



Procedure Number: **70.10.10**
Title: **Leak Survey**

1.0 Purpose

This procedure describes requirements for leak surveys. These procedures are directed at minimizing risks by proactive detection of leaks. These procedures comply with, and in many cases exceed, federal and state requirements.

2.0 Scope

This procedure identifies the various type and frequency of leak surveys employed by UGI. This procedure is supported by the following Gas Operation Manual GOM procedures:

- 70.10.20 Leak Investigation and Survey Equipment
- 70.10.30 Mobile Leak Survey
- 70.10.40 Walking Leak Survey
- 70.10.50 Inside Service Leak Survey and Inspection
- 70.20.30 Propane Gas Systems Leak Survey and Classification

3.0 Summary of Leak Surveys

Leak surveys generally fall into the following types:

- Scheduled based on materials. See Table 70.10.10-1: Surveys Based on Materials
- Scheduled based on location. See Table 70.10.10-2: Surveys Based on Location
- Unscheduled surveys triggered by outside events or Special Surveys. See Table 70.10.10-3: Triggered Special Surveys
- Other surveys. See Table 70.10.10-4: Other Scheduled Surveys
- Temporary Additional Surveys. See Appendix A: Additional Special Surveys

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005	04/30/2019	Mark Connors	05/01/2019

4.0 Survey Details – Schedule by Materials

4.1 Service Line - Unprotected Metallic Services

Unprotected metallic services shall be leak surveyed once a calendar year. Unprotected metallic services include service lines containing any of the following materials:

- A. Bare steel with no CP
- B. Coated steel with no CP
- C. Copper
- D. Ductile iron

These service lines shall be leak surveyed from the main to the first building wall, regardless of the meter location. If any portion of a service line contains unprotected metallic materials, the entire service line shall be surveyed. The walking method should be used.

4.2 Service Line – Plastic and Protected Steel (formerly SLIP)

Plastic and cathodically protected steel service lines shall be surveyed on at least a 5-year cycle, not-to-exceed 63 months. These service lines shall be leak surveyed from the main to the first building wall, regardless of the meter location. The walking method should be used. Atmospheric Corrosion Inspection on steel aboveground piping (see GOM 45.10.30 for additional information) shall be surveyed on at least a 3-year cycle, not-to-exceed 39 months.

4.3 Main - Cast Iron – Annual Patrol (CIP)

All cast iron mains shall be leak surveyed on an annual basis. Electronic or paper maps of the cast iron systems will be provided to the surveyors for the identification of cast iron systems and for the documentation of the survey. The mobile method should be used.

4.4 Main – Cast Iron Frost Patrol

All cast iron mains shall be leak surveyed as part of the Frost Patrol Survey. The start of this survey shall be conducted at a minimum every two weeks, weather permitting, within the dates January 1 to March 31. The survey shall also be conducted outside those dates when the net accumulated frost degree days (FDD) formula or operational winter conditions showing a substantive increase in cast iron leaks resulting from piping breaks. This mobile survey can be conducted a faster pace than the CIP.

4.4.1 Frost Degree Days Method for initiating frost patrol/survey

A 27°F base is used for calculating the net accumulated frost degree-days (FDDs). As an example: if the average daily temperature is 22°F, then the calculated FDDs associated with this is (27°F - 22°F) or five FDDs.

Based on historical data, a correlation has been found that when the accumulated degree-days reach 150, the average frost depth begins to result in a substantive increase of cast iron main breakage. Therefore, once this threshold limit of 150 FDDs has been reached, UGI will initiate frost patrols.

4.4.2 Frost Degree Days Temperature Measuring Points

The UGI companies use two different temperature measuring points for the frost degree day calculation. Hazleton is used for the UGI North region. Reading is used for the UGI South region.

4.4.3 Frost Degree Days Tracking

The Leak Survey Coordinator is responsible for initiating frost surveys when degree day thresholds are reached.

4.5 Bare Steel, Unprotected Coated Steel, Copper and Wrought Iron Main Survey

These mains (outside of business districts) are scheduled based on risk based analysis. At a minimum, these mains will be surveyed every 3 years, not-to-exceed 39 months. Based on DIMP/TIMP risk analysis, higher risk mains will be targeted for more frequent surveys (e.g. less than 3 years). This survey will be performed by either walking or mobile methods as determined by area and by the supervisor managing the survey.

4.6 Protected Steel and Plastic Main Survey

Protected steel and plastic mains (outside of business districts) will be leak surveyed at least once every 5 calendar years at intervals not to exceed 63 months. This survey will be performed by either walking or mobile methods.

5.0 Survey Details – Schedule by Location

5.1 Business District Survey

Characteristics used in determining a Business Districts include the following:

- A. Business districts should include public areas 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 where public buildings are closely spaced, there is wall to wall paving, and where there are numerous underground utilities. Examples of this would be downtown shopping/financial areas.
- B. Generally, the following would not be considered a business district:
 - i. A suburban shopping center or mall if there are few buildings, or there is not wall to wall pavement or utilities are not congested.
 - ii. An industrial complex where public access is limited.

Business districts shall be leak surveyed at least once each calendar year, not to exceed 15 months. A walking-type survey shall be performed on all main and service piping in proximity of the buildings.

5.2 Special Business/Urban Area Survey (Seasonal)

The survey is designed to target gas mains within urban or special business areas of higher consequence. This will be held once during the months of November 1, to March 31 per PUC agreement. UGI will select mains based upon risk based upon risk profile assessments derived from

UGI's pipeline replacement software, coupled with local system knowledge, which include the following:

- proximity to buildings,
- wall-to-wall paving,
- amount and classification of open and repaired leaks,
- main material (e.g. bare steel, unprotected coated steel),

The Special Business/Urban Area Leak Survey is a walking survey. This is carried out in addition to "Business District Surveys".

5.3 Inside Meter – Business District

Inside Service leak survey provides atmospheric corrosion inspection and leak survey of the inside portions of the gas service begin at the inside wall, to the outlet of the downstream meter valve (up to the customer piping). Services terminating indoors within Business Districts shall be done once per year, not to exceed 15 months.

5.4 Inside Meter - Leak Survey – Non-Business Districts

Inside Service leak survey provides atmospheric corrosion inspection and leak survey of the inside portions of the gas service begin at the inside wall, to the outlet of the downstream meter valve (up to the customer piping). These services outside of business districts are performed once every 3 years, not to exceed 39 months.

5.5 Transmission Leak Survey

All Transmission Lines must be leak surveyed annually. This survey will be performed by either walking or mobile methods.

5.6 Transmission Leak Survey – Class 3 & 4 Locations

All Transmission Lines in Class 3 or 4 locations must be leak surveyed twice per year at intervals not exceeding 7-1/2 months. This survey will be performed by either walking or mobile methods. This survey meets the requirement for unodorized gas in class 3 locations and the P&M measures required by TIMP.

5.7 Transmission Leak Survey – Class 4 Location – Unodorized Gas

All Transmission Lines transporting unodorized gas in a Class 4 location must be leak surveyed 4 times per year at intervals not exceeding 4-1/2 months. This survey will be performed by either walking or mobile methods.

5.8 "Places of Public Assembly" Survey – (Maryland only)

"Places of public assembly" means a building or portions of a building used for gathering together of 100 or more persons, the capacity being designated by the fire department for common purposes of deliberation, worship, or services, such as but not limited to churches, schools, hospitals, halls, theaters, and municipal facilities.