


Verification and certification report form for CDM project activities
(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the verification and certification report form for CDM project activities" at the end of this form.

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	SF6 recovery and reclamation project, South Korea
Reference number of the project activity	UNFCCC ID: 4274 TN P-No. : 8000456639- 16/003
Version number of the verification and certification report	1.0
Completion date of the verification and certification report	15/03/2016
Monitoring period number and duration of this monitoring period	MP 03 01/01/2015- to 31/12/2015 (including both days)
Version number of monitoring report to which this report applies	2.0
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
Host Party	Republic of Korea
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Scope: 11 / Technical area: 11.1 ¹ CDM Methodology: AM0079: Recovery of SF6 from Gas insulated electrical equipment in testing facilities version 02
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	165,092t CO _{2e}
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	134,817t CO _{2e}
Name of DOE	TÜV NORD CERT GmbH
Name, position and signature of the approver of the verification and	

¹ As per accreditation standard 6.0

certification report	Stefan Winter Final Approver
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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 03rd 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 01/01/2015 to 31/12/2015 (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 was started on 23 November 2007 and the commissioning at the recovery site started on 29 April 2008. The renewable crediting period (10 years fixed) started on 2011-04-01 (date of registration).

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, Ulsu-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 3rd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions: 134,817 t CO₂e

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	IR	Rainer	Winter	TÜV NORD CERT	x	x	x	x
2.	Verifier	EI	MIAO	YU		x	x	x	x

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	Speyer	Dirk	TÜV NORD CERT
2.	Technical reviewer	IR	Rami	Kunal	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 ² ;

² A year refers to a period of 12 consecutive months.

	Threshold	Related to
<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 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	<ul style="list-style-type: none"> - Increase the sampling size during the months when there is a greater likelihood of errors and issues with data quality control. - Cross check the manual recording against the automatically generated value by metering system. - Verify the staff competence by means of reviewing the relevant training records, on-site interview and observation
2.	Undue reliance on a poorly designed information system, which may have few	Low	Use of spreadsheets without adequate controls related to data changes/updates,	- intensively verifying the data captured and processed manually and/or in spreadsheets versus

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	
	effective quality controls		version tracking, traceability, security	those that are generated from an automatically system <ul style="list-style-type: none"> - Verify the function and responsibility defined in QA/QC, especially the person who is responsible for cross-checking, verifying - Test the information system and identify the improvement potentials (if any)
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

On the basis of the risk analysis the verification has been planned. 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}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
W _{SF6,BL,hist,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
Q _{SF6,k,j,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
MR _{Gas,i,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
MS _{Gas,i,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
MI _{Gas,i,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
L _{SF6,y,i,j}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
P _{SF6,y,i}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
NT _{PJ,k,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
i	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
n	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
w _{SF6,i}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
PE _{TF,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material
PE _{RF,y}	COM	<input type="checkbox"/>		<input type="checkbox"/>	Not material

EXC _{SF6,y}	COM	<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. However, based on the actual situation on-site and the errors, omissions and misstatements identified during the verification minor deviations from the original plan occurred. However, due to the insignificance no major revision of the overall plan was required. Esp. there was no need for significant modification of the sampling approaches or for additional / less locations to be visited during the on-site.

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: 15/02/2016 to 16/02/2016				
No.	Activity performed on-site	Site location	Date	Team member
1.	<ul style="list-style-type: none"> ➤ Opening meeting ➤ On-site inspection <p>Interview with PP Representative and Operation Staff (covering but not limited to)</p> <ul style="list-style-type: none"> - Project technology installation - Monitoring system - Data collection process 	Solvay Fluor Korea Co. Ltd., Ulsan.	15/02/2016 am.	Rainer Winter Yu Miao
2	<p>Documents check(covering but not limited to)</p> <ul style="list-style-type: none"> - Emission reduction calculation - QA/QC system - Raw data flow - Calibration - Training and competence 	Solvay Fluor Korea Co. Ltd., Ulsan.	15/02/2016 pm.	Rainer Winter Yu Miao
3	<p>On-site inspection</p> <p>Interview with PP Representative and Operation Staff (covering but not limited to)</p>	Korea Electrotechnology Research Institute: Chang Won.	16/02/2016 am.	Rainer Winter Yu Miao

	<ul style="list-style-type: none"> - Project technology installation - Monitoring system Data collection process 			
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 ➤ Close Meeting 	Korea Electrotechnology Research Institute: Chang Won.	16/02/2016 pm.	Rainer Winter Yu Miao

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Hong-Bo	Ha	Solvay Fluor Korea Co. Ltd	15-16.02.2016	<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 	Rainer Winter; Yu Miao
2	Shoudou	Zhang	Solvay Energy Services	15-16.02.2016	<ul style="list-style-type: none"> - Monitoring report - Monitoring and measurement equipment - Quality management system - Implementation of the monitoring plan - Monitoring data management 	Rainer Winter; Yu Miao
3	Hojin	Jeon	Solvay Fluor Korea Co. Ltd.	15.02.2016	<ul style="list-style-type: none"> - Technical equipment and operation - Monitoring and measurement equipment - Quality management 	Rainer Winter; Yu Miao

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					system - Implementation of the monitoring plan - Monitoring data management - Calibration	
4	Changhun	Lee	Korea Electrotechnology Research Institute	16.02.2016	- Data collection - Emission reduction calculation	Rainer Winter Yu Miao
5	Hanseop	Lee	Korea Electrotechnology Research Institute	16.02.2016	- Technical equipment and operation - Monitoring and measurement equipment - Quality management system - Implementation of the monitoring plan - Monitoring data management - Calibration	Rainer Winter 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

-	-	-		
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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)	1	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)	-	1	-
Others (please specify)	-	-	-
Total	1	2	0

SECTION E. Verification findings

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

Means of verification	<p>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.</p> <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 checked="" type="checkbox"/>	The respective requirements have widely been complied with; however; the following issues needed to be addressed in this context:	
		<ul style="list-style-type: none"> - CAR 1: The selected standardized baseline(s) has not been given correctly. - CL 1: All the contact information of project participants is missing in appendix 1 	

Conclusion	<input 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 checked="" 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	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. 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.
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	<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	<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	
	<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:	
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.4. Post-registration changes

- ☒ By means of site visit, document check and interview it could be verified that the project is implemented and operated in line with the registered PDD and the applied methodology.
- ☐ Post registration changes have been identified and are assessed in detail in the subsequent steps.

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
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	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	Title	
		Status	<input type="checkbox"/> under approval; <input type="checkbox"/> approved (approval No.:)
		Appr.date	
		Ref. No.	
	2	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

<input type="checkbox"/>	N/A - as this is not the first verification within the crediting period
<input checked="" 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 to a registered project activity

<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, monitoring methodology or standardized baseline

It has been checked whether any permanent changes from the registered monitoring plan (PCfrMP) 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, PCfMM or PCfSB have been submitted to the UNFCCC prior to the current monitoring period		
<input type="checkbox"/>	The following PCfrMP, PCfMM or 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, PCfMM or 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, PCfMM or 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, PCfMM or 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 of a registered project activity

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:	
	2	Issue:	
<input type="checkbox"/>	The following CoPD for which appendix 1 of the PS is applicable have been applied:		
	1	Issue:	
	2	Issue:	

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

<input 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	<p>By means of comparison of the MR with</p> <ul style="list-style-type: none"> (i) the applied CDM methodology (ii) all applicable CDM Meth tools and (iii) if applicable, a standardized baseline <p>the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology/tools/SB.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /METH/ • /unfccc/ <p>Please refer to following checklist items in Appendix 5 Table A-2: C.1 to C.7</p>
Findings	none
Conclusion	<p>The monitoring system and all applied procedures are completely in compliance to the registered monitoring plan.</p> <p>The monitoring system is in compliance with the applied monitoring methodology (AM0079: Recovery of SF₆ from Gas insulated electrical equipment in testing facilities --- version 2</p>

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	<p>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.</p> <p>Further it has been checked whether the GWP for the respective period have been correctly applied.</p> <p>The following sources of information have been used in this context:</p> <ul style="list-style-type: none"> • /MR/ • /XLS/ • /PDD/ • /PS/ • /VVS/ • unfccc/ <p>Please refer to following checklist items in Appendix 5 Table A-2: D.1 a) and b)</p>
Findings	none
Conclusion	<p>Based on the assessment as provided in related checklist items and by other sections of this report the monitoring activities comply with the registered monitoring plan and are in accordance with applicable verification requirements related to the compliance of monitoring activities with the registered monitoring plan in the VVS.</p>

E.6.2. Data and parameters monitored

Means of verification	<p>During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the PDD) have been verified with regard to the</p> <ul style="list-style-type: none"> (i) appropriateness of the applied measurement / determination method, (ii) the correctness of the values applied for ER calculation,
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	<p>(iii) the accuracy, and applied QA/QC measures.</p> <p>The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.</p> <p>Please refer to following checklist items in Appendix 5 Table A-2: D.2.1 to D.2.21</p>
Findings	none
Conclusion	<p>During the verification all relevant monitoring parameters (as listed in chapter B.7.1 of the PDD) have been verified with regard to the appropriateness of the applied measurement / determination method, the correctness of the values applied for ER calculation, the accuracy, and applied QA/QC measures. The results as well as the verification procedure are described parameter-wise in the project specific verification checklist.</p> <p>After appropriate corrections were carried out by the project participant 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.</p>

E.6.3. Implementation of sampling plan

Means of verification	<p>The verification team has been 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/. <p>Please refer to section D.4 of this report.</p>
Findings	N/A
Conclusion	No sampling was required to determine the monitored parameters.

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

Means of verification	<p>During the verification the relevant monitoring equipment has been checked whether the calibration requirements have been met; especially if the calibration frequency is 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/. <p>Please refer to following checklist items in Appendix 5 Table A-2: D.2.1 b) to D.2.21 b)</p>
Findings	none
Conclusion	<p>The calibrations of all monitoring equipments 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/. <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> $BE_y = MIN\{V_{SF6,hist} * DFT_y * EA_y\} * GWP_{SF6}$ <p>Where:</p> <ul style="list-style-type: none"> 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 $V_{SF6,hist} = w_{SF6,hist} \sum_t TI_{SF6,used,t}$ <p>Where:</p> <ul style="list-style-type: none"> $V_{SF6,hist}$ - 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 $EA_y = \sum_i CA_{i,y} * w_{SF6,i}$ <p>Where:</p> <ul style="list-style-type: none"> 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 $CA_{i,y} = MIN\{MR_{Gas,i,y}, MS_{Gas,i,y}, MI_{Gas,i,y}\}$ <p>Where:</p> <ul style="list-style-type: none"> $MR_{Gas,i,y}$ - 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
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	<p>i – Sub-index used for each cylinder that completed a recovery-reclamation cycle included in the estimation of emissions avoided for the year y</p> $DFT_y = \frac{\sum_k (Q_{SF6,k,y} * RT_{k,y})}{Q_{SF6,y}}$ $Q_{SF6,k,y} = \sum_j Q_{SF6,k,j,y}$ $Q_{SF6,y} = \sum_j Q_{SF6,k,j,y}$ <p>Where:</p> <p>DFT_y – Discount factor for testing in year y</p> <p>$Q_{SF6,k,y}$ – Total amount of SF₆ filled in the testing of equipments in category k in year y, tonnes SF₆</p> <p>$Q_{SF6,y}$ – Total amount of SF₆ filled in testing of all equipments in the project activity</p> <p>$RT_{k,y}$ – Ratio of number of eligible testing items in category k (maximum value is set at 1)</p> <p>$Q_{SF6,k,j,y}$ – Amount of SF₆ that is filled into equipment j of category k in year y at the SF₆ recovery site, tonnes SF₆</p> $RT_{k,y} = \frac{NT_{BL,k}}{NT_{PJ,k,y}}$ <p>$RT_{k,y}$ – Ratio of number of eligible testing items in category k (maximum value is set at 1)</p> <p>$NT_{BL,k}$ – Average number of eligible testing items where venting occurred per equipment in the baseline, for category k</p> <p>$NT_{PJ,k,y}$ – Average number of total testing items where recovery was done per equipment in the project, for category k</p>
Findings	CL2: The value of $RT_{2,y}$ and DFT_y in “Step 3: Calculation of DFT_y ” is not consistent with the value in Emission Calculation Excel Sheet.
Conclusion	<p>During the verification mistakes in the ER calculation in monitoring report were identified. Corresponding CARs were raised. A revised ER calculation in monitoring report was prepared by the PP and presented to the verification team. All raised issues were addressed appropriately so that all corresponding CARs could be closed out. Thus it is confirmed that the ER calculation is overall correct.</p> <p>A complete set of data for the specified monitoring period was available.</p> <p>Further the information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records and laboratory analysis to confirm the correctness and for plausibility check.</p> <p>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 factor, IPCC default values, GWPs and other reference values have been correctly applied.</p>

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

Means verification	of	<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
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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.

The following sources of information have been used in this context:

- /MR/
- /XLS/.

Please refer to following checklist items in Appendix 5 Table A-2:

D.2.1 b) to D.2.21 b)

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:

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

$PE_{RCL,y}$: Project emissions from emission of SF₆ during reclamation in year y, tCO₂e

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

Where:

- GWP_{SF6} – Global warming potential of SF₆, tCO₂e/t SF₆
- $R_{SF6,y,j,i}$ – Rate of SF₆ loss from point j during the reclamation period of cylinder i , in year y , %
- $R_{SF6,hist,j}$ – Historical rate of SF₆ loss from point j , %
- $P_{SF6,y,i}$ – Production of SF₆ during reclamation period of cylinder i in year y , t SF₆

$PE_{TF,y}$: 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)

$$PE_{TF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TD L_{j,y})$$

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

$PE_{RF,y}$: 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)

$$PE_{RF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TD L_{j,y})$$

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

$PE_{EXC,y}$: Project emissions from exceptional event(s) at the SF₆ reclamation site in year y, tCO₂e

	$PE_{EXC,y} = GWP_{SF6} \times EXC_{SF6,y}$ <p>Where:</p> <p>$EXC_{SF6,y}$ 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 $EXC_{SF6,y}$.</p>
Findings	none
Conclusion	<p>A complete set of data for the specified monitoring period was available. Further the information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records and laboratory analysis to confirm the correctness and for plausibility check.</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 applicable, the applied standardized baseline. Any assumptions used in emission or removal calculations have been justified. Appropriate emission factor, IPCC default values, GWPs and other reference values have been correctly applied.</p>

E.8.3. Calculation of leakage GHG emissions

Means verification	<p>of</p> <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. 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. 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.</p>
Findings	None
Conclusion	No leakage has to be considered as checked with related methodology and registered PDD.

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

Means verification	<p>of</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The MR includes in section E.4 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 type="checkbox"/> During the verification issues with impact on the ER calculation have been identified. Thus subject to the closure of above listed findings the summary table in E.4 needs to be revised.
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Findings	None
Conclusion	The summary table in the MR has been filled correctly and the values are in line with the related emissions reduction spreadsheet.

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. Please refer to following checklist items in Appendix 5 Table A-2: E.4
Findings	None
Conclusion	The MR includes a comparison of the calculated actual emission reductions with the ex-ante calculated values in the registered PDD. The ex-post determined value was found to be proportionally lower than the ex-ante estimated 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. Please refer to following checklist items in Appendix 5 Table A-2: E.4
Findings	None
Conclusion	The ex-post determined value was found to be proportionally lower than the ex-ante estimated value. The difference between ex-ante and actual emission reductions generation is due to delays in implementation of Phase 2

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	Please refer to following checklist items in Appendix 5 Table A-2: E.4								
Findings	<div> <input type="checkbox"/> The MR in section E.7 includes a summary table of the ER breakdown <div> <i>a) ER up to 2012-12-31 and</i> <i>b) ER from 2013-01-01 onwards</i> </div> </div> <div> <input checked="" type="checkbox"/> The breakdown of the ERs during the first commitment period and from 2013-01-01 onwards is as follows: <div> <input type="checkbox"/> The ER have completely been generated during the first commitment period <input checked="" type="checkbox"/> The ERs have completely been generated from 2013-01-01 onwards, <input type="checkbox"/> The ERs have partly been generated during the first commitment period and partly from 2013-01-01 onwards. </div> </div> <div> <input checked="" type="checkbox"/> The breakdown of the ERs is correct, considering the applicable guidance. </div> <table border="1"> <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>0</td><td>134,817</td><td>134,817</td></tr> </tbody> </table> <div>¹⁾ Both days included</div>		until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum	Emission reductions [tCO _{2e}]	0	134,817	134,817
	until 2012-12-31 ¹⁾	from 2013-01-01 ¹⁾	Sum						
Emission reductions [tCO _{2e}]	0	134,817	134,817						
Conclusion	The data provided in the MR is correct as well as the related break down. 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 before 31 December 2012 and ends anytime thereafter.
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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 03rd 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 01/01/2015 to 31/12/2015 (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: 134,817t CO₂e

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.: 03

from: 01/01/2015

to: 31/12/2015 (including both days) as follows:

Emission reductions: 134,817 t CO₂e.

Essen, 2016-03-30



Rainer Winter
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
SF6	Sulphur Hexafluoride

SOP	Specific Operational Procedure SFK-SOP-SF6-086
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 TUV NORD J/CDM Certification Program

Ms. Miao Yu

SCHEME	STATUS	VALID UNTIL
CDM	Lead Assessor (Validation, Verification)	2018-06-27
VCS / ISO 14064-2	Lead Assessor	2018-06-27
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	
1.2	Renewable Energies	

164 - Rev. 4, Date: 2015-06-24

164-001-VA050-F20-rev-2015-06-24.doc

001-VA050-F20-rev3 / 2012-10-25

001_001-VA050-F20-rev3-01-16-rev3.doc

001-VA050-F20-rev3 / 2012-10-25



Statement of Competence

Appointment and authorization according to the procedures of the TUV NORD J/CDM Certification Program

Mr. Dirk Speyer

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-04-16
VCS / ISO 14064-2	Senior Assessor	2016-04-16
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	
5.1	Chemical Industry	
5.2	Caprolactam, nitric and adipic acid	
11.1	Chemical Process Industries	
11.2	GHG Capture and Destruction	
12.1	Chemical Industry	
16.1	Carbon Capture and storage	

244 - Rev. 8, Date: 2015-01-07

244-001-VA050-F20-rev3-04-17-rev3.doc

001-VA050-F20-rev3 / 2012-10-25

234-001-VA050-F20-rev3-04-16-rev3.doc

001-VA050-F20-rev3 / 2012-10-25



Statement of Competence

Appointment and authorization according to the procedures of the TUV NORD J/CDM Certification Program

Mr. Rainer Winter

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

Authorization status for technical areas within sectoral scopes:

CODE	TECHNICAL AREA
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/mineral production
9.1	Aluminium and magnesium production
9.2	Iron, steel and Ferro-alloy production
11.1	Emissions of fluorinated gases
11.2	Refrigerant gas production
12.1	Chemical Industry
13.1	Solid waste and wastewater

003 - Rev. 9, Date: 2015-05-18



Statement of Competence

Appointment and authorization according to the procedures of the TUV NORD J/CDM Certification Program

Mr. Kunal Rami

SCHEME	STATUS	VALID UNTIL
CDM	Senior Assessor (Validation, Verification) Technical Reviewer	2016-08-27
VCS / ISO 14064-2	Senior Assessor Technical Reviewer	2016-08-27
Authorization status for technical areas within sectoral scopes:		
CODE	TECHNICAL AREA	
1.2	Renewables	
6.1	Construction	
13.1	Waste Handling and Disposal	

224 - Rev. 5, Date: 2016-02-26

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)	http://cdm.unfccc.int/methodologies/DB/42SEZ8MUM8DFNLCXHJNOPKOPLONU	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/COMOP/index.html	UNFCCC
6	UNFCCC	/MRT/	Monitoring Report Form (CDM-MR-FORM), Version 5.1	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 (Version 9.0)	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	http://cdm.unfccc	UNFCCC

No.	Author	Reference	Title	References to the document	Provider
			Standard (Version 09.0)	.int/Reference/Standards/index.html	
12	UNFCCC	/TA/	<ul style="list-style-type: none"> Tool for the demonstration and assessment of additionality" Version 4 Tool to determine project emissions from flaring gases containing methane" 	http://cdm.unfccc.int/Reference/tools/index.html	UNFCCC
13	UNFCCC	/GOT/	Glossary "CDM terms" (version 08.0)	https://cdm.unfccc.int/filestorage/external/20150226124447549-glos_CDM.pdf/glos_CDM.pdf?t=UmZ8bnFjODI3fDCW9A3vJwR03kQQh4sbLiYu	UNFCCC
14	PP	/CAL/	Instrument Calibration reports		PP
15	PP	/MR/	Draft monitoring report ver.01 dated on 14/01/2016 Final monitoring report ver. 02 dated 22/02/2016		PP
16	PP	/XLS/	Emission reduction spread sheet		PP
17	PP	/RD/	Raw monitoring data		PP
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

No.	Author	Reference	Title	References to the document	Provider
27	PP	<i>/SOC/</i>	Staff operation certificates		PP
28	PP	<i>/SOP/</i>	Standard operation procedures		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	01	Section no.	Appendix 1	Date:	08/07/2015
Description of CL					
All of the contact information of project participants is missing in appendix 1					
Project participant response (1st round)					Date:
The information has been added in MR.					
Documentation provided by project participant (1st round)					
<input type="checkbox"/>	Changes in the PDD	Section(s):	New version No.:		
<input checked="" type="checkbox"/>	Changes in MR	Section(s):	appendix 1 f New version No.:V2		
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:		
<input type="checkbox"/>	Other:				
DOE assessment (1st round)					Date:
The information of project participant in host country, i.e. Solvay Fluor Korea Co. Ltd. has been provided in revised monitoring report. The given information has been cross-checked against the information on UNFCCC website and verified as correct.					
Conclusion <i>Tick the appropriate checkbox</i>		<input type="checkbox"/> Additional action should be taken (finding remains open) <input checked="" type="checkbox"/> The finding is closed			

Table 4. CAR from this verification

CAR ID	01	Section no.	E.1	Date:	08/07/2015
Description of CAR					
The selected standardized baseline(s) has not been given correctly.					
Documentation provided by project participant (1st round)					
The standardized baseline is not applicable for the project and it's corrected in MR.					
Project participant response (1st round)					Date:
					22/07/2015
<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.:V2		
<input type="checkbox"/>	Changes in XLS	Worksheet(s):	New version No.:		
<input type="checkbox"/>	Other:				
DOE assessment (1st round)					Date:
28/07/2015					

As per registered PDD, the project does not apply standardized baseline(s). The corrected information given in the monitoring report has been cross verified against the registered PDD and assessed to be correct.

Conclusion

Tick the appropriate checkbox

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

CAR ID	02	Section no.	B.1	Date:	08/07/2015
Description of CAR					
The value of $RT_{2,y}$ and DFT_y in "Step 3: Calculation of DFT_y " is not consistent with the value in Emission Calculation Excel Sheet.					
Documentation provided by project participant (1st round)					
The typos have been corrected.					
Project participant response (1st round)					Date:
<input type="checkbox"/> Changes in the PDD					Section(s):
<input checked="" type="checkbox"/> Changes in MR					New version No.:
<input type="checkbox"/> Changes in XLS					Section(s):E.1
<input type="checkbox"/> Other:					New version No.:V2
					Worksheet(s):
					New version No.:
DOE assessment (1st round)					Date:
The revised value of $RT_{2,y}$ and DFT_y has been checked by verification team against the Emission Reduction Calculation sheet. The previous given value were typos. Since the change does not cause any influence on the accuracy of emission reductions, the correction is accepted and the CAR is closed.					
Conclusion					
<i>Tick the appropriate checkbox</i>		<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):
<input type="checkbox"/> Changes in MR					New version No.:
<input type="checkbox"/> Changes in XLS					Section(s):
<input type="checkbox"/> Other:					New version No.:
					Worksheet(s):
					New version No.:
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			

Appendix 5. Verification Protocol

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

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
A. Description of the project activity				
A.1. Purpose and general description of the project activity (F-CDM-FORM, Attachment, A.1) Check if section A.1 of the MR includes the following: <ul style="list-style-type: none"> - Purpose of the PA and the measures taken to reduce GHG emissions - Brief description of the installed technology and equipment - Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc.) - Total emission reductions achieved in this monitoring period 	/MR/	<p>The verification team has checked section A.1 of the MR and confirms that the information provided is complete and correct with regards to the following:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Purpose of the PA and the measures taken to reduce GHG emissions <input checked="" type="checkbox"/> Brief description of the installed technology and equipments <input checked="" type="checkbox"/> Relevant dates for the project activity (e.g. construction, commissioning, continued operation periods etc) <input checked="" type="checkbox"/> Total emission reductions achieved in this monitoring period <p>In this context the following findings have been identified: CAR 1 was raised.</p>	CAR4	OK
A.2. Location of project activity (F-CDM-FORM, Attachment, A.2) Check if section A.2 of the MR reflects correctly the following: <ul style="list-style-type: none"> - Host Party(ies) - Region / State / Province etc. - City / Town / Community etc. - Physical / geographical location (e.g. Latitude 	/MR/ /PDD/ /IM/	<p>The verification team has checked section A.2 of the MR and confirms by means of comparison with the information given in the PDD and information gathered during the site visit that the information provided is complete and correct with regards to the following:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Host Party(ies) <input checked="" type="checkbox"/> Region / State / Province <input checked="" type="checkbox"/> City / Town / Community 	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
and Longitude)		<input checked="" type="checkbox"/> Physical / Geographical location		
A.3. Parties and Project Participants (F-CDM-FORM, Attachment, A.3) Check if section A.3 of the MR includes the following: <ul style="list-style-type: none"> - All PPs as displayed on the UNFCCC website - A correctly filled table as per the MR template 	/MR/ /unfccc/	The verification team has checked section A.3 of the MR as well as the UNFCCC website and confirms that: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> all PPs as displayed on the project related UNFCCC website are correctly listed <input checked="" type="checkbox"/> the table as per the template MR has been correctly filled CL1 is raised.	CL1	OK
A.4. Reference of applied methodology (F-CDM-FORM, Attachment, A.4) Check if section A.4 of the MR correctly describes / includes the following: <ul style="list-style-type: none"> - Reference to the applicable version of the methodology - Reference to the applicable version(s) of relevant methodological tools - Relevant EB decisions, if applicable 	/MR/ /PDD/ /unfccc/	The verification team has checked section A.4 of the MR and confirms by means of comparison with the information given in the PDD and displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Number, title and version of the applicable CDM Methodology <input checked="" type="checkbox"/> Name and version of applicable CDM methodological tools <input checked="" type="checkbox"/> Relevant EB decisions 	OK	OK
A.5. Crediting period of project activity (F-CDM-FORM, Attachment, A.5) Check if section A.5 of the MR correctly includes the following: <ul style="list-style-type: none"> - Start date of the crediting period. In this context please check, if applicable, whether post registration changes to the start date have been accepted by the EB. 	/MR/ /unfccc/	The verification team has checked section A.5 of the MR and confirms by means of comparison with the information displayed on the UNFCCC website that the information provided is complete and correct with regards to the following: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Start date of the crediting period. <input checked="" type="checkbox"/> Type and length of the crediting period 	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
- <i>Length and type of the crediting period</i>				
B. Implementation of project activity				
B.1. Description of implemented registered project activity (F-CDM-FORM, Attachment, B.1) <i>Check if section B.1 of the MR correctly describes / includes the following:</i> <ul style="list-style-type: none"> - <i>Implementation status of the PA</i> - <i>Detailed description of installed technology(ies) / technical processes and equipment applied</i> - <i>Diagrams (where appropriate)</i> 	/MR/ /PDD/	The verification team has checked section B.1 of the MR and confirms by means of comparison with the information given in the PDD, the project standard and information gathered during the site visit that: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> the description of the implementation status of the PA is in line with the applicable provisions of the project standard <input checked="" type="checkbox"/> an appropriate description of the installed technology(ies), technical process and equipment incl. diagrams, where applicable, has been included 	OK	OK
B.1.1. Technical equipment changes (VVS; §§ 383, 384, 385) <i>Check if relevant technical equipment of the project activity has been exchanged or modified during the monitoring period. Further ensure that consistent notations of key equipment (meters etc.) in PDD, MR and calculation spreadsheet are applied</i> <i>Consider e.g. interviews with operational personnel, QMS records, maintenance records, instrument specifications.</i> <i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i> <i>In case of post registration changes pl. refer to chapter B.2.</i>	/IM01/ /PDD/	The project has been implemented as per the registered revised PDD. The used SF ₆ is recovered from GIS/GCB equipment by the piping system. It is then compressed and stored in dedicated cylinders which are weighed and labelled in recovery site i.e. KERI. The cylinders are transported to SF ₆ reclamation site i.e. SFK. The SF ₆ is analyzed at the laboratory once the cylinders arrived at SFK. Then the used SF ₆ which meets the standard i.e. SOP is injected to SF ₆ production plant for reclamation. <i>Verifier's action:</i> By means of on-site visit and interview, the physical features of the projects are in place. The revised PDD and Technical Specification of monitoring equipment have been checked. The UNFCCC website has been also checked. <i>Conclusion:</i> The project has been implemented as per the registered (revised) PDD.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>B.1.2. Operation of the project activity (VVS; §§ 383, 384, 385) <i>Check if relevant operation modes of the project activity have been exchanged or modified during the monitoring period.</i> <i>Consider e.g. interviews with operational personnel, operation log sheets, data management system records.</i> <i>In case of changes, check whether the project is still in line with the registered PDD and assure that these changes have been considered in the monitoring report and the emission reduction calculation.</i> <i>In case of post registration changes pl. refer to chapter B.2.</i></p>	<p>/IM01/ /PDD/ /LOG/</p>	<p><i>Description:</i> The technical equipments such as monitoring equipment and reclamation facility have not been changed and are consistent with those in registered (revised) PDD and previous validation.</p> <p><i>Verifier's action:</i> By means of instrument specification checks and interviews during the on-site visit. This was also crosschecked as per the plant operation log, equipments check & maintenance log nt was exchanged or modified within the monitoring period.</p>	OK	OK
<p>B.1.3. Incidents (VVS; §§ 383, 384, 385) <i>Identify if there have been any significant incidents, deviant operation modes and / or downtimes of the equipment?</i> <i>Consider e.g. interviews with operational personnel, operational log sheets, analysis of performance data.</i></p>	<p>/IM/</p>	<p><i>Description:</i> The operation modes for SF6 recovery, reclamation etc. have not been changed.</p> <p><i>Justification of evidences:</i> It was verified by means of site observation, the plant operation logs check, equipment check & maintenance log check, and could be cross evidenced by interviewing with the plant operators.</p> <p><i>Conclusion:</i> The incidents of the equipment during the monitoring period have not been observed.</p>	OK	OK
<p>B.1.4. Legislation Find out – esp. in the context of methodological requirements - whether relevant legislation with effect on the project activity in the host country has been changed. Assess, in case of changes, whether consequences</p>	<p>/IM/</p>	<p><i>Description:</i> Relevant legislation incl. SF₆ recovery and reclamation, related environmental protection laws, sectoral policies and relevant regulations were not changed. Both companies SFK and KERI are authorized to operate within their business activities and as such have fulfilled/obtained the necessary requirements/permits</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
for the PA with regard to relevant CDM requirements have been accounted for. In case of changes data sources shall be referenced.		(Permit for emissions of Air Pollutants, Permit for non-point waste water Pollutants, and Permit for toxic Chemical usage, manufacture and sale) in order to operate within their activities. Since the project activities are only a minor variation to their main activities respectively, the former are therefore also covered within the environmental, legal, operational, and business permits held by each of the companies. <i>Verifier's action:</i> It was verified through consulting official governmental website and as per the local and sectoral expertise of the verification team. <i>Conclusion:</i> No relevant changes since the validation were identified.		
B.1.5. Open issues from validation (VVS; § 353, 354) <i>Check (esp. in case of 1st periodic verification) whether there are any open issues indicated in the validation report (e.g. FAR)?</i>	/VAL/	<input checked="" type="checkbox"/> There were no open issues addressed in the validation report <input type="checkbox"/> All open issues from the validation have been appropriately addressed. <input type="checkbox"/> The following issues related to the validation have not yet been appropriately addressed:	OK	OK
B.1.6. Open issues from previous verification (VVS; §§ 353, 354) <i>Check in case of further periodic verifications whether there are any open issues indicated in previous verification reports (FAR) and take into consideration the guidance as specified in VVS.</i>	/VER/	<input checked="" type="checkbox"/> There were no open issues addressed in the previous verification report <input type="checkbox"/> All open issues from the previous verification have been appropriately addressed. <input type="checkbox"/> The following issues related to the previous verification have not yet been appropriately addressed:	OK	OK
C. Description of monitoring system				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.												
<p>C.1. Monitoring Plan – PDD Compliance (VVS, §§ 383-385)</p> <p>Check if the monitoring plan is in accordance with the monitoring plan contained in the registered PDD (or any accepted revised MP).</p> <p>Please check esp. if</p> <ul style="list-style-type: none"> - all parameters stated in the MP of the registered PDD have been monitored and updated as applicable - the monitoring equipment has been controlled and calibrated as per the MP - the monitoring results are consistently recorded as per the approved frequency - QA/QC procedures have been applied in accordance with the MP 	<p>/MR/ /PDD/</p>	<p>By means of comparison of the MR with the registered PDD (or any revisions thereof) the verification team has checked whether the MP is in compliance with the registered PDD. The outcome is as follows:</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td colspan="2">The MP is completely in accordance with the last registered/approved version of the PDD / MP.</td></tr> </table>	<input checked="" type="checkbox"/>	The MP is completely in accordance with the last registered/approved version of the PDD / MP.		OK	OK									
<input checked="" type="checkbox"/>	The MP is completely in accordance with the last registered/approved version of the PDD / MP.															
<p>C.2. Monitoring Plan – Meth Compliance (VVS, §§ 386-388)</p> <p>Check if the monitoring plan is in accordance with the applied methodology.</p> <p>In case the methodology references applicable tools it has to be ensured that the MP is also compliant with those tools.</p> <p>Also please specify if monitoring aspects have been identified that are not specified in the methodology but may enhance the level of accuracy and completeness of the monitoring plan – this esp. applies for SSC PAs.</p>	<p>/MR/ /PDD/ /AM79/</p>	<p>By means of comparison of the MR with the applied CDM methodology and related tools the verification team has checked whether the MP is in compliance with the MP related requirements of the applied methodology. The outcome is as follows:</p> <table border="1"> <tr> <td><input checked="" type="checkbox"/></td><td colspan="2">The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)</td></tr> <tr> <td><input checked="" type="checkbox"/></td><td colspan="2">The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:</td></tr> <tr> <td>1</td><td>Title (of the tool)</td><td>Tool to determine project emissions from flaring gases containing methane</td></tr> <tr> <td></td><td>Version</td><td></td></tr> </table>	<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)		<input checked="" type="checkbox"/>	The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:		1	Title (of the tool)	Tool to determine project emissions from flaring gases containing methane		Version		OK	OK
<input checked="" type="checkbox"/>	The MP is completely in accordance with the approved methodology applied by the CDM project (last registered/approved version of the PDD)															
<input checked="" type="checkbox"/>	The MP is completely in accordance with the applied tools which the methodology references. A breakdown of the referenced tools is as follows:															
1	Title (of the tool)	Tool to determine project emissions from flaring gases containing methane														
	Version															

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.				
		<table border="1"> <tr> <td></td><td></td><td>MP compliance</td><td> <input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP) </td></tr> </table>			MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)		
		MP compliance	<input checked="" type="checkbox"/> full compliance <input type="checkbox"/> findings have been raised <input type="checkbox"/> N/A (for MP)					
C.3. Management System (VVS, § 373 (a) (iii)) <i>Check if the GHG data monitoring system can be assessed as appropriate.</i> <i>In case reference is made to a (certified) company quality management system, check if all CDM related monitoring procedures have been fully integrated in the project participant's quality management system.</i> <i>In case of a stand-alone system, check how the GHG management system has been implemented and effectiveness is ensured.</i>	/MM/ /TR/	Description: The monitoring manual and applicable QA/QC procedures have been established and implemented, which defined the processes for measurements, data collection and compilation of data, data storage and archiving, calibration and maintenance. The training have been planned and implemented as scheduled. It is confirmed that all the operation staffs of had been properly trained. Internal audit has been carried out by CDM director. Verifier's action: The manual, the QA/QC Procedures, the row data tracking system, and training materials have been checked by the verification team during on site visit. Conclusion: The GHG data monitoring system is assessed as appropriate.	OK	OK				
C.4. Metering diagram (F-CDM-FORM, Attachment, C; PS §246) <i>Check first if the MR includes a metering diagram showing all relevant monitoring points.</i> <i>Check further if this diagram reflects the actual situation and is in line with the registered PDD and with the requirements of the applied methodology.</i>	/PS/ /MM/	Description: The MR includes metering diagram with all relevant monitoring points, and the diagram reflects the actual situation and is in line with registered (revised) PDD and the applied methodology. Verifier's action: The MR has been verified against on-site observation and interview with project operators. Conclusion:	OK	OK				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The metering diagram correctly reflects the real situation.		
C.5. Roles and Responsibilities (F-CDM-FORM, Attachment, C; PS §246) <i>Check if all roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan. Please consider the complete data trail from raw data generation to submission of the final data. Identify, if relevant personnel w.r.t. monitoring has been exchanged? If so, have appropriate training measures been carried out. In case of changes, assure that the implemented monitoring procedures have not been affected.</i>	/PS/ /MM/	Description: The roles and responsibilities are clearly defined in the monitoring manual and MR. The key personnel w.r.t. monitoring was not exchanged during this monitoring period. Verifier's action: The competence of the appointed person has been interviewed and the monitoring manual, staff training records have been checked. The gathered information has been cross checked against the PDD. Conclusion: All roles and positions of each person in the GHG data management process are clearly defined and implemented as stated in the monitoring plan.	OK	OK
C.6. Emergency procedures for the monitoring system (F-CDM-FORM, Attachment, C; PS §246) <i>Check, as appropriate, whether relevant emergency procedures for the monitoring system have been included in the MR and assess whether these procedures have been implemented, when required</i>	/PS/ /MM/	Description: Emergency procedures for monitoring system are stated completely. Verifier's action: The project operation records, monitoring manual, log sheet, the O&M records have been checked and responsible staff has been interviewed. Conclusion: The relevant emergency procedures for the monitoring system have been included in the MR and assessed as appropriate.	OK	OK
C.7. Data archive and data protection (PS §65 b)) <i>Check whether all records of monitoring parameters are archived according to the monitoring plan.</i>	/MM/ /MR/	Description: All monitoring data and records are archived electronically and archived in local office and will be kept at least for 2 years after	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Assess further whether appropriate measures have been taken in order to avoid unintended or intended manipulation or loss of the measured data.		<p>the end of the last crediting period.</p> <p>The CDM director has overall control on the raw and aggregated data. The data is under protection from unintended revision and manipulation.</p> <p>Verifier's action:</p> <p>The records of the monitoring data and the hard & soft copy have been checked.</p> <p>Conclusion:</p> <p>The data is assessed to be appropriate. All data has been archived according to monitoring plan.</p>		
D. Data and parameters				
D.1. Data and Parameters fixed ex ante				
<p>a) Compliance with registered PDD (F-CDM-FORM, Attachment; D1, VVS § 352) Check whether the value applied is in compliance with the registered PDD.</p>	/PDD/ /MP-R/ /A /MR/	<p><i>Description:</i></p> <p>The eight parameters have been involved in MR, which have been indicated in the registered revised PDD and used during this monitoring period.</p> <ol style="list-style-type: none"> 1. The Global warming potential of SF₆ (GWP_{SF6}), 2. Rated capacity of the operating equipment of the testing facilities at recovery site and reclamation site, 3. Emissions factor for electricity (EF_{elec,j,y}), 4. Average technical transmission and distribution losses for providing electricity (TDL_{j,y}), 5. Used gas vented during eligible testing item t for the historical baseline year (TI_{SF6,used,t}), 6. Average number of eligible testing items where venting occurred per equipment in the baseline (NT_{BL,k}), 7. Historical amount of SF₆ loss from point j (L_{SF6,hist,j}), 8. Production of SF₆ during the historical period (P_{SF6,hist}). <p><i>Verifier's action:</i></p> <p>The registered revised PDD and MR have been checked. The</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		nameplates of the operating equipment of the testing facilities at recovery site and reclamation site have been checked on-site. Conclusion: The value applied is in compliance with the registered PDD.		
b) Compliance with the applied methodology (F-CDM-FORM, Attachment; D1) <i>Check whether the value applied is in compliance with the applied methodology or any other tool.</i>	/AM79/ /MR/	Description: The parameters which have been defined as fixed ex-ante in the registered PDD. This parameter has been involved in MR as the fixed ex-ante determined value. Verifier's action: The registered PDD, applied methodology AM0079, MR have been checked. Conclusion: The value applied is in compliance with the applied methodology and tool.	OK	OK
D.2. Data and Parameters monitored				
D.2.1. GWP_{SF6}				
a) Measurement / Determination method (VVS, §§ 389-393) <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</i>	/IM/ /PDD/ /AM79/	Description: GWP _{SF6} is Global warming potential of SF ₆ . The value of the parameter is fixed for the first commitment period Verifier's action: The applied methodology AM0079, revised PDD and MR have been checked. Conclusion: The measurement is carried out and documented in line with registered PDD and applied methodology	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>method is in line with the registered monitoring plan of the PDD and the applied methodology.</i>				
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <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>	/AM79/ /MM/	<i>Description:</i> Not required as per methodology. <i>Verifier's action:</i> N/A <i>Conclusion:</i> N/A	OK	OK
c) Correctness (VVS, §§ 389-393) <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/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The value from the methodology AM0079 has been used. <i>Verifier's action:</i> The applied methodology AM0079, revised PDD and MR have been checked. <i>Conclusion:</i> The applied value is correct.	OK	OK
D.2.2: W_{SF6,BL,hist,y}				
a) Measurement / Determination method (VVS, §§ 389-393)	/IM/ /PDD/	<i>Description:</i> W _{SF6,BL,hist,y} is the concentration of SF ₆ in used gas. Each time	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Describe how the monitoring parameter was measured / determined. 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. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	<p>/AM79/ /SOP/ /RD/ /CAL/</p>	<p>the cylinder bundle arrived at SFK site, the gas sample from the cylinder bundle analyzed at the laboratory using Gas Chromatography. The value was measured and recorded by SFK staffs for each analysis according to SOP.</p> <p>No device exchanges and malfunction were detected during the monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The detection limit/accuracy of GC was checked against the GC calibration report and GC specification. The characteristics including measuring conditions and accuracy of the meter are consistent with those described in SOP.</p> <p><i>Conclusion:</i></p> <p>The measurement is carried out and documented in line with registered PDD and applied methodology</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</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/</p>	<p><i>Description:</i></p> <p>The SF6 concentration value in the project was measured by GC. The detection limit/accuracy of GC for all the gases analysed is at least 50 ppm and it meets the requirement of the applied standard SOP.</p> <p>The GC calibrations were performed every 2 year by SFK, which is authorized by AGILENT Technologies and they are in line with the applied standard SOP.</p> <p>The GC is in normal operational condition during this monitoring period.</p> <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>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The accuracy of monitoring has been checked and assessed in accordance with the registered monitoring plan.		
c) Correctness (VVS, §§ 389-393) <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 / / XLS /	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) The SF ₆ concentration value is measured by the GC provided in MR. <i>Verifier's action:</i> The records were checked and the detailed laboratory results in DCS system have been checked. <i>Conclusion:</i> The applied value is re-producible and correct.	OK	OK
D.2.3: Q_{SF6,k,i,y}				
a) Measurement / Determination method (VVS, §§ 389-393) <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 / / AM79 /	<i>Description:</i> Q _{SF6,k,i,y} is mass of SF ₆ that is filled into equipment at the SF ₆ recovery i.e. KERI site. The value was measured continuously by mass flow meter with accuracy ±0.100% and recorded each time of injection. No meters exchanges and malfunction were detected during the monitoring period. <i>Verifier's action:</i> The SF ₆ 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. <i>Conclusion:</i> The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.	OK	OK
b) Accuracy and QA/QC Procedure	/CAL/	<i>Description:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>(VVS, §§ 394-400) <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>	/MM/	<p>The accuracy of mass flow meter is $\pm 0.100\%$ and meets the requirement of the applied national standard FMT-QG-06. The calibrations of meters were performed every 5 years by a qualified third party FMTech Co., Ltd. and in line with the industry requirement. All the meters are in normal operational condition during this monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The applied standard (FMT-QG-06) has been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The meters calibration records covering the monitoring period were checked.</p> <p><i>Conclusion:</i></p> <p>The mass flow meters are in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p>		
<p>c) Correctness (VVS, §§ 389-393) <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>	<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 mass of SF₆ which was measured by mass flow meter. Certain input values of the Monitoring workbook.</p> <p><i>Verifier's action:</i></p> <p>The SF₆ filling records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i></p> <p>The value applied in the project is correct.</p>	OK	OK
D.2.4: MR_{Gas,i,y}				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>a) Measurement / Determination method (VVS, §§ 389-393) 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/ /AM79/ /RD/</p>	<p><i>Description:</i> $MR_{Gas,i,y}$ is mass of used SF₆ recovered into cylinder bundle 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 recovery. No meters exchanges and malfunction were detected during the monitoring period. <i>Verifier's action:</i> The SF₆ 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.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) 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 mass flow meter is $\pm 0.100\%$ 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. <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. The meters 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 Concl.	Final Concl.
		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.		
c) Correctness (VVS, §§ 389-393) 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/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) Description: The mass of SF ₆ recovered which was measured by mass flow meter. Verifier's action: The SF ₆ recovery 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
D.2.5: MS_{Gas,i,y}		Heat generation by project in period y		
a) Measurement / Determination method (VVS, §§ 389-393) 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/ /AM79/	Description: MR _{Gas,i,y} is mass of used gas stored in recovery cylinder bundle at the SF ₆ 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. Verifier's action: The records of mass of used SF ₆ stored were verified by the verification team. The revised PDD and MR have been reviewed. The nameplate of the weighing scale has been checked. Conclusion:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <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>	/CAL/ /MM/	<p><i>Description:</i></p> <p>The accuracy of weighing scale is 0.5kg/5000kg and meets the requirement of the applied standard KML-CAL-M05 and PH-I003.</p> <p>The calibrations of weighing scale were performed every 2 years by a qualified third party KML and Pyunghwa HiTech, which is in line with the industry requirement. The weighing scale is in normal operational condition during this monitoring period.</p> <p><i>Verifier's action:</i></p> <p>The applied standards (KML-CAL-M05 and PH-I003) have been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The weighing scale calibration records covering the monitoring period were checked.</p> <p><i>Conclusion:</i></p> <p>The weighing scale is in normal operational condition during this monitoring period. No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.</p>	OK	OK
c) Correctness (VVS, §§ 389-393) <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>	/MR/ /DR/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The mass of used SF₆ stored which was measured by weighing scale.</p> <p><i>Verifier's action:</i></p> <p>The records of the mass of used SF₆ stored were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>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.		
D.2.6: $MI_{Gas,i,y}$		Methane concentration in drained gas (on wet basis, in mass)		
<p>a) Measurement / Determination method (VVS, §§ 389-393) <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. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>	/IM/ /PDD/ /AM79/	<p><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 SF₆ 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> 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, §§ 394-400) <i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have</i></p>	/CAL/ /MM/	<p><i>Description:</i> The accuracy of mass flow meter is $\pm 0.100\%$ 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. <i>Verifier's action:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p> <p><i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</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>		
<p>c) Correctness (VVS, §§ 389-393)</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 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>The value applied in the project is correct.</p>	OK	OK
D.2.7: $L_{SF_6,y,i,j}$				
<p>a) Measurement / Determination method (VVS, §§ 389-393)</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</i></p>	<p>/IM/</p> <p>/PDD/</p> <p>/AM79/</p> <p>/RD/</p>	<p><i>Description:</i></p> <p>$L_{SF_6,y,i,j}$ is amount of SF_6 loss from point j during the reclamation period at reclamation i.e. SFK site. The value was measured continuously by mass flow meter and recorded daily. The GC accuracy is the detection limit of all the gases analysed being at least 50 ppm.</p> <p>No meters exchanges and malfunction were detected during the monitoring period.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>and if in cases of failures / downtimes of standard equipment other measurement / determination methods have been used. Furthermore, verify the frequency of measurements as per the requirements. Assess whether the measurement / determination method is in line with the registered monitoring plan of the PDD and the applied methodology.</i></p>		<p><i>Verifier's action:</i></p> <p>The records of 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.</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, §§ 394-400)</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. 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.</i></p>	<p>/CAL/ /MM/ /SOP/</p>	<p><i>Description:</i></p> <p>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.</p> <p>The calibrations of mass flow meter were performed every 5 years by a qualified third party FMTech Co., Ltd. and in line with the industry requirement. The meter is in normal operational condition during this monitoring period.</p> <p>The GC calibrations were performed every 2 year by SFK, which is authorized by AGILENT Technologies and they are in line with the applied standard SOP.</p> <p><i>Verifier's action:</i></p> <p>The applied standard (FMT-QG-06) and SOP have been checked. The measured value and the qualification of calibration entity were also checked.</p> <p>The meters calibration records covering the monitoring period were checked.</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Conclusion:</i></p> <p>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, §§ 389-393)</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/ /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></p> <p>The value is correct.</p>	OK	OK
D.2.8: P_{SF6,y,i}				
<p>a) Measurement / Determination method (VVS, §§ 389-393)</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/ /AM79/ /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 equipments 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 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>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		<p><i>Conclusion:</i></p> <p>The 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, §§ 394-400)</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, §§ 389-393)</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/ /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> <p>The value applied in the project is correct.</p>	OK	OK
D.2.9: NT_{PJ,k,y}				

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p>a) Measurement / Determination method (VVS, §§ 389-393) 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/ /AM79/ /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, §§ 394-400) 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
<p>c) Correctness (VVS, §§ 389-393) Determine whether the value given in the monitoring</p>	<p>/MR/ /RD/</p>	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>report is correct or determined in a conservative manner.</i></p> <p><i>In case of conservative approaches used in lieu of the monitoring as per registered MP detailed assessment of the conservativeness of the approach used should be given.</i></p> <p><i>In case of mistakes / deviations pl. provide details and descriptions of the CARs raised.</i></p>	<p>/XLS/</p> <p>/MR/</p>	<p>The number of total testing items where the recovery was done and the number of tested equipment, which were recorded and counted.</p> <p><i>Verifier's action:</i></p> <p>The records were checked. The value given in the monitoring report and the corresponding Excel sheet were checked.</p> <p><i>Conclusion:</i></p> <p>The value applied in the project is correct.</p>		
D.2.10: i				
<p>a) Measurement / Determination method (VVS, §§ 389-393)</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. 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/</p> <p>/PDD/</p> <p>/AM79/</p> <p>/RD/</p> <p>/MR/</p>	<p><i>Description:</i></p> <p>i is the sub-index used for each cylinder bundle that completed a recovery-reclamation cycle. The value was recorded by staffs on SF₆ 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}), gas weight (MS_{gas,i}), w_{SF6,i}, and gas injected (MI_{gas,i}), which are following;</p> <p><i>Verifier's action:</i></p> <p>The sub-index was verified by the verification team. The revised PDD and MR have been reviewed.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>	OK	OK
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</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>/CAL/</p> <p>/MM/</p> <p>/PDD/</p> <p>/MR/</p>	<p><i>Description:</i></p> <p>The recovery cylinder bundles have been visibly distinguishable from new gas cylinder bundles. When used gas is filled into a recovery cylinder bundle, weighed, and sent for reclaiming, the sub-index is used to label the cylinder bundle for identification</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>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>	/IM/	<p>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, §§ 389-393)</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/ /IM/	<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
D.2.11: n				
<p>a) Measurement / Determination method (VVS, §§ 389-393)</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>	/IM/ /PDD/ /AM79/ /RD/	<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> <p>The labels of cylinder bundle using were verified by the verification team.</p> <p><i>Conclusion:</i></p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<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>		The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <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. 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.</i>	/CAL/ /MM/ /LOG/ /IM/	<i>Description:</i> 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. <i>Verifier's action:</i> The labels of cylinder bundle using were verified by the verification team. <i>Conclusion:</i> No error has occurred. QA/QC procedures are in line with the MP and the calibration and maintenance of the monitoring equipment have been carried out appropriately.	OK	OK
c) Correctness (VVS, §§ 389-393) <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/ /IM/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The number is correctly counted provided in MR. <i>Verifier's action:</i> The labels of cylinder bundle using were verified by the verification team. <i>Conclusion:</i> The value applied in the project is correct.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
D.2.12: $w_{SF6,i}$				
<p>a) Measurement / Determination method (VVS, §§ 389-393) 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/ /AM79/ /SOP/ /CAL/ /RD/	<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, the gas sample from the cylinder bundle analyzed at the laboratory using Gas Chromatography. The value is measured and recorded by SFK staffs for each analysis according to SOP. 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> 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, §§ 394-400) 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>	/IM/ /PDD/ /AM79/ /SOP/ /CAL/ /RD/	<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 year 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. <i>Verifier's action:</i> The detection limit/accuracy of GC met with the applied</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.</i>		standard SOP. The GC calibration records covering the monitoring period were available during the onsite visit and have been checked. <i>Conclusion:</i> The requirement has been fulfilled.		
c) Correctness (VVS, §§ 389-393) <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/ /RD/ /CAL/ /PH/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The SF6 concentration value is measured by a GC provided in MR. <i>Verifier's action:</i> The records were checked and the detailed laboratory results in DCS system have been checked. <i>Conclusion:</i> The value is correct.		
D.2.13: PE_{TF,y}				
a) Measurement / Determination method (VVS, §§ 389-393) <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/ /AM79/ /SOP/ /RD/	<i>Description:</i> PE _{TF,y} is project emissions as a result of increased electricity consumption at the testing facility attributable to project activity $PE_{TF,y} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} (1 + TDL_{j,y})$ The "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" version 01 is applied. <i>Verifier's action:</i> The methodology, tool and the registered revised PDD have been checked to confirm the correctness. The installed capacity of the operating equipments has been cross-checked with the nameplates. <i>Conclusion:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The requirement has been fulfilled.		
b) Accuracy and QA/QC Procedure (VVS, §§ 394-400) <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>	/IM/ /PDD/ /AM79/	<i>Description:</i> As per the methodology QA/QC procedures are not necessary. <i>Verifier's action:</i> N/A <i>Conclusion:</i> N/A	OK	OK
c) Correctness (VVS, §§ 389-393) <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/ /RD/ /CAL/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) <i>Description:</i> The parameters applied for the calculation were verified in the above tables, which are assessed as correct. <i>Verifier's action:</i> The installed capacities have been checked though the nameplates. The value given in the monitoring report and the corresponding Excel sheet were checked. <i>Conclusion:</i> The value is correct,		
D.2.14: PE_{RF,y}				
a) Measurement / Determination method (VVS, §§ 389-393)	/IM/ /PDD/	<i>Description:</i>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<p><i>Describe how the monitoring parameter was measured / determined. 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>	/AM79/ /RD/	<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 8760 has been applied.</p> <p><i>Verifier’s action:</i></p> <p>The methodology, tool and the registered revised PDD have been checked to confirm the correctness. The installed capacity of the mass flow meter has been cross-checked with the nameplate.</p> <p><i>Conclusion:</i></p> <p>The measurement method is in line with the registered monitoring plan of revised PDD and applied methodology AM0079, Ver.2.</p>		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</p> <p><i>In case of measured (or estimated) values, check whether the accuracy of equipment used for monitoring is controlled and calibrated in accordance with the monitoring plan or if significant inaccuracies occur; in this case, make sure that the most conservative assumptions theoretically possible have been made for calculating ERs.</i></p> <p><i>Describe whether all applicable QA/QC procedures are met. Assess further if the calibration of the monitoring equipment has been carried out in line with the latest EB guidance.</i></p>	/IM01/ /PDD/ /AM79/	<p><i>Description:</i></p> <p>As per the methodology QA/QC procedures are not necessary.</p> <p><i>Verifier’s action:</i></p> <p>N/A</p> <p><i>Conclusion:</i></p> <p>N/A</p>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
Include calibration dates and information in validity of the installed monitoring equipment in the table in Annex 2.				
c) Correctness (VVS, §§ 389-393) 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/ /CAL/ /XLS/	<input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment) Description: The parameters applied for the calculation were verified in the above tables, which are assessed as correct. Verifier's action: The installed capacity has been checked though the nameplate. The value given in the monitoring report and the corresponding Excel sheet were checked. Conclusion: The value given in the monitoring report is correct.		
D.2.15: EXC_{SF6,y}				
a) Measurement / Determination method (VVS, §§ 389-393) 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/ /AM79/ /RD/	Description: EXC _{SF6,y} is quantity of SF ₆ which was being injected to the reclamation facility during exceptional events occurred. The concentration of SF ₆ 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 SF ₆ injected from the cylinder bundle into the reclamation line between 5 hours prior to the event and until the time that the injection line was shut off must be considered as EXC _{SF6,y} . Verifier's action: The records of the quantity of SF6 were verified by the verification team. The revised PDD and MR have been reviewed. Conclusion:	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The requirement has been fulfilled.		
<p>b) Accuracy and QA/QC Procedure (VVS, §§ 394-400)</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/ /PDD/ /AM79/ /SOP/ /XLS/	<p><i>Description:</i></p> <p>The project owner records the date and time of any exceptional event that occurs. The total amount of gas injected from the cylinder bundle into the reclamation line between 5 hours prior to the event and until the time that the injection line was shut off is considered as $EXC_{SF_6,y}$. The total amount of gas taken from the continuous measurement of the flow meter on the injection line is determined from $MI_{Gas,i}$.</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, §§ 389-393)</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/ /RD/ /CAL/	<p><input checked="" type="checkbox"/> Correct <input type="checkbox"/> Not correct (initial assessment)</p> <p><i>Description:</i></p> <p>The amount of SF_6 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 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 SF_6 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>	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
		The value is correct.		
E. Calculation of Emission reductions				
E.1. Traceability (VVS, §§ 353, 356) <i>Assess if the calculation is fully traceable. In case of complex calculations an Excel calculation spreadsheet shall be used. All applied formulae must be visible.</i>	/XLS/	<i>Description:</i> An unprotected Excel calculation sheet was used. All applied formulae are visible. No information gaps have been identified. <i>Verifier's action:</i> The Monitoring workbook has been checked. <i>Conclusion:</i> The calculation is completely traceable.	OK	OK
E.2. Parameter consistency (VVS, § 356) <i>Assess whether all internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet? Consider only the correct data exchange between the monitoring report and the calculation spreadsheet (if any). Further ensure the consistency of notations for all parameters in the PDD, MR and calculation spreadsheet.</i>	/XLS/ /MR/	<i>Description:</i> All the internal and external parameters and data used for calculation are applied consistently in the monitoring report and the calculation spreadsheet. <i>Verifier's action:</i> The MR and Monitoring workbook were checked to be appropriate and consistent with those in registered PDD. <i>Conclusion:</i> CAR2 is raised.	CAR2	OK
E.3. Correctness of calculation (VVS, §§ 401-402) <i>Check if the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology. Assess whether the provided calculations are complete and reflect all requirements of the monitoring plan.</i>	/XLS/ /AM79/ /PDD/ /MR/	<i>Description:</i> According to AM0079 (Version 2), the applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and the approved methodology <i>Verifier's action:</i> The MR, MP of the project, ER spreadsheet and the methodology AM0079 version 2 were checked.	OK	OK

Checklist Item (incl. guidance for the verification team)	Reference	Verification Team Comments (Means and results of assessment)	Draft Concl.	Final Concl.
<i>Check especially that no standard or old values have been used for calculation where calculations based on up-to-date data is required.</i>		<p><i>Conclusion:</i></p> <p>The applied formulae and methods for calculating baseline emissions, project emissions and leakage are in accordance with the monitoring plan and / or the approved methodology.</p>		
<p>E.4. Comparison with ex-ante determined emission reductions (F-CDM-FORM, Attachment, E.5; E.6) <i>Check if the MR includes a comparison of actual values of the monitoring period with the estimations in the registered PDD.</i> <i>Check further whether in case of an increase an appropriate explanation is included in the MR.</i> <i>Assess in case of a significant increase whether this is due to technical or organisational changes within or outside the control of the PP and – if this is case – whether the PRC have been considered appropriately.</i></p>	<p>/XLS/ /MR/ /PDD/ /RD/</p>	<p><i>Description:</i></p> <p>The calculated value was found to be proportionally lower than the ex-post determined value, thus no further justification was required.</p> <p><i>Verifier's action:</i></p> <p>The calculation and comparison have been cross checked against the of MR, ER sheet, monthly aggregated data and registered PDD check</p> <p><i>Conclusion:</i></p> <p>The comparison has been justified. By applying the same GWP-CH4 value as specified in registered PDD, the ex-post GHG removals is lower than the ex-ante calculated value</p>	OK	OK

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	$\pm 0.100\%$	05/02/2009	25/05/2012	24/05/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Mass Flow Meter	$Q_{SF6,k,j,y}$	14111339	08-M-243	$\pm 0.100\%$	21/11/2008	21/05/2012	20/05/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Mass Flow Meter	$MR_{Gas,i,y}$	14069408	09-M-090	$\pm 0.100\%$	27/05/2009	25/05/2012	24/05/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Weighing Scale	$MS_{Gas,i,y}$	FR3		0.5kg/5000kg	05/01/2012	12/12/2013 25/11/2015	11/12/2015 24/11/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Gas Chromatograph	$w_{SF6,i}$ $L_{SF6,y,i,j}$	CN10622030	UAAA003		20/12/2013	01/12/2014	03/12/2016	<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	$\pm 0.100\%$	08/06/2009	21/05/2012	20/05/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To:
Mass Flow Meter(Purge)	$L_{SF6,y,i,j}$	14014074	09-M-091	$\pm 0.35\%$	08/06/2009	24/05/2012	23/05/2017	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes	From: To: