Gas Leak Survey

SCOPE AND PURPOSE

Sevier County Utility District contracts the annual leak survey to a third party. This procedure is to provide personnel performing leakage surveys with the necessary procedures to inspect any portion of a natural gas system to detect, classify, and report leakage locations that are venting to the atmosphere as required by §192.706 & §192.723.

A leakage survey shall provide coverage of mains and services underground and aboveground; in all areas where an operator can reasonably be expected to carry the equipment.

RESPONSIBILITY

The System Maintenance Supervisor, or other designee, is responsible to ensure that leakage surveys are properly performed.

PERSONNEL SAFETY (Where Applicable)

Do not survey if lightning is present.
Leakage surveys may be conducted by using either a single- or multiple-person survey party.

EQUIPMENT AND MATERIALS

Gas Detector
Probe Rod
Combustible Gas Indicator (CGI)
Maps & Other Records (If Available)
Communication method (Radio, Cell Phone, etc)
Other equipment and materials as needed

OPERATOR QUALIFICATION

This activity is a covered task under the Operator Qualification Plan and may only be performed by or directed and observed by an individual who is currently qualified to perform surface leakage surveys. Refer to the OQ Plan for specific qualification requirements.

MAINTENANCE & OPERATION OF INSTRUMENTS

Each instrument used for leak detection and evaluation shall be operated in accordance with the manufacturer's recommended operating instructions.

CALIBRATION OF INSTRUMENTS

Each instrument used for leak detection and evaluation shall be calibrated at the following times in accordance with the manufacturer's recommended calibration instructions.

INSTRUCTIONS

The survey shall be conducted at speeds slow enough (under 5 mph) to allow an adequate sample to be continuously obtained by placement of equipment intakes over the most logical venting locations (See 1, 2, 3 below), giving consideration to the location of gas facilities.

1. *For Aboveground Piping:*

- Sampling of the atmosphere should, where practical, take place adjacent to the piping as close as permitted by gas detector design, due to the potential for rapid diffusion of leaking gas to the atmosphere.

2. *For Underground Piping:*
   - Sampling of the atmosphere should, where practical, take place along the route of the pipeline to be inspected as close to the ground surface as permitted by gas detector design, due to the potential for rapid diffusion of leaking gas to the atmosphere.
3. *Areas Where Piping is Under Pavement*
   - Samplings should be taken at, but not limited to, the following locations:
     - Curb Line(s)
     - Available ground surface openings, such as but not limited to:
       - Manholes
       - Catch Basins
       - Sewer, Power, & Telephone Duct Openings
       - Fire & Traffic Signal Boxes
       - Cracks in Pavement of Sidewalks
       - Any Point where Venting is Likely to Occur
       - Foundation Walls
4. *Limitations*
   - Gas detector design or adverse conditions may **limit** the use of this survey method. Examples of adverse conditions that may affect the venting of subsurface gas leaks include, but are not limited to:
     - Moisture
     - Frost
     - Ice & Snow Cover
     - High or Gusting Wind

Leak Classification, & Action Criteria

When evaluating any gas leak indication, the initial step is to determine the grade/severity and perimeter of the leak area and take appropriate action in accordance with Section 12.3 of the Operations and Maintenance Manual or SCUD Procedure # MAINT015. If this perimeter extends to a building wall, the investigation(s) should continue into the building, if possible.

1. Before a leak can be classified, a determination shall be made as to the severity of the leak.
   - The migration of gas shall be determined by establishing the outer boundaries of the indications. These tests shall be made with a CGI.
   - If possible, locate all gas lines in the vicinity of the leak indication. Particular attention should be paid to the location of valves, fittings, tees, stubs, and connections.
   - If possible, all foreign facilities in the area of the search should be identified.
   - Personnel should look for evidence of recent construction activities that may have contributed to the leakage.
   - Gas may also migrate and vent along a trench or bore-hole provided for other facilities. Leaks could occur at the intersection of the foreign facility and the gas pipeline; particular attention should be given to those intersections.
   - Evenly spaced bar or test holes should be used over the gas line(s) suspected to be leaking.
   - If possible, all bar or test holes should be of equal depth and diameter (and down to the pipe where necessary).
   - All CGI readings should be taken at an equal depth and the readings recorded.

2. Based on the evaluation of the location or magnitude of a leak, or both, leaks shall then be graded in accordance with the SCUD's leak classification criteria. The judgment of the personnel at the scene is of the primary importance in determining the grade assigned to the leak.
   - **Note: Underground leaks must be graded using a Combustible Gas Indicator (CGI). A CGI is a device capable of detecting and measuring gas concentrations, of the gas being transported, in the atmosphere.**
3. All leaks shall be repaired / monitored according to the SCUD's leak classification and action criteria.
4. When a leak is to be re-evaluated, it shall be re-evaluated and classified using the same procedure that was used in the initial classification of the leak.

Precautions

- When placing bar or test holes for testing, consideration shall be given to bar or test-hole placement and depth to minimize the potential for damage to gas pipeline facilities and possible injury to personnel conducting the investigation.
- Caution should also be exercised to prevent damage to other underground structures when barholing or excavating.
- Unusual situations may complicate investigation techniques on some occasions such as, but not limited to:
  - Multiple leaks
  - Foreign gases
  - Gas detected in storm-drain or sewer systems
  - Gas detected in telephone or other duct runs
    - These indications should be considered migrating gas leakage until proven otherwise by test or analysis.

REPORTING/NOTIFICATION

The SCUD employee shall complete documentation in accordance with the Operation and Maintenance Manual. SCUD utilizes electronic forms to record and maintain all leaks. The proper electronic form for each leak shall be completed.

ABNORMAL OPERATING CONDITIONS

AOC Main Category (Examples of Specific AOCs)	**Reactions to AOC, as appropriate**	
Unplanned escape of product from a pipeline • Blowing/Escaping gas/Grade I leak	➢ Protect life & Property ➢ Prevent accidental ignition ➢ Notify appropriate personnel ➢ Notify Fire/Emergency Responders ➢ Initiate Emergency Plan	➢ Locate source/cause of AOC ➢ Use appropriate PPE ➢ Stop gas flow ➢ Make repairs/eliminate AOC
Fire or Explosion • Fire on a pipeline • Explosion	➢ Protect life & Property ➢ Prevent accidental ignition ➢ Notify appropriate personnel ➢ Notify Fire/Emergency Responders	➢ Locate source/cause of AOC ➢ Use appropriate PPE ➢ Stop gas flow ➢ Make repairs/eliminate AOC

	➢ Initiate Emergency Plan	
Unplanned Pressure Deviation • Unplanned Decrease in Pressure & or No Press. • Unplanned Increase in Pressure	➢ Protect life & property ➢ Notify appropriate personnel ➢ Initiate Emergency Plan as Needed	➢ Locate source/cause of AOC ➢ Make repairs/eliminate AOC
Unplanned Flow Rate Deviation • Unplanned Increase in Flow • Unplanned Decrease in Flow & or No Flow	➢ Protect life & property ➢ Notify appropriate personnel ➢ Initiate Emergency Plan as Needed	➢ Locate source/cause of AOC ➢ Make repairs/eliminate AOC
Unplanned Status Change • Inoperable/Failure of a Pipeline Component • Stray Current on a Pipeline – Electric Shock	➢ Protect life & property ➢ Notify appropriate personnel ➢ Initiate Emergency Plan as Needed	➢ Locate source/cause of AOC ➢ Make repairs/eliminate AOC
Inadequate Odorization or Reports of Gas Odor • Low odorization • Over odorization & or Odor complaint	➢ Protect life & property ➢ Prevent accidental ignition ➢ Notify appropriate personnel	➢ Locate source/cause of AOC ➢ Make repairs/eliminate AOC
Improper Installation/Misalignment of Components • Improper fitting/component installation • Misalignment of fittings/components	➢ Protect life & property ➢ Prevent accidental ignition	➢ Notify appropriate personnel ➢ Make repairs/eliminate AOC

RELATED PROCEDURES

MAINT015 – Leak Grading Criteria
EMER002 – Inside Gas Leak Investigation
EMER003 – Outside Gas Leak Investigation