



**Verification and certification report form for
CDM project activities
(Version 03.0)**

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

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Reducing Gas Leakages within the Titas Gas Distribution Network in Bangladesh (10077)
Scale of the project activity	☒ Large-scale ☐ Small-scale
Version number of the verification and certification report	2.0
Completion date of the verification and certification report	05/06/2020
Monitoring period number and duration of this monitoring period	2, 23/12/2018- 07/11/2019
Version number of the monitoring report to which this report applies	2
Crediting period of the project activity corresponding to this monitoring period	29/01/2017-28/01/2027
Project participants	Titas Gas Transmission & Distribution Co. Ltd. (TGTDCCL); NE Climate A/S
Host Party	People's Republic of Bangladesh
Applied methodologies and standardized baselines	AM0023 (Version 04.0.0)- Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities
Mandatory sectoral scopes	10. Fugitive emissions from fuels (solid, oil and gas)
Conditional sectoral scopes, if applicable	N.A
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	3,838,690 tCO ₂ e
Certified amount of GHG emission reductions or GHG removals for this monitoring period	3,481,722 tCO ₂ e
Name and UNFCCC reference number of the DOE	TÜV SÜD South Asia Private Limited (TÜV SÜD)-E-0005
Name, position and signature of the approver of the verification and certification report	 Eswar Murty

	Sr. Manager Certification Body "Environment and Energy" TUV SUD South Asia Pvt Ltd. Pune, India
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SECTION A. Executive summary

TÜV SÜD South Asia Pvt. Ltd. has performed the 2nd Verification of the aforementioned CDM project activity. The verification is based on the currently valid documentation of the United Nations Framework Convention on Climate Change (UNFCCC).

The verification process includes three phases:

- Desk review of documents;
- On-site audit and follow-up interviews with the relevant personnel;
- Resolution of outstanding issues and the issuance of final verification report and opinion.

The CDM project has reduced gas leakages from components in the natural gas distribution system in Greater Dhaka and its adjacent areas in the People's Republic of Bangladesh, a Least Developed Country. The length of the natural gas distribution system operated by Titas is 12,253.22 km. Construction began on the distribution system in the mid-1960s and over the years the system has not been adequately maintained. As a result, a significant percentage of the natural gas throughput (predominately methane (CH₄)) leaks from components in the system and is released into the atmosphere contributing to global warming.

The project has surveyed 503,974 gas pressure regulation stations across the Titas gas distribution system and identified and repaired 38,092 leaks, leading to emissions reductions of methane, a potent greenhouse gas (GHG).

- Project participants are Titas Gas Transmission & Distribution Co. Ltd. (TGTDCCL); NE Climate A/S.
- The project is hosted by Titas Gas Transmission & Distribution Company Ltd. (referred to as "Titas" in this PDD). The company's headquarters are based in Dhaka, Bangladesh with the coordinates of 23.7000°N, 90.3833°E.
- The project has been implemented across Titas' distribution network which covers Greater Dhaka and its adjacent areas, and includes the following twelve regions: Dhaka, Narayanganj, Narsingdi, Munshigonj, Manikgonj, Gazipur, Tangail, Mymensingh, Jamalpur, Sherpur, Netrokona, and Kisoregonj.

1 Corrective Action Requests (CAR) and 3 Clarification Requests (CLs) were raised during the course of verification process and have been successfully closed.

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, Verifier, Technical and Country Expert	EI	Joshi	Akhilesh	TUV SUD South Asia	✓	✓	✓	✓

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	Murty	Eswar	TUV SUD South Asia
2	Technical Expert (10.1)	IR	Shukla	Atul	TUV SUD South Asia
3	Approver	IR	Murty	Eswar	TUV SUD South Asia

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

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 errors	Medium	Human error is likely to occur if the monitoring personnel are not trained well or inexperienced in data recording procedures and monitoring processes.	Wherever there is a greater likelihood of errors and chances of incorrect transfer of data, effective data verification should be done on those days/months data. Data related to holiday months need to be checked thoroughly.
2	Design of data management	Medium	Use of spreadsheets without adequate data control, changes/updates, version tracking, traceability and security	Depending on how data is generated, processed, and reported, place greater emphasis on verifying data captured and processed manually and/or in spreadsheets versus those that are generated from an automated system.
3	Manual data	Low	Typographic errors in the spreadsheets and log books while recording.	Require the PPs to assess all the data again and confirm that no further errors are made.

C.2. Consideration of materiality in conducting the verification

The errors identified in the project are below the threshold limit of materiality and hence not material. The GHG emission reductions are calculated without material misstatements.

SECTION D. Means of verification**D.1. Desk review**

Publication has been initiated before the verification activities started. Based on the published MR the assessment team performed a desk review to:

- verify the completeness of the data and the information presented in the MR,
- check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD and verify that the applied methodology was carried out. Particular attention was paid to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures.,

- evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

D.2. On-site inspection

Duration of on-site inspection: 11-12 March 2020				
No.	Activity performed on-site	Site location	Date	Team member
1.	Plant inspection, location of equipment, monitoring of current parameters, risks, project boundaries	PSL office	11-12 March 2020	Akhilesh Joshi
2	Verified the technical description, daily and monthly plant records, outage details, evidence documents, troubleshooting procedure	TGTDCL office	11-12 March 2020	Akhilesh Joshi
3	Verified the socio-economic issues, Environmental legislation, Rules and regulations, consent status during monitoring period	Various leaks locations	11-12 March 2020	Akhilesh Joshi
4	Assessed the calibration frequency and status of the monitoring equipment, accuracy label as described in the registered PDD, QA/QC procedures, responsibility, data review and controlling, training of monitoring personal		11-12 March 2020	Akhilesh Joshi
5	Assessed the emission reduction procedure and verified the emission reductions excel sheet data with plant records		11-12 March 2020	Akhilesh Joshi

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Huque	Asma	Prokaushali Sangsad Ltd (PSL)	11/03/2020-12/03/2020	Project design and implementation	Akhilesh Joshi
2	Ahmed	Tanvir	PSL		Project design and implementation	
3.	James	Kevin	Climate Compass LLC (Through Video conferencing)		Monitoring plan and the Practice Project information flow Emission Reduction calculations	
4.	Potapenko	Voladymyr	MBS Ltd		• QA/QC procedures • Personnel training and relevant records • Monitoring instruments and calibration	
5	Ghosh	Tuhin Shuvra	PSL		Monitoring instruments and calibration	
6	Mostofa	Rob	PSL			
7	Potapenko	Oleksondz	MBS Ltd			
8	Islam	Md.Zawarul	PSL		Compliance with local laws and regulations	
9	Haque	S.M. Rezaul	TGTDCL		Project database and the uncertainties Compliance with local laws and regulations	
10	Ashadudzzaman	Md.	TGTDCL			

D.4. Sampling approach

Since it is not practical to individually verify all 38,092 leaks within the project boundary through on-site inspections, Acceptance Sampling approach was employed by verification team, which follows the “Standard for sampling and survey for CDM project activities and programme of activities”, version 8.0.

TUV SUD has taken the “Table 1 Sample Size and Acceptance Number” of the guideline into consideration in order to select a random sample from the PP data, and the AQL of 1%, the UQL of 10%, and the producer's and consumer's risk both at 5% were selected. Therefore, a sample size (n) of 61 should have been verified at least, and accordingly with 2 as the maximum number of discrepancies (acceptance number) between the verified data and the PP data.

However a total number of 69 samples were selected on random basis covering the areas in the boundary.

The list of the samples of leaks verified is provided below.

S.No	Leak code	Address of the Leak
1.	GA-R.3.RR.39.1	Gazipur, Tongi, Bou Bazar, H/N - 33/34
2.	GA-R.3.RR.354.1	Tongi, East Arichpur, Shohid Shirty School Road, Rasul bag, Delwar Hossain
3.	GA-R.3.RR.406.1	Tongi, East Arispur, Kazi Nazrul Islam Road, H# 272
4.	GA-R.3.RR.411.1	Tongi, Saraebangla Road, Middle Arispur, Maynuddin
5.	GA-R.3.RR.412.1	Tongi, Saraebangla Road, Middle Arispur, Sufia Begum
6.	GA-R.3.RR.413.1	Tongi, Saraebangla Road, Middle Arispur, H # 158
7.	GA-R.3.RR.509.1	Tongi, Middle Arichpur, She-re-Bangla road, Haque shaheb
8.	GA-R.3.RR.510.1	Tongi, Middle Arichpur, She-re-Bangla road, Separot Khan
9.	GA-R.3.RR.511.1	Tongi, Middle Arichpur, She-re-Bangla road, H # 20 (Martin Rozario)
10	GA-R.3.RR.561.1	Gazipur, Tongi, East Anichpur, Shohid Sriti School Road, Rubbana Martek, Moni Monjil, H # 78
11	GA-R.3.RR.561.3	Gazipur, Tongi, East Anichpur, Shohid Sriti School Road, Rubbana Martek, Moni Monjil, H # 78
12	GA-R.3.RR.608.1	Gazipur, Tongi, East Arichpur, Shohid Sriti School Road, Rupbaner Martek, Near Baitul Tara Jame Mosjid, H # 95, Md. Jamal Uddin
13	GA-R.3.RR.609.1	Gazipur, Tongi, East Arichpur, Kazi Nazrul Islam Road, Beside of Baitul Tara Jame Mosjid, H # 291, Md. Manik Miah
14	GA-R.3.RR.611.1	Gazipur, Tongi, East Arichpur, Kazi Nazrul Islam Road, Beside of Railline, H # 388, Md. Yousuf Ali (Master)
15	GA-R.3.RR.612.1	Gazipur, Tongi, East Arichpur, Kazi Nazrul Islam Road, H # 351/1, Abdul Jabbar Kha
16	GA-R.38.RR.2652.1	Savar, Ashulia, Dandabor, Korim box Road, Block - A, Mohshin
17	GA-R.60.RR.3157.2	Tangail, Purbo Adalate Para, Keya Chinama Hall Road, Md . Joir Uddin Mia
18	MD-3.27.RR.853.1	Rampura, Banasree, Block-C, Road # 3, H # 3
19	MD-3.27.RR.854.1	Rampura, Banasree, Block-C, Road # 3, H # 12
20	MD-3.27.RR.859.1	Rampura, Banasree, Block-B, Road # 6, H # 33
21	MD-3.27.RR.909.1	Banashree, Block - A, Rd # 5, H # 28
22	MD-3.27.RR.1004.1	Banashree, Block-C, Rd # 2, H # 27/29
23	MD-3.27.RR.1007.2	Banashree, Block-C, Rd # 4, H # 35
24	MD-3.27.RR.1009.1	Banashree, Block-C, Rd # 4, H # 30/1
25	MD-3.27.RR.1010.1	Banashree, Block-C, Rd # 4, H # 26
26	MD-3.27.RR.1013.1	Banashree, Block-C, Rd # 4, H # 16
27	MD-3.27.RR.1015.1	Banashree, Block-B, Rd # 4, H # 28
28	MD-3.20.RR.1026.1	Shantinagar, Pir Shaheber Goli, H# 62
29	MD-3.20.RR.1027.1	Shantinagar, Pir Shaheber Goli, H# 62
30	MD-4.30.RR.233.1	Banani,Block-F,Road-5,H#84
31	MD-4.30.RR.234.1	Banani,Block-F,Road-5,H#80
32	MD-4.30.RR.235.1	Banani,Block-F,Road-5,H#114
33	MD-4.28.RR.262.1	South Badda, Gulshan, H # 48/1
34	MD-4.31.RR.262.1	Uttara, Sector#03, Road#02, H#23
35	MD-4.2.RR.263.1	Tejgaon, East Nakhal Para, H#273
36	MD-4.28.RR.263.1	South Badda, Gulshan, H # Ba-48, Abdul Mannan
37	MD-4.28.RR.852.1	Gulshan- 2, Road# 101, H# 18
38	MD-4.28.RR.853.1	Gulshan- 2, Road# 100, H# 35
39	MD-4.28.RR.854.1	Gulshan- 2, Road# 100, H# 35
40	MD-4.28.RR.856.1	Gulshan- 2, Road# 100, H# 35
41	MD-4.28.RR.861.1	Gulshan-2, Rd # 102, H # 19
42	MD-4.28.RR.909.1	Gulshan-2, Rd # 50, H # 13
43	MD-3.20.RR.1028.1	Shantinagar, Bhasani Goli, H# 63/1, Sufia View
44	GA-R.3.RR.357.1	Tongi, Maddho Arichpur, She-re-Bangla Road, Afzal Khan Dulu (Opposite Side of Rahman Commisionar House)
45	GA-R.3.RR.358.1	Tongi, Moddho Arichpur, Monsur Ali Road, H # 133

46	GA-R.3.RR.360.1	Tongi, Moddho Arichpur, Monsur Ali Road, H # 286 (Shofiullah)
47	GA-R.3.RR.362.1	Tongi, Moddho Arichpur, Monsur Ali Road, H # 140 (Maya Begum)
48	GA-R.3.RR.363.1	Tongi, Moddho Arichpur, Monsur Ali Road, H # 120,121
49	GA-R.3.RR.455.1	Tongi, Modhumita, Arichpur, Hazi Yunus Ali Shorkar Road, Mostofa Sheikh, H # 114
50	GA-R.3.RR.564.2	Gazipur, Tongi, West Arichpur, Hazi Unus Ali Sarkar Road, LUCID - DEW, H # 183
51	GA-R.3.RR.565.1	Gazipur, Tongi, West Arichpur, Hazi Unus Ali Sarkar Road, Bosir Shaheb, H # 278
52	MD-3.26.RR.2983.1	New Eskaton, Dilu Road, H # 7
53	MD-3.26.RR.2984.1	New Eskaton, Dilu Road, H # 9
54	MD-3.26.RR.2985.1	New Eskaton, Dilu Road, H # 16
55	MD-3.26.RR.2986.1	Gausngar, New Eskaton, H # 20
56	MD-3.26.RR.2987.1	Gausngar, New Eskaton, H # 20
57	MD-3.26.RR.2988.1	Gausngar, New Eskaton, H # 20
58	MD-3.26.RR.2989.1	Gausngar, New Eskaton, H # 20
59	MD-3.26.RR.2990.1	Gausngar, New Eskaton, H # 20
60	GA-R.32.CR.3.1	Gazipur, Jaydebpur Bazar, Surma Hotel And Mini Chinese
61	GA-R.91.RR.3.1	Chandra, Sofipur, Kortoa Road, H # I-51
62	GA-R.32.CR.4.1	Gazipur, Rajendropur Cant. 58(Arty), House #275
63	GA-R.91.RR.4.1	Konabari, Harina Chala, Parijat Road, Mr. Jahangir Alam
64	GA-R.60.CR.5.1	Tangail, New Busstand, Super Tayer Sold
65	GA-R.91.RR.5.1	Konabari, Harina Chala, H # 753
66	GA-R.91.RR.6.1	Konabari, Harina Chala, H # 707
67	GA-R.60.CR.7.1	Tangail, Nirala More , Nirala Ghak, Cust # 260-010050
68	GA-R.91.RR.7.1	CHANDRA, SOFIPUR, KORTOA ROAD, H # D-21/41
69	GA-R.3.RR.8.1	Tongi, Modha Arichpur, Shere Bangla Road, H # 30

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			
Compliance of the project implementation with the registered PDD		1	
Post-registration changes			
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline			
Compliance of monitoring activities with the registered monitoring plan			
Compliance with the calibration frequency requirements for measuring instruments	1		
Assessment of data and calculation of emission reductions or net removals	2		
Others (please specify)			
Total	3	1	0

SECTION E. Verification findings

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

Means of verification	To check the compliance of the monitoring report with the latest monitoring report form available at UNFCCC
Findings	The latest version of MR form available at UNFCCC is 7.0 and same has used by the project proponent in the monitoring report.
Conclusion	TUV SUD confirms that the monitoring report has been prepared on the at least version of the MR available at UNFCCC.

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

NA

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

Means of verification	This project has reduced methane leaks at above-ground infrastructure in the Titas Gas Transmission & Distribution Co. Ltd. (Titas) gas distribution system. Titas is the managing entity of the gas network under project activity. The project utilized various advanced leak detection equipment to identify leaks throughout the above ground infrastructure of Titas' gas distribution system. The main leak detection and quantification technology used in the project is the "Hi-Flow Sampler" (HFS) which is a machine designed to detect and measure leaks in gas infrastructure. The project has an ongoing monitoring program to ensure leak repairs remain intact. In addition, Titas tracks the continued operation of all the various gas lines across its system. In the case where a particular section of the distribution system is not operational (for example during a large scale repair), the hours during which the system is not operational are tracked. The total hours of operation of all the leaks affected by a given outage are then adjusted to reflect the reduced hours of operation. The Project is funded by NE Climate which is one of the PP, which provides the survey equipment, repair materials, and project transportation for the project. NE Climate has hired Climate Compass as a technical partner to help manage the project implementation and compliance with the approved PDD and methodology. Climate Compass has hired M.B.S as a 3rd party technical consultant to help confirm through regular inspections that the project is compliant with the methodology and PDD. NE Climate has also hired the Dhaka based company Prokaushali Sangsad Limited (PSL), to do much of the project implementation work on a day-to-day basis. The PSL team includes project managers to direct the daily workflow, database managers to ensure the data gathered from the project is recorded correctly, operators in the field who take the appropriate measurements and log the data, and repairmen. Titas Gas also provides several employees who contribute to the database and measurement functions. The roles and responsibilities of each of the above parties are discussed and the respective documentation has been verified by the audit team. The training certificates of the monitoring personnel, calibration team are checked and verified by the audit team The audit team has checked and verified the leaks on a sample basis covering all the areas in the boundary. The collection of data from the leaks, unique numbering and monitoring and repairs of the leaks were verified on site for the selected number of samples. The data has been checked with the plant records.
Findings	CAR has been raised with respect to the implementation and monitoring systems that PP identified and repaired 38,092 leaks during this monitoring period, but ER spreadsheet only states 38,013 leaks. PP as a response, have now clarified that the number referred in MR is the number of leaks identified in baseline study, to close out the issue.

Conclusion	The project is fully implemented according to the description presented in the registered PDD. The verifier confirms, through the visual inspection that all physical features of the CDM project activity including data collecting systems and storage have been implemented in accordance with the registered PDD. The project activity is completely operational and the same has been confirmed during the on-site visit. The operation of the project activity complies with all applicable statutory requirements in Bangladesh. All the equipment and meters have been found installed and operational. There was no diversion from the implementation details given in the registered PDD during this reported monitoring period. The verification team has verified the implementation of the project activity as per VVS PA v2.0 and found to be correct. The project activity has been implemented and operated as stated in the registered PDD which has been verified during the site visit.
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E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents¹

Not applicable.

E.4.2. Corrections

Not applicable.

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

Not applicable.

E.4.4. Inclusion of a monitoring plan

Not applicable.

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

Not applicable.

E.4.6. Changes to the project design

Not applicable.

E.4.7. Changes specific to afforestation and reforestation project activities

Not applicable.

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	The verification team has checked the actual monitoring plan against the registered monitoring plan and monitoring methodology. Furthermore, the verification team has checked monitoring system during the onsite inspection by means of comparison with the information given in the monitoring plan and monitoring methodology. No applicable tool and
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¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

	standardized baseline involved.
Findings	There is no deviation observed between monitoring plan of the project activity with the monitoring plan of the applied methodology of the project activity.
Conclusion	The monitoring plan complies with the applied methodology and the monitoring system and all applied procedures are completely in compliance to the registered monitoring plan and the methodology. Based on the above observations, the verification team confirms that the registered monitoring plan complied with the approved methodology applied by the registered CDM project activity thus satisfies requirements of VVS PA v2.0.

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	Data and parameters fixed ex-ante as listed in the monitoring report have been crosschecked and reviewed as applicable against the registered PDD, as well as against the applied methodology and other relevant CDM related documentation and IPCC data. The ex-ante and validated fixed value of GWP for CH₄ has been kept at 25 at the time of registration of PDD. The conversion factor to convert Nm³ CH₄ to tCH₄ has been fixed ex ante at 0.0007168 and was verified to be correct. EB 69 – Annex 3 states that the GWPs for the second commitment period of the Kyoto Protocol shall be adopted based on decision 4/CMP7 (i.e. those listed in the column entitled “Global Warming Potential for Given Time Horizon” in table 2.14 of the errata to the contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, based on the effects of greenhouse gases over a 100-year time horizon). Accordingly, the value of 25 has been used in the MR.
Findings	No CAR/CL has been raised.
Conclusion	TÜV SÜD confirms that PP has correctly mentioned the ex-ante parameters in the monitoring report in line with the registered PDD, IPCC data and the applied monitoring methodology. Furthermore, it is confirmed that PP has correctly applied the values that were traced to their respective sources and found correct.

E.6.2. Data and parameters monitored

Means of verification	The verification of the parameters required by the monitoring plan is provided as follows: <table border="1"> <tr> <td>Data / Parameter:</td><td>T_{j,y}</td></tr> <tr> <td>Data unit:</td><td>Hours</td></tr> <tr> <td>Description:</td><td>The time the relevant component, in which physical leak j, occurred, would leak in the baseline scenario and would be eligible for crediting during the crediting year y (hours)</td></tr> <tr> <td>Source of data used:</td><td>Titas operational logs</td></tr> </table>	Data / Parameter:	T_{j,y}	Data unit:	Hours	Description:	The time the relevant component, in which physical leak j, occurred, would leak in the baseline scenario and would be eligible for crediting during the crediting year y (hours)	Source of data used:	Titas operational logs
Data / Parameter:	T_{j,y}								
Data unit:	Hours								
Description:	The time the relevant component, in which physical leak j, occurred, would leak in the baseline scenario and would be eligible for crediting during the crediting year y (hours)								
Source of data used:	Titas operational logs								

Means of verification/Comments:	The recording of hours has been verified from the complete data for each leak j, in the baseline scenario and also from the shutdown records.
Cross-check	---

Data / Parameter:	T_z
Data unit:	Hours
Description:	The time (in hours) the relevant component has been leaking during the crediting year y
Source of data used:	Titas operational logs
Means of verification/Comments:	The recording of hours has been verified from the complete data for each leak z, in the monitoring period and also from the shutdown records.
Cross-check	---

Data / Parameter:	Temperature and pressure of natural gas
Data unit:	°C and bar
Description:	Conditions observed at the point and time of the leak rate measurement
Source of data used:	Hi Flow Sampler
Means of verification/Comments:	The Hi-Flow™ Sampler automatically adjusts readings to standard temperature and pressure (0°C and 101.3 kPa) and this is reflected in the machine's margin of error and are integrated into the results from the hi-Flow sampler device. The audit team has verified the sample leaks from the HFS and the temperature and pressure readings were observed for the respective leak.
Cross-check	--

Data / Parameter:	Ur_j
Data unit:	Fraction
Description:	The uncertainty range for the measurement method applied to leak j
Source of data used:	The manufacturer's documented margin of error ±10% per measurement and the data of each measurement.
Means of verification/Comments:	The uncertainty data is calculated using leakage flow rates and the respective UR of the Hi-Flow sampler used for the leak. The uncertainty calculations are included in the CER calculations spreadsheet and the same have been checked by the audit team for all the leaks.
Cross-check	--

Data /	Ur_z
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	Parameter:	
	Data unit:	Fraction
	Description:	The uncertainty range for the measurement method applied to leak z
	Source of data used:	The manufacturer's documented margin of error $\pm 10\%$ per measurement and the data of each measurement.
	Means of verification/Comments:	The uncertainty data is calculated using leakage flow rates and the respective UR of the Hi-Flow sampler used for the leak. The uncertainty calculations are included in the CER calculations spreadsheet and the same have been checked by the audit team for all the leaks.
	Cross-check	--
	Data / Parameter:	$F_{CH_4, j} / F_{CH_4, z}$
	Data unit:	m^3CH_4/h
	Description:	The leak flow rate of methane for leak (j, z) from the leaking component
	Source of data used:	Hi-Flow™ sampler readings
	Means of verification/Comments:	Measurements with Hi-Flow™ Sampler are automatically adjusted to the methane content, temperature and pressure and, thus, will directly yield methane leak flow rates. The audit team has verified the leak flow rate of methane for leak j and z from the complete data for the leaks.
	Cross-check	--
	Data / Parameter:	BE_{CAP}
	Data unit:	tCO ₂ e
	Description:	Capped quantity of the baseline emissions, defined as the baseline emissions for the first year of the crediting period
	Source of data used:	Monitored baseline emissions during the first year of the first crediting period
	Means of verification/Comments:	Capped quantity as per the methodology
	Cross-check	--
Findings	No CAR/CL has been raised.	
Conclusion	The monitoring has been carried out in accordance with the monitoring plan contained in the registered PDD. All parameters were monitored and determined as per the registered monitoring plan. Referring to the VVS PA v2.0, DOE confirms through on-site verification and from the document review, the actual monitoring system complies with the registered monitoring plan. The substantiation of this conformity on information flow for these parameters including the values in the monitoring reports is reported in the above During the verification, all relevant monitoring parameters of the registered monitoring plan have been verified with regard to the appropriateness of the verification method, the correctness of the values applied for ER calculation,	

	the accuracy and applied QA/QC measures. After appropriate corrections, carried out by the project participant, it is confirmed that all monitoring parameters have been measured / determined without material misstatements and are in line with all applicable standards and relevant requirements. All parameters required to be monitored are recorded at the intervals required by the registered monitoring plan and the applied methodology. On the basis of review of source and nature of available evidences and records, the verification team confirms the quality of evidence for emission reduction provided is sufficient as per VVS PA v2.0
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E.6.3. Implementation of sampling plan

Means of verification	Project participants did not apply a sampling approach for the determination of data and parameters monitored but have monitored the entire leaks. DOE has carried out sampling as per the Sampling and surveys for CDM project activities and programmes of activities Version 8.0
Findings	No CAR/CL has been raised.
Conclusion	DOE has carried out sampling as per the Sampling and surveys for CDM project activities and programmes of activities Version 8.0

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

Means of verification	The audit team has checked the calibration certificates and records of the monitoring equipment as given below: The calibration is done as per the Hi-Flow Sampler manual which suggests a 30 day calibration period by certified staff. Serial Numbers of the Hi-Flow Samplers used in this project and dates of calibration: NQ 1001: 07/09/2019, 27/09/2019, 18/10/2019 16020932: 28/01/2019, 24/02/2019, 24/03/2019, 18/04/2019, 16/05/2019, 16/06/2019, 11/07/2019, 08/08/2019, 03/09/2019, 27/9/2019, 18/10/2019 16020933: 28/01/2019, 24/02/2019, 24/03/2019, 18/04/2019, 16/05/2019, 16/06/2019, 11/07/2019, 08/08/2019, 03/09/2019, 27/9/2019, 18/10/2019 16020936: 28/01/2019, 24/02/2019, 24/03/2019, 18/04/2019, 16/05/2019, 16/06/2019, 11/07/2019, 08/08/2019, 03/09/2019, 27/9/2019, 18/10/2019 The period where there is a deviation in the 30 day calibration period indicates that the monitoring has not been carried out during that particular period. The PP has ensured that at the time of monitoring, the HFS used has been calibrated in line with the specifications of the manual. No measurements during this monitoring period were taken by an HFS outside the manufacturers recommended calibration schedule. In the case where the Hi-Flow Sampler fell out of calibration, it remained unused during the impacted period. The Calibration has been performed by the certified staff and the documents regarding the same have been verified by the audit team.
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Findings	CL 3 has been raised since HFS number 16020932, 16020933, 16020936 calibrated on 31st day (16/06/2019) after previous calibration done on 16/05/2019. PP has clarified that HFS were not being used before conducting calibration on 16/06/2020, after completion of 30th day on 15/06/2020. DOE checked the calibration details and found that HFS error were found within limit during successive calibration on 16/06/2020. Also, the HFS were not used during delayed calibration period. The issue has been closed.
Conclusion	According to VVS PA v2.0, verification team has checked calibration records to confirm it has been conducted as the frequency specified in the registered monitoring plan.

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	The assessment of data and the calculation of baseline emission reduction in the MR and the CER excel sheet have been verified in accordance with the formulae as per the methodology.
Findings	CL 1 has been raised since it was observed that around 931 leaks were not being monitored using GS or HFS due to difficulty in monitoring or any other reasons like not found/ line repaired by Titas etc. However, CER has been estimated for 531 such leaks for 2nd monitoring period. PP as a response has revised the ER spreadsheet to exclude the leaks(risers), which were not monitored during the present monitoring period from ER calculation. The issue is closed. CL 2 has been raised since it was confirmed that HFS memory HFS number NQ1001 memory was corrupted for the leak ID MY-H.74.RR.5137.1. Still the Ers have been calculated for this riser using the same HFS data. PP as a response has clarified that sometimes error may occur during downloading the data from HFS and some records gets corrupted. For these Risers (Leaks), manual hard copy of individual riser is referred for calculation of Ers, the methodology allows any of these sources of data to be used to calculate CERs in cases where the electronic HFS memory is corrupted. In this case the other sources were used to include the leak in the database. The issue is closed.
Conclusion	The calculation of baseline emissions is correct. 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. The calculation of baseline GHG emissions have been carried out in accordance with the formulae and methods described in the registered monitoring plan and the applied methodology. 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. The verification team also confirms that there is no material misstatement in the calculation of reported baseline emissions.

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

Means of verification	Not Applicable
Findings	Not Applicable
Conclusion	Not Applicable

E.8.3. Calculation of leakage GHG emissions

Means of verification	No leakage emissions
Findings	No leakage emissions
Conclusion	No leakage emissions

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

Means of verification	No lack of evidence and missing data were detected during this monitoring period. All values as per the monitoring plan were crosschecked by the verification team against basic monitored data and the calculations were found to be correct. The verification team confirms that all assumptions, emission factors and default values have been correctly justified. All the emission factors, application of maximum permissible errors and default values are explicitly mentioned in the monitoring report. Hence the DOE confirms that the methods and formulae used to obtain the emissions are appropriate. No reporting risks have been identified for the data reported. Troubleshooting procedure, maintenance and calibration of monitoring equipment, monitoring measurements and reporting, record handling and maintenance, reviewing monitored data are available at the plant. All the monitored data are archived partially in electronic and paper form. The data will be kept for the whole crediting period and 2 years after the last crediting period thereby meeting the requirement of the monitoring plan. Verified emission reductions in this monitoring period: 3,481,722 tCO₂e Baseline: 3,481,722 tCO₂e Project emissions: 0 tCO₂e Leakage: 0 tCO₂e
Findings	No CL/CAR has been raised.
Conclusion	The verification team confirms that the emission reductions are real and measurable. The verification team also confirms that there is no material misstatement in the calculation of reported emission reductions. The calculations of baseline emissions, project emissions and leakage as appropriate have been carried out in accordance with the formulae and methods described in the registered monitoring plan and the applied methodology document. TUV SUD confirms that all assumptions, emission factors and default values have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report. Calculations, applied formulae and method for calculation of GHG emission are in accordance with the registered monitoring plan and are in line with the requirements of the applied methodology.

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

Means of verification	TUV SUD compared the ex-ante estimation of emission reductions in the registered PDD with the emission reductions reported by the PPs in the monitoring report.
Findings	The estimated CERs for this monitoring period are 3,838,690 tCO ₂ e however during this monitoring period the reported CERs are 3,481,722 tCO ₂ e. This clearly demonstrates that the reported emission reductions resulted are lower than that of estimated in the CDM-PDD.
Conclusion	TUV SUD confirms that the emission reductions are real and measurable.

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

Means of verification	TUV SUD compared the ex-ante estimation of emission reductions in the registered PDD with the emission reductions reported by the PPs in the monitoring report.
Findings	The emission reduction amount of present monitoring period is lower than the estimated in the registered PDD.
Conclusion	TUV SUD confirms that the emission reductions are real and measurable.

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

Means of verification	The reported GHG emission reductions reported in the monitoring report are 3,481,722 tCO ₂ e (from 1 st January 2013 onwards). As described in detail in Section E of this report, all relevant aspects of the project activity have been assessed in order to determine, whether the claimed emission reductions by the PPs are correctly determined, reasonable and fairly stated and based on verifiable evidence and in accordance with the applied methodology, the registered PDD.
Findings	No CL/CAR has been raised.
Conclusion	TUV SUD confirms that the GHG emission reduction of the present monitoring period is 3,481,722 tCO ₂ e. TUV SUD confirms that the GHG emission reductions reported in the monitoring report and claimed by the PPs are correctly determined and reported. This is acceptable

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

Means of verification	Not applicable
Findings	Not applicable
Conclusion	Not applicable

E.10. Global stakeholder consultation

Means of verification	The DOE has checked whether any comments have been received during global stakeholder consultation process. No comments were received during this process.
Findings	No CAR/CL has been raised.
Conclusion	The DOE concludes that no comments were received during global stakeholder consultation process in line with paragraph 187 of the PCP for project activities version 02.0. and para 391 of the VVS for project activities version 02.0.

SECTION F. Internal quality control

Internal quality control within the team is assured by means of a technical review process that takes place after the on-site assessment and after closure of findings. The internal quality control in the verification process is given by the final decision (Verification and Certification Conclusion) made by the CB "Environment and Energy".

SECTION G. Verification opinion

The DOE confirms that

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the project design document approved by the EB;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the monitoring plan in Monitoring Report is as per the PDD and monitoring plan approved by the EB;
- the approved monitoring plan in the approved PDD is as per the applied methodology;
- There is an audit trail that contains the evidence and records that validate the stated figures.

Based on the information we have seen and evaluated, we confirm that the project activity achieved the verified amount of reductions in anthropogenic emissions by sources of greenhouse gases that would not have occurred in the absence of the project activity.

Verified emission reductions in this monitoring period: 3,481,722 tCO₂e

Baseline:	3,481,722 tCO ₂ e
Project emissions:	0 tCO ₂ e
Leakage:	0 tCO ₂ e

SECTION H. Certification statement

TÜV SÜD South Asia Pvt. Ltd. Has performed the periodic verification CDM project activity "Reducing Gas Leakages within the Titas Gas Distribution Network in Bangladesh". The verification is based on the currently valid documentation of the United Nations Framework Convention on Climate Change (UNFCCC).

The management of NE Climate A/S and Titas Gas Transmission & Distribution Co. Ltd. Are responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project's Monitoring Plan indicated in the registered PDD and the applied methodology

TUV SUD conducted the verification on the basis of the monitoring methodology "AM0023 ver. 4 - Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities", registered PDD, validation report and the monitoring report (version 02) dated 25/03/2020 , emission reduction spreadsheets and all the supporting documentation made available to us.

TÜV SUD confirms that the project is implemented as described in the validated and registered project design documents. Based on the information we have assessed, we confirm that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner.

Pune, 05/06/2020



Eswar Murty

Certification Body "Environment and Energy"
TÜV SÜD South Asia Pvt Ltd

Appendix 1: Abbreviations

Abbreviations	Full texts
ACM	Approved Consolidated Methodology
AQL	Acceptable Quality Level
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CO ₂ e	Carbon dioxide equivalent
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ER	Emission Reduction
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
HFS	Hi Flow Sampler
KP	Kyoto Protocol
MP	Monitoring Plan
MR	Monitoring Report
PCP	Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PS	Project Standard
PSL	Prokaushali Sangsad Limited
TÜV SÜD	TÜV SÜD South Asia Pvt. Ltd
TGTDCL	Titans Gas Transmission & Distribution Co. Ltd
UNFCCC	United Nations Framework Convention on Climate Change
UQL	Unacceptable Quality Level
VVS	Clean Development Mechanism Validation And Verification Standard for PA v2.0

Appendix 2: Competence of team members and technical reviewers



CERTIFICATE OF APPOINTMENT

Mr. Murty, Eswar fulfills the requirements of the Certification Body 'Environment and Energy' of TUV SUD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1: 2006	Other
	☒	☒	☒	☒	☐

Qualification as					
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert
	☒	☒	☒	☒	☒
TA (s)	1.1, 1.2, 3.1, 4.1, 13.1				

Country Expertise					
Region	1	2	3	4	5
	☒	☐	☐	☐	☐
Further countries					

Technical Area	
1.1_Thermal Energy Generation	
1.2_Renewables	
3.1_Energy demand	
4.1_Cement and lime production	
13.1_Solid waste and wastewater	

This appointment is valid until 31/05/2020 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TUV SUD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0031/010.

Date	Signature
01/06/2019	

IS-CMS-CB-POG-01/05, version 03

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CERTIFICATE OF APPOINTMENT

Mr. Shukla Atul fulfills the requirements of the Certification Body Environment and Energy of TUV SUD South Asia Pvt. Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO 14064-1:2006	Other
	☒	☒	☒	☐	☐

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	☐	☐	☐	☐	☐	☒
TA (s)	1.1, 10.1					

Country Expertise						
Region	1	2	3	4	5	Other
	☒	☐	☐	☐	☐	
Further countries						

Technical Area
1.1 Thermal energy generation
10.1 Fugitive emissions from oil and gas

This appointment is valid until 31.05.2020 and is bound by internal requirements of the Certification Body Environment and Energy of TUV SUD South Asia Pvt. Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0009/005.

Date	Signature
01/05/2019	

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CERTIFICATE OF APPOINTMENT

Mr. Joshi, Akhilesh fulfills the requirements of the Certification Body 'Environment and Energy' of TUV SUD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14004-1:2006	Other
	☒	☒	☒	☐	☐

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	☒	☒	☒	☐	☐	☒
TA (s)	1.2, 3.1, 4.1, 10.1					

Country Expertise						
Region	1	2	3	4	5	Other
	☒	☐	☐	☐	☐	
Further countries						

Technical Area	
1.2 Renewables	
3.1 Energy demand	
4.1 Cement and lime production	
10.1 Fugitive emissions from oil and gas	

This appointment is valid until 31.07.2020 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TUV SUD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-00101/003.

Date	Signature
01/08/2019	

IS-CDM-CE-PO3-01/03, version 03

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Appendix 3: Documents reviewed or referenced

No	Author	Title	References to the document	Provider
1	UNFCCC	https://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1418008670.0/view	-	
2	UNFCCC	AM0023 ver. 4 - Leak detection and repair in gas production, processing, transmission, storage and distribution systems and in refinery facilities	Version 4	
3	UNFCCC	Sampling and surveys for CDM project activities and programmes of activities	Version 8.0	
4	NE Climate	Published Monitoring Report	Version.1, Dated 10/02/2020	NE Climate
5	NE Climate	Registered PDD	Version 6, 16/03/2015	NE Climate
6	NE Climate	Final Monitoring Report	Version 2 dated 25/03/2020	NE Climate
7	NE Climate	Hi Flow Sampler Calibration log book	23/12/2018- 07/11/2019	NE Climate
8	NE Climate	List of issues during calibration of Hi Flow Sampler	23/12/2018- 07/11/2019	NE Climate
9	NE Climate	Error list of Hi Flow Sampler	23/12/2018- 07/11/2019	NE Climate
10	Titas Gas	Declaration on the replacement of leaks	25/01/2019	NE Climate
11	PSL	Statement regarding provision of materials	17/01/2019	NE Climate
12	PSL	Statement regarding leak detection and measurement team	17/01/2019	NE Climate
13	Bacharach	Manual for Hi Flow Sampler	May 2005	NE Climate
14	Titas Gas	Statement regarding disconnections	23/01/2019	NE Climate
15	Titas Gas	Statement regarding the team members and their responsibilities from Titas Gas	25/01/2019	NE Climate
16	MBS	Training course completion certificate on Hi Flow Sampler for 37 nos. of operators and managers	10/11/2019	NE Climate
17	MBS	Confirmation of technical skills of PSL and Titas Gas managers to use Hi flow Samplers and Monitoring systems	10/11/2019	NE Climate
18	MBS	Confirmation of the visits by MBS personnel for training, inspection, support to data collection and calibration process	09/02/2018- 13/12/2018	NE Climate
19	NE Climate	CER calculation spreadsheet for the total leak monitoring including outages	25/03/2020	NE Climate
20	Titas Gas/PSL	On field leak data tag/ card to record the data-consisting of Leak code, Date, Operator name, Leak rate. Type of leak, Date of Initial repair, Name of repairmen, Leak rate after repairing,	23/12/2018- 07/11/2019	NE Climate

CDM-VCR-FORM

		Monitoring date of leak		
21	Titas Gas/PSL	Log book data of all leaks before repair and during monitoring	23/12/2018-07/11/2019	NE Climate
22	Titas Gas/PSL	Detailed log sheets of all leaks with leak code, photographs and GPS coordinates	23/12/2018-07/11/2019	NE Climate

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

Table 1. Remaining FAR from validation and/or previous verifications

No remaining FAR from previous verifications.

Table 2. CL from this verification

CL ID	01	Section no.		Date: 18/03/2020
Description of CL				
From the ER spreadsheet, it was observed that around 931 leaks were not being monitored using GS or HFS due to difficulty in monitoring or any other reasons like not found/ line repaired by Titas etc. However, CER has been estimated for 531 such leaks for 2 nd MP. PP to clarify that how is it possible to estimate CERs for the Risers which are considered as difficult to monitor or not monitored for any leaks during 2 nd MP?				
Project participant response				Date: 20/03/2020
CERs should not have been calculated for these risers as no monitoring was completed. The incorrectly added date of monitoring was removed. The excel sheet has been updated to correct this issue and the revised CER total has been changed in the MR.				
Documentation provided by project participant				
Revised CER calculation sheet and updated MR with revised CER total.				
DOE assessment				Date: 20/05/2020
PP as a response, have now revised the ER spreadsheet to exclude the leaks(risers), which were not monitored during the present monitoring period from ER calculation. Same is being verified by Doe through review of revised ER spreadsheet. Therefore, this CL is closed.				

CL ID	02	Section no.		Date: 18/03/2020
Description of CL				
Based on review of Loss of data and error list for HFS during 2 nd MP, it was confirmed that HFS memory HFS number NQ1001 memory was corrupted for the leak ID MY-H.74.RR.5137.1. Still the ERs have been calculated for this riser using the same HFS data. PP to clarify that how the ERs have been calculated for the given leak ID, despite error in data of the corresponding HFS number NQ1001?				
Project participant response				Date: 20/03/2020
As per the methodology and explained in the PDD, multiple redundancies are included in the project to capture the data in case one source of data is lost or corrupted. For each monitoring event, an electronic copy of the key data is produced, a hard copy is made on site, a TYVEK tag is made with key information that is attached to the leak, and the electronic file of the HFS memory is saved. As outlined on page 10 of the MR, the methodology allows any of these sources of data to be used to calculate CERs in cases where the electronic HFS memory is corrupted. In this case the other sources were used to include the leak in the database.				
Documentation provided by project participant				
Electronic version of the leak schematic and picture of the tag				
DOE assessment				Date: 20/05/2020
PP as a response, have clarified that sometimes error may occur during downloading the data from HFS and some records gets corrupted. For these Risers (Leaks), manual hard copy of individual riser is referred for calculation of ERs. Same is provided by the PP and verified by DOE and found consistent with ER spreadsheet. Therefore, this CL is closed.				

CL ID	03	Section no.		Date: 18/03/2020
Description of CL				

Section C of webhosted MR states that “every Hi-Flow Sampler measurement was taken with a unit that was calibrated within at least 30 days prior to that measurement”. However, HFS number 16020932, 16020933, 16020936 calibrated on 31 st day (16/06/2019) after previous calibration done on 16/05/2019. PP to substantiate that, how they accounted for this delayed calibration?	
Project participant response	Date: 23/03/2020
Normally the calibration would happen on the evening of the 30 th day. In this particular case, the units came back late to the office and so the calibration was performed the next morning before the units were sent out for use. Therefore, no measurements were taken by the equipment without being calibrated within the 30-day period recommended.	
Documentation provided by project participant	
-	
DOE assessment	Date: 20/05/2020
PP as a response, have clarified that HFS were not being used before conducting calibration on 16/06/2020, after completion of 30 th day on 15/06/2020. DOE checked the calibration details and found that HFS error were found within limit during successive calibration on 16/06/2020. Also, the HFS were not used during delayed calibration period. Therefore, this CL is closed.	

Table 3. CAR from this verification

CAR ID	01	Section no.		Date: 18/03/2020
Description of CAR				
Section A.1 of webhosted MR states that PP identified and repaired 38,092 leaks during this monitoring period, but ER spreadsheet only states 38,013 leaks. PP to substantiate the same.				
Project participant response				Date: 20/03/2020
This number refers to the original number of leaks that were identified and repaired in the baseline study, not during this monitoring period. This has been clarified in the text in the revised MR.				
Documentation provided by project participant				
Revised MR				
DOE assessment				Date: 20/05/2020
PP as a response, have now clarified that the number referred in MR is the number of leaks identified in baseline study. Same is now clarified in revised MR. Therefore, CAR is closed.				

Table 4. FAR from this verification

No FAR has been raised during this verification.