

12-C Leakage Surveys

DESC O&M Manual - Version 2022.5 October 5, 2022

[1.0 SCOPE](#)

[2.0 REGULATORY REFERENCES](#)

[3.0 LEAK SURVEY PROCEDURES](#)

[4.0 TRAINING/QUALIFICATIONS](#)

[5.0 DOCUMENTATION/FORMS](#)

[6.0 RELATED DOCUMENTS](#)

[7.0 APPENDICES](#)

1.0 SCOPE

This chapter describes the procedures for conducting leakage surveys on the DENC and DESC distribution and transmission *pipeline* systems, so that hazardous leaks may be eliminated and the release of natural gas from pipeline facilities may be minimized.

2.0 REGULATORY REFERENCES

49 CFR Part 192 §§ [192.706](#), [192.723](#), [192.935](#)(d), [ADB-2021-01](#)

South Carolina Code of Regulations [Chapter 103, Article 4. Gas Systems Subarticle 5, 103-465. Inactive Service Lines.](#)

3.0 LEAK SURVEY PROCEDURES

[3.1 Leakage Control Program](#)

[3.2 Business District Determination \[192.723\(b\)\(1\)\]](#)

[3.3 Leak Survey Areas and Intervals](#)

[3.4 Leak Survey Requirements](#)

[3.5 Leak Survey Methods \[192.723\]](#)

[3.6 Surveying Specifications](#)

[3.7 Leaks on Customer Fuel Lines](#)

3.1 Leakage Control Program [[ADB-2021-01](#)]

Leak survey is a part of Company's leakage control program to ensure the safe operation, eliminate hazardous leaks, and minimize releases of natural gas from the natural *gas* system. Leak responses *shall* be initiated and conducted in accordance with all company procedures, including [Chapter 12-B Leak Response, Leak Classification, and Gas Emergencies](#) and the applicable sections of *Emergency* Procedures.

3.2 Business District Determination [[192.723\(b\)\(1\)](#)]

(a) In determining business districts, the following *should* be considered:

- (1) Areas where the public regularly congregates or where the majority of the buildings on either side of the street are regularly utilized for industrial, commercial, financial, educational, religious, health, or recreational purposes; and
- (2) Areas where gas and other underground facilities are congested under continuous street and sidewalk paving that extends to the building walls on one or both sides of the street.
- (3) Any other area that, in the judgment of the operator, should be so designated.

(b) Business district boundaries should be reviewed and modified by the Distribution Engineering Services department annually to ensure consistent interpretation across the system. Input should be gathered from local districts/divisions before final approvals. Throughout the year, any changes to the business districts should be communicated through Distribution Engineering Services so appropriate modifications to GIS polygons and CIS can be made.

3.3 Leak Survey Areas and Intervals

(a) Business Districts [[192.723\(b\)\(1\)](#)]

- (1) A leakage survey of all gas facilities (services, mains, M&R stations, etc) in Business Districts shall be conducted at least once each calendar year, but at intervals not exceeding 15 months.
- (2) This survey includes test of gas in atmosphere, at utility manholes, at cracks in pavement and sidewalks, and at any other locations providing an opportunity for finding gas leaks.

(b) High Pressure Distribution / M Lines

- (1) A leakage survey of High Pressure Distribution Lines should be conducted at least once each calendar year, but at intervals not exceeding 15 months.
- (2) Facilities in the designated survey area including farm tap regulator sets, regulator stations and large customer meter and regulating stations should be included in the high pressure distribution survey. These HP distribution surveys should also include leak survey of pipelines from these facilities back to the tap on the *transmission line*.

(c) Transmission Lines [[192.706](#)] [[192.935\(d\)](#)]

- (1) A leakage survey of all transmission pipelines and transmission facilities shall be conducted twice each calendar year, not to exceed 7-1/2 months.
- (2) Farm tap regulator sets (serving one or two customers), regulator stations and large customer meter and regulating stations located on the right of ways, or readily accessible from the right of ways, should be leak surveyed during the transmission line survey along with the pipelines

(d) Distribution Systems and Customers outside of Business Districts [[192.723\(b\)\(2\)](#)]

- (1) A leakage survey of all gas distribution systems and facilities serving customers shall be conducted at least once every 5 calendar years at intervals not exceeding 63 months. This should be done by surveying all residential customers in one year and then again in 5 years, or by surveying a different portion of residential customers each year until all are surveyed in a 5-year period (i.e. 20% each year for 5 years).
- (2) Distribution facilities in the designated survey area including farm tap regulator sets, regulator stations and large customer meter and regulating stations should be included in the distribution survey. These distribution surveys shall also include leak survey of pipelines from these facilities back to the tap on the transmission line.

(e) Corrosion Leak Monitoring

Repaired corrosion leak documentation is used to identify areas of active corrosion. Repaired corrosion leaks are periodically reviewed by Engineering. Pipelines identified during this review, or at any time, as in need of replacement due to active corrosion, shall be leak surveyed at least once each 12-month period, not to exceed 15 months, until the pipelines are replaced.

(f) Pipelines and Customers of Interest (Limited Mobility)

Critical Sites (Limited Mobility) are identified by a third part Public Awareness vendor by utilizing a list of identified Standard Industrial Classification(SIC) codes each year. Some SIC codes on the list include hospitals, schools, day care, religious buildings, prisons, recreation, amusement parks, theaters, sports venues and municipal/county/state parks. Gas facilities that are within 1000 ft. of these identified SICs are leak surveyed every 12 months not to exceed 15 months.

State Specific: South Carolina

[South Carolina Code of Regulations Chapter 103, Article 4, Gas Systems Subarticle 5, 103-465, Inactive Service Lines.](#)

(g) Inactive Service Lines (DESC)

- (1) A leakage survey of all inactive service lines on the distribution system shall be conducted at least once each calendar year. For the purposes of this procedure, an inactive *service line* is defined as a service line where the gas meter has been removed and gas is still in the line up to the locked meter cock.
- (2) When surveying inactive service lines, they should be inspected to determine if there is no reasonable possibility for future use (i.e. buildings that are condemned, abandoned, destroyed, uninhabitable, etc.). If no reasonable possibility exists, it should be documented as a Follow-Up and company personnel should review to consider abandoning.

(h) "High Priority" Black Plastic Service (PE 3306) (DESC)

- (1) A leakage survey of all high priority black plastic services should be conducted at least once each calendar year, but at intervals not exceeding 15 months, or replaced / retired within one year of identification as high priority.
- (2) High priority is defined as a black plastic service that has a higher potential risk to leak due to previous repair. These should be identified and maintained at the local office.

3.4 Leak Survey Requirements

- (a) Properly qualified company or contractor personnel shall perform all leakage surveys.
- (b) Leakage surveys may be performed on a more frequent basis. The choosing of a more frequent interval will be the responsibility of the management. Aspects to contemplate when considering an increased leakage survey frequency would include the location of the pipeline, the maintenance history of the pipeline, and the pipeline's operating pressure.

3.5 Leak Survey Methods [[192.723](#)], [[ADB-2020-01](#)] [[ADB-2021-01](#)]

- (a) Gas detector surveys are generally conducted using an optical methane detector (OMD), a flame ionization (FI) unit, a combustible gas indicator (CGI), or infrared detector.
 - (1) The flame ionization unit shall be calibrated weekly during the survey. A response test should be conducted daily on the flame ionization unit during the survey.
 - (2) Other detectors/indicators shall be calibrated according to manufacturer's recommendations or at a minimum calibrated monthly during the survey.
 - (3) Calibrations Records shall be maintained as required. Contract services for leak survey should be required to maintain calibration records for 5 years.
- (b) A remote methane leak detector (RMLD) should be used at:
 - (1) Short below ground water crossings.
 - (2) Above ground locations.

Note: Leaks found using RMLD should be immediately investigated and graded appropriately using other approved methods.

- (c) Vegetation surveying may be used only as a supplemental survey in addition with other approved method. Note: This not a standalone survey method
- (d) Readings should be taken along the pipeline and in places near the pipeline where gas is likely to migrate such as: valve boxes, pavement or sidewalk cracks, utility manholes, aboveground pipelines and meters, and at other locations providing an opportunity for finding gas leaks, and specifically at the connection to the vent piping for indoor meters.
- (e) Gas detector surveys may be conducted while walking the right-of-way or from a slowly moving vehicle. Bar hole testing shall be used to approximate the location of underground leaks. Underground migration may occur since gas will take the path of least resistance. Since natural gas will rise if unrestricted, bar hole tests shall be conducted at depths above the pipeline.
- (f) Soap Testing - A non-corrosive soap or soap-water solution may be used to identify leaks on exposed pipe. The solution is generously applied to the exposed pipe and visually inspected. Continuous formation of bubbles in the solution on the component indicates a leak.

3.6 Surveying Specifications [[ADB-2021-01](#)]

- (a) The leak survey technician shall be provided with an electronic list of addresses and maps of the area to be surveyed. The surveyor will submit an electronic GPS compliance record indicating the path the inspector took to survey the scheduled area.

- (b) Through an electronic format each address will be documented as it is surveyed. If any follow-up work is required the survey technician shall document the type of work needed which will auto-create an order for the respective local office.
- (1) Follow up orders may include atmospheric corrosion, service lines that need to be abandoned, regulators that need to be removed, bad dog update on CIS, etc. Follow up orders generated from leak survey shall be completed according to company requirements
 - (2) If a leak survey technician "can't gain entry" to survey an entire service line or the specific address to survey is not found ("not in field"), the "CGE" or "NIF", respectively, shall be documented as a follow up order. These orders shall be completed or re-surveyed as part of the current year's survey.
- (c) All leaks found shall be documented. Leaks shall be graded according to [Chapter 12-B Leak Response, Leak Classification, and Gas Emergencies](#).
- (1) If a leak survey technician finds a grade 1 leak, the technician shall immediately contact Central Dispatch. Central Dispatch shall create the emergency order which will dispatch company personnel to the scene. The leak survey technician shall obtain the LDF number associated with the order and not leave the scene until company personnel arrive.
 - (2) If a leak survey technician finds a grade 2 or grade 3 leak, the technician shall document through the electronic format in which an order will auto-generate for the respective local office. A grade 2 leak should be repaired within 6 months of its detection. If a grade 2 cannot be repaired within 6 months the leak must be resurveyed or down-graded. Grade 3 leaks shall be reevaluated during the next scheduled survey, or within 15 months of the date reported, whichever occurs first, until the leak is re-graded or no longer results in a reading.
 - (i) Technicians shall verify if grading leaks as a grade 3 is allowed in the service territory they are surveying.
 - (ii) Surveys performed by contractor may fix grade 2/3 leaks on inlet or *outlet* swivels by tightening only if *OQ* qualified. Surveyor shall create a "found and fixed" leak record with photos attached.
 - (iii) The leak survey technician shall tie a ribbon or attach a flag when a Grade 2 or 3 leak is identified at an aboveground location (photos shall be submitted with an automatic electronic notification).
 - (iv) The leak survey technician shall mark an identified underground Grade 2 or 3 leak with a flag or paint and take a photograph showing location relative to landmarks (photos shall be submitted with an automatic electronic notification).
- (d) Leaks shall be responded to and repaired according [Chapter 12-B Leak Response, Leak Classification, and Gas Emergencies](#). Once a leak is repaired, complete the order and Leak Damage Failure record.

3.7 Leaks on Customer Fuel Lines

- (a) If, during the course of surveying, a leak is found on a customer's fuel line, follow standard procedure for grading leaks.
- (1) If any potential danger or concern exists for the customer the leak *must* be graded a Grade 1 and responded to immediately.
 - (2) If the leak is graded a Grade 2, a Cust Fuel Line order will be created in which a company employee will investigate the leak within 30 days. If the leak cannot be repaired at that time by the employee and requires the customer to do fuel line repair work:
 - (i) The Cust Fuel Line order shall be marked 'incomplete' with appropriate comments, indicating customer was notified of the situation, or if a letter needs to be sent to the customer.
 - (ii) Gas Operations personnel are responsible for sending the customer notification letters. Operations personnel are responsible for re-dating

- (iii) Once the customer is notified, they should be given 30 days to make the repair.
- (iv) The Cust Fuel Line order shall be resent in 30 days to ensure the customer has made repairs.
- (v) Failure to do so may result in additional measures that may include the customer's gas service being discontinued
- (vi) The order and LDF application should not be completed until it is verified that the leak has been eliminated.

(b) Leaks on customer fuel lines should not be graded a grade 3.

4.0 TRAINING/QUALIFICATIONS

See the appropriate system Operator Qualification Program.

5.0 DOCUMENTATION/FORMS

Record Retention: [[192.709](#)][[192.935](#)][[192.947](#)]

Distribution survey records shall be stored for five years. Five year record retention is defined as all records from the previous five years plus records completed year to date. Summary reports and queries will be available.

As long as a line remains in service, the transmission records documenting leak surveys, each leak discovered, and line breaks shall be maintained.

These are minimum requirements. Periodically, designated records as listed above or copies of such shall be forwarded to Engineering for permanent filing. Once placed in the permanent file, these on records shall be kept for the life of the pipeline. Permanent files may be kept in a variety of media including but not limited to paper, micrographic or electronic. Engineering is responsible for designating records to be placed into the permanent file and maintenance of such. No permanent records may be destroyed or disposed of without prior approval from the General Manager-Engineering & Construction.

6.0 RELATED DOCUMENTS

See also:

- [PHMSA Advisory Bulletin \(ADB-2020-01\)](#): Requirements for Inside Meters and Regulators
- [PHMSA Advisory Bulletin \(ADB-2021-01\)](#): Eliminating Hazardous Leaks and Minimizing Releases of Natural Gas from Pipeline Facilities

7.0 APPENDICES

None at this time.

(UNCONTROLLED IF PRINTED)