methodology. DOE has checked the reg. PDD as well as the methodology to confirm the same.
Findings	<input checked="" type="checkbox"/>	No leakage emissions were to be considered (LE = 0).
	<input checked="" type="checkbox"/>	The calculation of the leakage emissions was found to be fully compliant with the above stated principles (see 8.1 and 8.2). The calculations of leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan, the applied methodology and, where applicable, the applied standardized baseline. Any assumptions used in leakage emissions calculations have been justified. Where applicable, appropriate emission factors, IPCC default values, GWPs and other reference values have been correctly applied. No errors, miscalculations, omissions, misstatements or incomplete information have been identified.
	<input type="checkbox"/>	The verification team has identified mistakes in the project emissions calculation or the underlying calculation approaches.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: -
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
		It can be confirmed that no leakage emissions were to be considered.

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	<p>The verification team has checked if the MR includes a summary table of the emission reductions calculation specifying separately</p> <ul style="list-style-type: none"> - Total baseline emissions, - Total project emissions, - Total leakage, - Total emission reductions. <p>It has been assessed whether the values are correct or need to be revised as a consequence of issues identified above.</p> <p>Summary of emission reductions during the monitoring period:</p> $ER_y = BE_y - PE_y - LE_y$ $= BE_y - PE_y - 0$ $= BE_y - PE_y$ $= 115,008 \text{ tCO}_2\text{e} - 4,182 \text{ tCO}_2$ $= 110,826 \text{ tCO}_2\text{e}$ <p>Where:</p> <p>ER_y -Emission reductions (t CO₂e)</p> <p>BE_y -Baseline Emissions (t CO₂e)</p> <p>PE_y -Project Emissions (t CO₂e)</p> <p>LE_y -Leakage (t CO₂e)</p> <p>To re-produce the emission reductions, following documents/records were verified by the audit team:</p> <ul style="list-style-type: none"> - SF₆ gas filling records at recovery site - SF₆ gas recovery records at recovery site - SF₆ gas stored in cylinder bundle records - SF₆ gas records for gas from the cylinder bundle injected into the production process - SF₆ gas loss from point j during the reclamation period - SF₆Contraction of amount of SF₆ loss at SFK site - SF₆ concentration records from GC at SFK site - Records of the number of total testing items where recovery was done per equipment - Records of the quantity of SF₆ which was being injected to the reclamation facility during exceptional events occurred. - Meters calibration records (covering the monitoring period)^{CAL/} <p>All the figures as per the monitoring report were cross-checked by the verification team against basic monitored data.</p> <p>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.</p>						
Findings	<table border="1"> <tr> <td data-bbox="488 1861 555 1921"><input checked="" type="checkbox"/></td><td data-bbox="555 1861 1410 1921">Section E.4 of the MR includes in a summary table of the emission reductions calculation.</td></tr> <tr> <td data-bbox="488 1921 555 1982"><input checked="" type="checkbox"/></td><td data-bbox="555 1921 1410 1982">The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.</td></tr> <tr> <td data-bbox="488 1982 555 2076"><input checked="" type="checkbox"/></td><td data-bbox="555 1982 1410 2076">The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.</td></tr> </table>	<input checked="" type="checkbox"/>	Section E.4 of the MR includes in a summary table of the emission reductions calculation.	<input checked="" type="checkbox"/>	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.	<input checked="" type="checkbox"/>	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.
<input checked="" type="checkbox"/>	Section E.4 of the MR includes in a summary table of the emission reductions calculation.						
<input checked="" type="checkbox"/>	The summary table specified the total baseline, project and leakage emissions as well as the total emission reductions separately.						
<input checked="" type="checkbox"/>	The values as specified in the ER summary table are correct; no issues have been identified during the verification which requires changes in the ER calculation.						

Conclusion	<input type="checkbox"/>	During the verification issues with impact on the ER calculation have been identified.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised: - N/A
	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
It can be confirmed that the emission reduction calculation is overall correct.		

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The verification team has checked if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD. It has further checked which of the below listed cases is applicable for the calculated ER of the current monitoring period.	
Findings	<input checked="" type="checkbox"/>	Case 1: The ex-ante estimated value was found to be proportionally higher than the ex-post determined value. No further action is deemed required.
	<input type="checkbox"/>	Case 2: The ex-ante estimated value fits very good to the actually monitored value. No further justification is deemed required.
	<input type="checkbox"/>	Case 3: The ex-ante estimated value was found to be proportionally lower than the ex-post determined value.
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the latest approved PDD. It is confirmed that the ex-ante estimated value was found to be proportionally lower than the ex-post determined value.	

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	On the basis of the above comparison of actual values of the monitoring period with the estimations in the registered PDD (E.8.5) the verification team has checked whether (in case 3) an appropriate explanation is included in the MR.	
Findings	<input checked="" type="checkbox"/>	No further justification or explanation is deemed required as actual emissions of this MP do not exceed significantly the ex-ante calculated emission reductions (applicable for case 1 and 2).
	<input type="checkbox"/>	For case 3: The PP has provided a related justification in the MR. The reasons for the increase are as follows: - the actual emissions reduction of this monitoring period is higher than the value in the registered PDD which was caused by the rich water resource
	<input type="checkbox"/>	In this context the following CARs, CLs, FARs have been raised:
Conclusion	<input checked="" type="checkbox"/>	No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.
	<input type="checkbox"/>	The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.
	It is confirmed that the actual emission reductions are lower than the ex-ante estimated values in the latest approved PDD.	

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	The verification team has checked chapter E.7 of the MR and the emission reduction calculation sheet ^{/XLS/} .								
Findings	<p><input checked="" type="checkbox"/> The MR in section E.7 includes a summary table of the ER breakdown</p> <p style="margin-left: 40px;">a) <i>ER up to 2012-12-31 and</i></p> <p style="margin-left: 40px;">b) <i>ER from 2013-01-01 onwards</i></p> <p><input type="checkbox"/> The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows:</p> <p style="margin-left: 40px;"><input type="checkbox"/> The ER have completely been generated during the first commitment period</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> The ERs have completely been generated from 2013-01-01 onwards,</p> <p style="margin-left: 40px;"><input type="checkbox"/> The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards.</p> <p><input checked="" type="checkbox"/> The breakdown of the ERs is correct, considering the applicable guidance.</p> <table border="1" style="width: 100%; margin-top: 10px;"> <thead> <tr> <th></th><th>until 2012-12-31 ¹⁾</th><th>from 2013-01-01 ¹⁾</th><th>Sum</th></tr> </thead> <tbody> <tr> <td>Emission reductions [tCO_{2e}]</td><td style="text-align: center;">0</td><td style="text-align: center;">110,826</td><td style="text-align: center;">110,826</td></tr> </tbody> </table> <p style="margin-left: 40px;">¹⁾ Both days included</p>		until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum	Emission reductions [tCO _{2e}]	0	110,826	110,826
	until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum						
Emission reductions [tCO _{2e}]	0	110,826	110,826						
Conclusion	<p><input checked="" type="checkbox"/> No CARs/CLs/FARs have been raised in this context. No correction was required. The project is in line with the respective requirements.</p> <p><input type="checkbox"/> The raised CARs/CLs/FARs have been addressed appropriately. The PP has carried out the requested corrections. All respective findings could be closed out. For details please refer to Appendix 4.</p> <p>The data provided in the MR is correct as well as the related breakdown. The pro-rata approach was correctly applied to the calculations of GHG emission reductions or net anthropogenic GHG removals in accordance with the project standard, as the monitoring period starts after 31 December 2012 and ends anytime thereafter.</p>								

E.9. Assessment of reported sustainable development co-benefits

Means of verification	-
Findings	-
Conclusion	NA

E.10. Global stakeholder consultation

Means of verification	-
Findings	-
Conclusion	NA

SECTION F. Internal quality control

Before the submission of the final verification report a technical review of the whole verification procedure was carried out. The technical reviewers are competent GHG auditors being appointed for the scope this project falls under. The technical reviewer are 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 have been confirmed or revised. Furthermore, reporting improvements might have been achieved.

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

After this step the submission for requesting for issuance is conducted.

SECTION G. Verification opinion

Solvay Fluor Korea Co. Ltd has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 05th periodic verification of the project: "SF₆ 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 SF₆.

This verification covers the period from 01/01/2018 to 31/01/2019 (including both days).

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

- all operations of the project are implemented and installed as planned and described in the validated project design document.
- the monitoring plan is in accordance with the applied approved CDM methodology, i.e., AM0079: Recovery of SF₆ from Gas insulated electrical equipment in testing facilities, version 02
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately.
- the monitoring system is in place and functional. The project has generated GHG emission reductions.
- the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner

TÜV NORD JI/CDM CP further confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: 110,826 tCO₂e

SECTION H. Certification statement

As a duly accredited DOE, TÜV NORD CERT confirms that the project

"SF₆ recovery and reclamation project, South Korea"

registered under

UNFCCC-No. : 4274

has achieved emission reductions in accordance with all applicable requirements for registered CDM project activities during the current monitoring period

MP-No.: 06

from: 01/01/2018

to: 31/01/2019 (including both days)

as follows:

Emission reductions: 110,826 tCO₂e.

Beijing, 2019-04-05




YU, Miao
Team leader

Appendix 1. Abbreviations

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

Appendix 2. Competence of team members and technical reviewers



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program

Mr. Rainer Winter


SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2019-07-01
JR	Senior Assessor Technical Reviewer	2019-07-01
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2019-07-01

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal Energy Generation
1.2	Renewables
4.1	Cement and lime production
4.2	Paper
5.1	Chemical Industry
5.2	Caprolactam, nitric and adipic acid
8.1	Mineral production
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
11.1	Emissions of fluorinated gases
11.2	Hydrogen gas production
12.1	Chemical industry
13.1	Solid waste and wastewater

003 - Rev. 10, Date: 2016-07-01

ISO 14064-2:2015-07-01, ver.10.00
ISO 14064-2:2015-07-01, ver.10.00



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program

Ms. Miao Yu


SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2021-06-27
VCS / ISO 14064-2	Lead Assessor	2021-06-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.2	Renewables
13.2	Manure

164 - Rev. 6, Date: 2016-06-27

ISO 14064-2:2015-07-01, ver.10.00
ISO 14064-2:2015-07-01, ver.10.00



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program


Mr. Sang Yong Jang

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
11.1	Emissions of fluorinated gases

366 - Rev. 0, Date: 2017-01-16

ISO 14064-2:2015-07-01, ver.10.00
ISO 14064-2:2015-07-01, ver.10.00



Statement of Competence
Appointment and authorization according to the procedures of the TÜV NORD JICDM Certification Program

Mr. Stefan Winter

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27
VCS	Senior Assessor (Validation, Verification) Technical Reviewer	2020-07-27

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
1.1	Thermal energy generation
1.2	Renewables
2.1	Energy distribution
3.1	Energy demand
4.1	Cement and lime production
4.2	Paper
5.2	Caprolactam, nitric and adipic acid
8.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
13.1	Solid waste and wastewater
13.2	Manure

163 - Rev. 5, Date: 2017-07-20

ISO 14064-2:2015-07-01, ver.10.00
ISO 14064-2:2015-07-01, ver.10.00

Appendix 3. Documents reviewed or referenced

No.	Author	Reference	Title	References to the document	Provider
1	UNFCCC	/AM0079 /	Recovery of SF ₆ from Gas insulated electrical equipment in testing facilities (version 02)	https://cdm.unfccc.int/methodologies/DB/42SEZ8MUM8DFNLCXHJNOPKOPLONUTN	UNFCCC
2	DOE	/CPM/	TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms)		TÜV NORD
3	IPCC	/IPCC/	1. 1996 IPCC Guidelines for National Greenhouse Gas Inventories: work book 2. 2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	www.ipcc-nggip.iges.or.jp	UNFCCC
4	UNFCCC	/KP/	Kyoto Protocol (1997)	http://unfccc.int/kyoto_protocol/items/2830.php	UNFCCC
5	UNFCCC	/MA/	Decision 3/CMP. 1 (Marrakesh – Accords)	http://cdm.unfccc.int/Reference/COPMOP/index.html	UNFCCC
6	UNFCCC	/MRT/	Monitoring Report Form (CDM-MR-FORM), Version 06.0	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	UNFCCC
7	UNFCCC	/PDD/	Project Design Document for CDM project: “SF ₆ recovery and reclamation project, South Korea” version 7, dated 2011-03-23; Revised Project Design Document for CDM project: “SF ₆ recovery and reclamation project, South Korea” version 8, dated 2013-02-26, approved by EB on 27 Aug 2013	http://cdm.unfccc.int/Projects/DB/DNV-CUK1292915045.72/view	UNFCCC
8	UNFCCC	/PS/	CDM Project Standard for project activities (Version 02.0)	http://cdm.unfccc.int/Reference/Standards/index.html	UNFCCC
9	UNFCCC	/VAL/	Validation Report for CDM project “SF ₆ recovery and reclamation project, South Korea”	http://cdm.unfccc.int/Projects/DB/DNV-CUK1292915045.72/view	UNFCCC
10	PP	/VER/	Documents of previous verifications (Monitoring report, verification report, ER calculation sheet)	http://cdm.unfccc.int/Projects/DB/DNV-CUK1292915045.72/view	UNFCCC
11	UNFCCC	/VVS/	CDM Validation and Verification Standard for project activities (Version 02.0)	http://cdm.unfccc.int/Reference/Standards/index.html	UNFCCC
12	UNFCCC	/TA/	<ul style="list-style-type: none"> “Combined tool to identify the baseline scenario and 	http://cdm.unfccc.int/Reference/tools/index.html	UNFCCC

No.	Author	Reference	Title	References to the document	Provider
			<p>demonstrate additionality”, version 02.2, EB28.</p> <ul style="list-style-type: none"> • “Tool to calculate project or leakage CO2 emissions from fossil fuel combustion”, version 02, EB 41 • “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”, version 01, EB 39 		
13	UNFCCC	/GOT/	Glossary “CDM terms” (version 09.1)	https://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf	UNFCCC
14	PP	/CAL/	<p>Instrument Calibration reports</p> <ul style="list-style-type: none"> - Calibration Certificate of mass flow meter (14122007, 14111339, 14069408, 14014422, 14014074) covering the monitoring period. - Calibration standard of mass flow meter - FMT-QG-06 - Calibration of calibration entity i.e. FMTech Co., Ltd. - Qualification of calibration entity FMTech Co., Ltd. issued by Korea Laboratory Accreditation Scheme (KOLAS) - Calibration Certificate of GC (CN10622030) issued by SFK according to SOP - Qualification of calibration entity issued by AGILENT Technologies, S/N: YAC080560 - Calibration certificate of weight scale for the cylinders (FR3) - Calibration standard of weight scale - KML-CAL-M05; PH-I003 - Certificate of calibration entity Pyunghwa HiTech - Qualification of calibration entity Pyunghwa HiTech issued by Korea Laboratory Accreditation Scheme (KOLAS) 		PP
15	PP	/MR/	<p>Monitoring report ver.01 dated on 19/02/2019</p> <p>Monitoring report ver.02 dated on 19/03/2019</p> <p>Monitoring report ver.03 dated on 04/04/2019</p>		PP
16	PP	/XLS/	<p>Emission reduction spread sheet</p> <p>Version 1: 12/02/2019</p> <p>Version 2: 19/03/2019</p> <p>Version 3: 04/04/2019</p>		PP
17	PP	/RD/	<p>Raw monitoring data</p> <ul style="list-style-type: none"> - SF₆ gas filling records at recovery site - SF₆ gas recovery records at recovery site 		PP

No.	Author	Reference	Title	References to the document	Provider
			<ul style="list-style-type: none"> - SF₆ gas stored in cylinder bundle records - SF₆ gas records for gas from the cylinder bundle injected into the production process - SF₆ gas loss from point j during the reclamation period - SF₆ Contraction of amount of SF₆ loss at SFK site - SF₆ concentration records from GC at SFK site - Records of the number of total testing items where recovery was done per equipment - Records of the quantity of SF₆ which was being injected to the reclamation facility during exceptional events occurred. 		
18	PP	/MM/	CDM Monitoring Manual part 1, monitoring data, monitoring procedures and Quality assurance		PP
19	PP	/TR/	Staff training records		PP
20	PP	/MD/	Project monitoring diagram		PP
21	VT	/PH/	Photographs of Project Site, Central Control Room, DCS System, all the meters and nameplate of the equipment taken by Verification team during the on-site verification		VT
22	PP	/LOG/	copy of project operation records /Equipment daily check log		PP
23	PP	/CMA/	Certificate of Metrological Authorization		PP
24	PP	/IEC/	SF ₆ Quality standard IEC 60376 International Electrotechnical Commission (IEC), IEC 60480 - Guidelines for the checking and treatment of sulfur hexafluoride (SF ₆) taken from electrical equipment and specification for its re-us, edition 2.0, Publication Date: 14 October 2004 (http://webstore.iec.ch/webstore/webstore.nsf/Artnum_PK/33279)		PP
25	VT	/IM/	Interview memos		VT
27	PP	/SOC/	Staff operation certificates		PP
28	PP	/SOP/	Standard operation procedures		PP
29	PP	/SP/	<ul style="list-style-type: none"> - Technical Specification of mass flow meter - Technical Specification of GC 		PP

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 2. Remaining FAR from validation and/or previous verification (N/A)

FAR ID	-	Section no.	-	Date:-
Description of FAR				
N/A				
Project participant response (1st round)				Date:-
N/A				
Documentation provided by project participant(1st round)				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)N/A				Date:-
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed		

Table 3. CL from this verification

CL ID	0	Section no.		Date:
Description of CL				
Project participant response (1st round)				Date:08/02/2018
Documentation provided by project participant (1st round)				
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):	New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date:
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed		

Table 4. CAR from this verification

CAR ID	01	Section no.	E.1	Date:19/03/2019
Description of CAR				
In SF ₆ Emission Reduction Calculation sheet – “SFK data” Cell T14, EXC _{SF6,y} has been deducted from MI _{Gas,i,y} which is not correct. The EXC _{SF6,y} has already been considered for project emission calculation and deducted from the baseline emission. Clarification is required.				
Project participant response (1st round)				
The calculation of MI _{Gas} has been corrected in both MR and Emission Reduction calculation sheet.				
Documentation provided by project participant (1st round).				Date: 19/03/2019
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s):	New version No.:2	
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:2	
<input type="checkbox"/>	Other:			
DOE assessment (1st round)				Date:20/03/2019

The updated XLS sheet (version 2) has been checked, the formula for $MI_{gas,i,y}$ calculation has been revised, and the value of $MI_{gas,i,y}$ is calculated as the difference of the flowmeter readings. The value of $EXC_{SF_6,y}$ has not been deducted from $MI_{gas,i,y}$, hence the total emission calculation is higher than previous version. The revised calculation is confirmed as correct.

Conclusion

Tick the appropriate checkbox

- ☐ Additional action should be taken (finding remains open)
☒ The finding is closed

CAR ID	02	Section no.	E.2	Date:	19/03/2019
Description of CAR					
In SF ₆ Emission Reduction Calculation sheet – “Emission Reduction” Cell E72, E78, the operational hours 8760hrs (calculated as 365days*24hrs) do not cover the whole 6th monitoring period i.e. 396 days. Correction is required.					
Project participant response (1st round)					
The operational hours have been corrected as 8904 hours (395 days *24 hours) for conservative purpose. The calculation of $PE_{TF,y}$ and $PE_{RF,y}$ has been corrected in both MR and Emission Reduction calculation sheet accordingly.					
Documentation provided by project participant (1st round).					Date: 19/03/2019
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:	
<input checked="" type="checkbox"/>	Changes in MR	Section(s):frontpage		New version No.:2	
<input checked="" type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:2	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)					Date: 20/03/2019
The updated XLS sheet (version 2) has been checked, 8904 operating hours (395 days *24 hours) has been applied for project emission calculation, which covered the whole 6 th monitoring period. The project emission is estimated in a conservative manner. The revised calculation is confirmed as correct.					
Conclusion					
Tick the appropriate checkbox		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

Table 5. FAR from this verification

FAR ID	-	Section no.	-	Date:-	
Description of FAR					
N/A					
Project participant response (1st round)					Date:-
N/A					
Documentation provided by project participant(1st round)					
<input type="checkbox"/>	Changes in the PDD	Section(s):		New version No.:	
<input type="checkbox"/>	Changes in MR	Section(s):		New version No.:	
<input type="checkbox"/>	Changes in XLS	Worksheet(s):		New version No.:	
<input type="checkbox"/>	Other:				
DOE assessment (1st round)N/A					Date:-
Conclusion					
Tick the appropriate checkbox		<input type="checkbox"/> Additional action should be taken (finding remains open) <input type="checkbox"/> The finding is closed			

Appendix 5. Monitored Parameters

Table 1: Periodic Verification Checklist – Monitored Parameters

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
1. GWP_{SF6}				
<p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.</p>	/IM/ /PDD/ /AM0079/	<p><i>Description:</i> GWP_{SF6} is Global warming potential of SF₆. The value of the parameter is fixed for the first commitment period</p> <p><i>Verifier's action:</i> The applied methodology AM0079, revised PDD and MR have been checked.</p> <p><i>Conclusion:</i> The measurement is carried out and documented in line with registered PDD and applied methodology</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371) 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. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the</p>	/AM0079/ /MM/	<p><i>Description:</i> Not required as per methodology.</p> <p><i>Verifier's action:</i> N/A</p> <p><i>Conclusion:</i> N/A</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<i>monitoring equipment has been carried out in line with the latest EB guidance. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>				
c) Correctness (VVS, §§ 360-364) <i>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.</i>	/MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> <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 applied value is incorrect.	OK	OK
2. WSF6,BL,hist,y				
a) Measurement / Determination method (VVS, §§ 360-364) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.</i>	/IM/ /PDD/ /AM0079/ /SOP/ /RD/ /CAL/	<i>Description:</i> WSF6,BL,hist,y is the concentration of SF ₆ in used gas. Each time the cylinder bundle arrived at SFK site, the gas sample from the cylinder bundle is analyzed at the laboratory using Gas Chromatography. The value was measured and recorded by SFK staffs for each analysis according to SOP. No device exchanges and malfunction were detected during the monitoring period. <i>Verifier's action:</i> 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. <i>Conclusion:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
		The measurement is carried out and documented in line with registered PDD and applied methodology		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371)</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><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	/CAL/ /MM/	<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 2nd 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> <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><i>Conclusion:</i></p> <p>The accuracy of monitoring has been checked and assessed in accordance with the registered monitoring plan.</p>	OK	OK
<p>c) Correctness (VVS, §§ 360-364)</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>	/MR/ /XLS/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p>The SF₆ concentration value is measured by the GC provided in MR.</p> <p><i>Verifier's action:</i></p> <p>The records were checked and the detailed laboratory results in DCS system have been checked.</p> <p><i>Conclusion:</i></p> <p>The applied value is re-producible and correct.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
3. Q_{SF6,k,j,y}				
<p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.</p>	/IM/ /PDD/ /AM0079/	<p>Description: Q_{SF6,k,j,y} is mass of SF₆ that is filled into equipment at the SF6 recovery i.e. KERI site. The value was measured continuously by mass flow meter with accuracy $\pm 0.100\%$ and recorded each time of injection. No meter exchanges or malfunction were detected during this monitoring period.</p> <p>Verifier's action: 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>Conclusion: The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371) 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. 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. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</p>	/CAL/ /MM/	<p>Description: The accuracy of mass flow meter is $\pm 0.1\%$ 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>Verifier's action: The applied standard (FMT-QG-06) has been checked. The measured value and the qualification of calibration entity were also checked. The meter's calibration records covering the monitoring period were checked.</p> <p>Conclusion:</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
		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.		
c) Correctness (VVS, §§ 360-364) <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/ /RD/ /CAL/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The mass of SF ₆ which was measured by mass flow meter. Certain input values of the Monitoring workbook. <i>Verifier's action:</i> The SF ₆ filling 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
4. MR_{Gas,i,y}				
a) Measurement / Determination method (VVS, §§ 360-364) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/IM/ /PDD/ /AM0079/ /RD/	<i>Description:</i> MR _{Gas,i,y} is mass of used SF ₆ recovered into cylinder bundle at the SF ₆ recovery i.e. KERI site. The value was measured continuously by mass flow meter with accuracy $\pm 0.1\%$ and recorded each time of recovery. No meters exchanges and malfunction were detected during the monitoring period. <i>Verifier's action:</i> The SF ₆ 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. <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 Conclusion	Final Conclusion
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371) <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> <i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	/CAL/ /MM/	<p><i>Description:</i> The accuracy of mass flow meter is $\pm 0.1\%$ 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> 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> 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
<p>c) Correctness (VVS, §§ 360-364) <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></p>	/MR/ /RD/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i> The mass of SF₆ recovered which was measured by mass flow meter.</p> <p><i>Verifier's action:</i> The SF₆ recovery records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i> The value applied in the project is correct.</p>	OK	OK
5. MS_{Gas,i,y}				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.</p>	<p>/IM/ /PDD/ /AM0079/</p>	<p><i>Description:</i> $MR_{Gas,i,y}$ is mass of used gas stored in recovery cylinder bundle at the SF₆ 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. No weighing scale exchanges and malfunction were detected during the monitoring period. <i>Verifier's action:</i> The records of mass of used SF₆ stored were verified by the verification team. The revised PDD and MR have been reviewed. The nameplate of the weighing scale has 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.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371) 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. 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. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</p>	<p>/CAL/ /MM/</p>	<p><i>Description:</i> The accuracy of weighing scale is 0.5kg/5000kg and meets the requirement of the applied standard KML-CAL-M05 and PH-I003. The calibrations of weighing scale were performed every 2 years by a qualified third party Pyunghwa HiTech, which is in line with the industry requirement. The weighing scale is in normal operational condition during this monitoring period. <i>Verifier's action:</i> The applied standards (KML-CAL-M05 and PH-I003) have been checked. The measured value and the qualification of calibration entity were also checked. The weighing scale calibration records covering the monitoring period were checked. <i>Conclusion:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
		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 the monitoring equipment have been carried out appropriately.		
c) Correctness (VVS, §§ 360-364) <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/ /DR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The mass of used SF ₆ stored which was measured by weighing scale. <i>Verifier's action:</i> The records of the mass of used SF ₆ 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
6. MI_{Gas,i,y}				
a) Measurement / Determination method (VVS, §§ 360-364) <i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>	/IM/ /PDD/ /AM0079/	<i>Description:</i> 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 with accuracy $\pm 0.100\%$ and recorded each time of injection to SF ₆ 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 reviewed. The specification of the mass flow meter has been checked. <i>Conclusion:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
		The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371)</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><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	/CAL/ /MM/	<p><i>Description:</i></p> <p>The accuracy of mass flow meter is $\pm 0.1\%$ 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
<p>c) Correctness (VVS, §§ 360-364)</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>	/MR/ /RD/ /XLS/	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</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.</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>CAR1 was raised.</p>	CAR4	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
7. $L_{SF6,y,i,j}$				
<p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.</p>	<p>/IM/ /PDD/ /AM0079/ /RD/</p>	<p><i>Description:</i> $L_{SF6,y,i,j}$ is amount of SF₆ loss from point j during the reclamation period at reclamation i.e. SFK site. The value was multiplied by value continuously by mass flow meter and value measured daily by GC. The GC accuracy is the detection limit of all the gases analysed being at least 50 ppm. No meters exchanges and malfunction were detected during the monitoring period. <i>Verifier's action:</i> The records of the amount of SF₆ 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. <i>Conclusion:</i> The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371) 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. 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.</p>	<p>/CAL/ /MM/ /SOP/</p>	<p><i>Description:</i> The accuracy of mass flow meter is $\pm 0.35\%$ 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. 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. The GC calibrations were performed every 2 years by SFK, which is authorized by AGILENT Technologies and they are in line with the applied standard SOP.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>		<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>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>c) Correctness (VVS, §§ 360-364)</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/</p> <p>/RD/</p> <p>/XLS/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The amount of SF₆ loss was measured by mass flow meter and GC was provided in MR.</p> <p><i>Verifier's action:</i></p> <p>The records of amount of SF₆ loss and concentration were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i> The value is correct.</p>	OK	OK
8. P_{SF6,y,i}				
<p>a) Measurement / Determination method (VVS, §§ 360-364)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</i></p> <p><i>Check if relevant equipment has been exchanged and if in cases of failures / downtimes of standard</i></p>	<p>/IM/</p> <p>/PDD/</p> <p>/AM0079/</p> <p>/RD/</p>	<p><i>Description:</i></p> <p>P_{SF6,y,i} is production of SF₆ during the reclamation period at reclamation i.e. SFK site. The value was measured daily by the following equipment and accuracy</p> <ul style="list-style-type: none"> ➤ level gauge: ±50mm ➤ pressure gauge: ± 0.5% ➤ Temperature: ± 0.5% <p>No meters exchanges and malfunction were detected during the</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<i>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.</i>		<p>monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The records of production of SF₆ were 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) Accuracy and QA/QC Procedure (VVS, §§ 365-371)</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><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/CAL/ /MM/ /SOP/</p>	<p><i>Description:</i></p> <p>The accuracy of the level gauge, pressure gauge and temperature sensor meet the requirement of the applied standard SOP (SFK-SOP-SF6-086).</p> <p><i>Verifier's action:</i></p> <p>The applied standard (SFK-SOP-SF6-086) has been checked.</p> <p><i>Conclusion:</i></p> <p>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.</p>	OK	OK
<p>c) Correctness (VVS, §§ 360-364)</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>/MR/ /RD/ /XLS/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The production of SF₆, which was calculated by level gauge, pressure gauge and temperature sensor.</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>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>		The value applied in the project is correct.		
9. NT_{PJ,k,y}				
<p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.</p>	<p>/IM/ /PDD/ /AM0079/ /MR/ /RD/</p>	<p><i>Description:</i> NT_{PJ,k,y} 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.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371) 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. 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. Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</p>	<p>/CAL/ /MM/ /XLS/</p>	<p><i>Description:</i> The records are from SF₆ 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.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
c) Correctness (VVS, §§ 360-364) 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.	/MR/ /RD/ /XLS/ /MR/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) Description: The number of total testing items where the recovery was done and the number of tested equipment, which were recorded and counted. Verifier's action: The records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked. Conclusion: The value applied in the project is correct.	OK	OK
10. i				
a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.	/IM/ /PDD/ /AM0079/ /RD/ /MR/	Description: i is the sub-index used for each cylinder bundle that completed a recovery-reclamation cycle. The value was recorded by staffs on SF ₆ 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 _{gas,i,y}), gas weight (MS _{gas,i,y}), w _{SF6,i} , and gas injected (MI _{gas,i,y}), which are following; Verifier's action: The sub-index was verified by the verification team. The revised PDD and MR have been reviewed. Conclusion: The measurement method is in line with the registered monitoring plan of the revised PDD and applied methodology AM0079, Ver.2.	OK	OK
b) Accuracy and QA/QC Procedure (VVS, §§ 365-371)	/CAL/ /MM/	Description:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<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><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/PDD/ /MR/ /IM/</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>		
<p>c) Correctness (VVS, §§ 360-364)</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/ /IM/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The sub-index is correctly used, and labeled on each cylinder bundle from provided in MR.</p> <p><i>Verifier's action:</i></p> <p>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.</p> <p><i>Conclusion:</i></p> <p>The value applied in the project is correct.</p>	OK	OK
11. n				
<p>a) Measurement / Determination method (VVS, §§ 360-364)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data</i></p>	<p>/IM/ /PDD/ /AM0079/ /RD/</p>	<p><i>Description:</i></p> <p>n is the number of cylinder bundles that completed a recovery-reclamation cycle in the year y.</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 Conclusion	Final Conclusion
<p><i>aggregation trails (from ODL to data aggregation level zero (DAL0)).</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. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>		<p>The labels of cylinder bundle using were verified by the verification team.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of the revised PDD and applied methodology AM0079, Ver.2.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371)</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><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/CAL/ /MM/ /LOG/ /IM/</p>	<p><i>Description:</i></p> <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>	OK	OK
<p>c) Correctness (VVS, §§ 360-364)</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</i></p>	<p>/MR/ /IM/</p>	<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 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>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<i>of the conservativeness of the approach used should be given. In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i>		<i>Conclusion:</i> The value applied in the project is correct.		
12. W_{SF6,i}				
<p>a) Measurement / Determination method (VVS, §§ 360-364) Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)). 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.</p>	<p>/IM/ /PDD/ /AM0079/ /SOP/ /CAL/ /RD/</p>	<p><i>Description:</i> W_{SF6,i} is the concentration of SF₆ in the cylinder bundle. Each time the cylinder bundle arrived at SFK site, a gas sample from the cylinder bundle has been analyzed at the laboratory using Gas Chromatography. The value is measured and recorded by SFK-staff for each analysis according to SOP. No device exchange or malfunction was detected during the monitoring period. <i>Verifier's action:</i> 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. <i>Conclusion:</i> The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371) 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. Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the</p>	<p>/IM/ /PDD/ /AM0079/ /SOP/ /CAL/ /RD/</p>	<p><i>Description:</i> 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. The GC calibrations were performed every 2 years by SFK, which is authorized by AGILENT Technologies and they are in line with the applied standard SOP. The GC is in normal operational condition during this 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>monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>		<p><i>Verifier's action:</i></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><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>		
<p>c) Correctness (VVS, §§ 360-364)</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/ /RD/ /CAL/ /PH/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The SF6 concentration value is measured by a GC provided in MR.</p> <p><i>Verifier's action:</i></p> <p>The records were checked and the detailed laboratory results in DCS system have been checked.</p> <p><i>Conclusion:</i></p> <p>The value is correct.</p>	OK	OK
13. PE_{TF,y}				
<p>a) Measurement / Determination method (VVS, §§ 360-364)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>/IM/ /PDD/ /AM0079/ /SOP/ /RD/</p>	<p><i>Description:</i></p> <p>PE_{TF,y} is project emissions as a result of increased electricity consumption at the testing facility attributable to project activity</p> $PE_{TF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y})$ <p>The "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" version 01 is applied.</p> <p>Electricity consumption approximated by the rated capacity of the operating equipment multiplied by operating hours of the</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<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>equipment, which has been conservatively estimated as days of this monitoring period multiplied by 24hours.</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 operating equipment has been cross-checked with the nameplates.</p> <p><i>Conclusion:</i></p> <p>The requirement has been fulfilled.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371)</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><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/IM/ /PDD/ /AM0079/</p>	<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>N/A</p>	OK	OK
<p>c) Correctness (VVS, §§ 360-364)</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</i></p>	<p>/MR/ /RD/ /CAL/ /XLS/</p>	<p><input type="checkbox"/> Correct <input checked="" 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. However the operation hours are not correct.</p> <p><i>Verifier's action:</i></p>	CAR-2	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<p><i>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></p> <p>CAR 2 is raised.</p>		
14. $PE_{RF,y}$				
<p>a) Measurement / Determination method (VVS, §§ 360-364)</p> <p><i>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</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>/IM/ /PDD/ /AM0079/ /RD/</p>	<p><i>Description:</i></p> <p>$PE_{RF,y}$ 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 (monitoring days*24hr) 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 AM0079, Ver.2.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371)</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</i></p>	<p>/IM01/ /PDD/ /AM0079/</p>	<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>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<p>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.</p> <p>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.</p> <p>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</p>		<p>Conclusion:</p> <p>N/A</p>		
<p>c) Correctness (VVS, §§ 360-364)</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/ /RD/ /CAL/ /XLS/</p>	<p><input type="checkbox"/> Correct <input checked="" type="checkbox"/> Not correct (initial assessment)</p> <p>Description:</p> <p>The parameters applied for the calculation were verified in the above tables, which are assessed as correct. However the operation hours are not correct.</p> <p>Verifier's action:</p> <p>The installed capacity has been checked though the nameplate. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p>Conclusion:</p> <p>CAR 2 is raised.</p>	CAR-2	OK
15. EXC_{SF6,y}				
<p>a) Measurement / Determination method (VVS, §§ 360-364)</p> <p>Describe how the monitoring parameter was measured / determined. Focus primarily on the original data level (ODL) but also describe the applied data aggregation trails (from ODL to data aggregation level zero (DAL0)).</p>	<p>/IM/ /PDD/ /AM0079/ /RD/</p>	<p>Description:</p> <p>EXC_{SF6,y} is quantity of SF₆ which was being injected to the reclamation facility during exceptional events occurred. The concentration of SF₆ is considered as 1 for conservative. The volume of the injected SF_{6,y} 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 SF₆ injected from the cylinder</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<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>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}.</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>The requirement has been fulfilled.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 365-371)</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><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i></p>	<p>/CAL/ /MM/ /PDD/ /AM0079/ /SOP/ /XLS/</p>	<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_{SF6,y}. The total amount of gas taken from the continuous measurement of the flow meter on the injection line is determined from MI_{Gas,l}.</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. 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></p> <p>The requirement has been fulfilled.</p>	OK	OK
<p>c) Correctness (VVS, §§ 360-364)</p> <p><i>Determine whether the value given in the monitoring report is correct or determined in a conservative manner.</i></p>	<p>/MR/ /XLS/ /RD/ /CAL/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The amount of SF₆ was measured by mass flow meter. The calculation of total amount of gas injected (from the cylinder bundle into the reclamation line between 5 hours prior to the event</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Conclusion	Final Conclusion
<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>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></p> <p>The records of amount of SF₆ 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></p> <p>The value is correct.</p>		

Appendix 6. Calibration dates and validity of installed monitoring equipment

Monitoring equipment	Related monitoring parameter as per applicable registered monitoring plan	Serial number	Type	Accuracy or accuracy class	Previous calibration (last calibration before start of this monitoring period)	Calibration date(s) during this monitoring period	Validity of calibration(s)	Delay in calibration: yes/no	Period of delayed calibration
Mass Flow Meter	Q _{SF6,k,j,y}	14122007	09-M-008	±0.100%	15/05/2017	-	24/05/2017 14/05/2022	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Mass Flow Meter	Q _{SF6,k,j,y}	14111339	08-M-243	±0.100%	15/05/2017	-	20/05/2017 14/05/2022	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Mass Flow Meter	MR _{Gas,i,y}	14069408	09-M-090	±0.100%	15/05/2017	-	24/05/2017 14/05/2022	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Weighing Scale	MS _{Gas,i,y}	FR3		0.5kg/5000kg	07/11/2017	-	24/11/2017 06/11/2019	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Gas Chromatograph	W _{SF6,i} L _{SF6,y,i,j}	CN10622030	UAAA003	at least 50 ppm.	13/10/2017	-	22/10/2017 12/10/2019	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Mass Flow Meter	MI _{Gas,i,y} EXC _{SF6,y}	14014422	09-M-092	±0.100%	16/05/2017	-	20/05/2017 15/05/2022	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Mass Flow Meter(Purge)	L _{SF6,y,i,j}	14014074	09-M-091	±0.35%	15/05/2017	-	23/05/2017 14/05/2022	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To: