

**Title: Outside Leak Investigation**

Check all appropriate boxes

<input type="checkbox"/> SAFETY ALERT	<input checked="" type="checkbox"/> GAS	<input checked="" type="checkbox"/> DISTRIBUTION	<input type="checkbox"/> SUBSTATION ENGR.
<input checked="" type="checkbox"/> MANDATORY COMPLIANCE	<input type="checkbox"/> ELECTRIC	<input checked="" type="checkbox"/> TRANSMISSION	<input type="checkbox"/> TRANS./SUB. M&C
<input type="checkbox"/> RECOMMENDED ACTIONS	<input type="checkbox"/> ESTIMATING	<input type="checkbox"/> OPERATIONS	<input type="checkbox"/> APPLICANT DESIGNER /
<input type="checkbox"/> INFORMATIONAL/CLARIFICATION	<input type="checkbox"/> MAPPING	<input checked="" type="checkbox"/> SERVICE	<input type="checkbox"/> CONSTRUCTION

The purpose of this bulletin is to describe the actions required when performing an outside leak investigation.

This bulletin provides additional instructions for UO Standard S4110 "Leak Survey and Repair of Gas Transmission and Distribution Facilities". It will be incorporated into the next revision of the standard and the issuing of its associated Work Procedure WP4110-13.

**Detailed Instructions**

Always presume a gas leak exists until proven otherwise.

Gas personnel **must** never rely on their sense of smell when investigating a gas leak call. Since odorant can be "washed out" or be insufficient in the system, the sniff test does not relate odor to quantity (volume) of gas-in-air. A combustible gas indicator (CGI) **shall** be used to indicate the percentage of gas present.

**Note: Do not grade gas leaks found on customer's piping and equipment.**

**Note: Do grade gas leaks found on PG&E facilities.**

Any gas leak or odor complaint call is considered potentially hazardous. At a minimum, a CGI instrument, soap can, and probe rod are needed to investigate a reported gas leak.

**Note: A Flame Ionization unit may be used as a search instrument for an outside gas leak investigation. A combustible gas indicator must be used to grade all leaks.**

**A. "Initial" actions:**

If a gas leak is reported to be outside a building or structure or as part of a continuing investigation of an inside odor complaint, **take the following steps:**

1. Turn on, purge, and zero the CGI in an area free of natural gas prior to beginning the gas leak investigation.

***Warning: Do not turn on flashlights, or use portable or hand held radios, cellular phones, or pagers in a gaseous area. Any exception to this must meet the criteria contained within Numbered Document M-83.***

2. Contact the complainant, if possible, and try to gain access to the structure to make safe and to gain additional information about the complaint.
  - Admittance should be gained by knocking on the door. **DO NOT RING DOORBELL!**
  - **If admittance is gained, follow the procedures in Gas Information Bulletin 285 “Inside Odor Investigation”**
  - **If admittance is not gained due to customer refusing entry or if there is no answer**, perform a perimeter investigation to include but not limited to a check around windows, doors, crawl space and attic vents, and other available openings for indications of gas leakage. Check around the foundation wall and along the gas service using a CGI and probe at the gas service riser, sewer service and water service entrance, if available within 5 feet of structure. If gas is discovered through this process ***move directly to Section C “Make Safe actions”***, apply “Do Not Enter” tape across all accessible entrances such as front door, side door, garage door etc and standby. If no indication of gas is found, take action in accordance with WP6434-01.

**B. Outside Investigation- Recognize that an odor of gas may be coming from an above ground source or below ground source.**

**Above Ground Considerations**

- Items to check when investigating an odor in the air include: meter sets, farm taps, gas lights, gas grills and regulator stations.
- Dead or dying vegetation and white mold in the soil may be indications of underground gas leakage.

**Below Ground Considerations**

1. Perform barhole tests from the building foundation wall or riser location along the service to the gas main using a CGI set on the LEL scale.
  - a. Once a reading of 5% is obtained on the LEL scale, purge the CGI and switch it to the 100% scale.
  - b. If no reading is found on the 100% scale, purge the CGI, switch it to the LEL scale, and continue the investigation.
  - c. Grade any sustained reading found on PG&E facilities.

- d. Check basements and/or crawl spaces of buildings adjacent to the gas leak to determine all gas leakage and hazards have been located.
  - e. If a continuous reading is obtained with a CGI inside a building, the building **must** be checked in accordance with the requirements of GIB 285 "Inside Leak Investigation".
  - f. If gas readings are found against or within 5 feet of the building, treat it as a Grade 1 leak and move to Section C "Make Safe Actions".
2. Check all manholes, catch basins, telephone ducts, and all other underground openings in the vicinity using a CGI. If gas readings are found, extend the testing to adjacent substructures.

***Warning: Do not enter an underground enclosure without first determining if a hazard exists and taking appropriate action to ensure proper personal protection.***

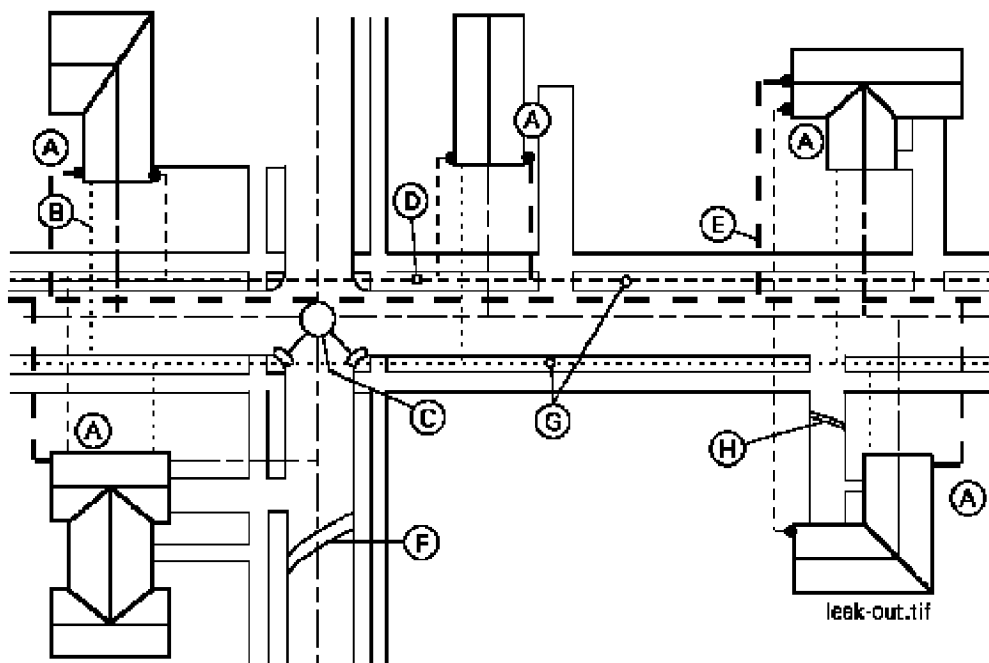
3. Obtain service and main location information, if necessary. A pipe locator may be used to identify a more exact location.
  - a. Determine the extent of the migration of gas from the leak. Test subsurface structures for the presence of gas.
  - b. Barhole test where substructures are unavailable for testing.
  - c. Test sufficiently to determine the migration pattern of the gas leak. If additional buildings appear to be affected, continue as above with inside leak investigations.
  - d. Gas leak patterns can vary with system pressure, the type and size of the gas leak, the kind of pipe and pipe joints, and the location of the gas leak and soil conditions.
4. Pinpoint the leak
  - a. Make barholes of a uniform depth.
  - b. Take CGI readings at each barhole.
  - c. Vent barholes and retest (note the length of time for an indication of leakage to return).
  - d. Low readings surrounded by higher readings may indicate the gas leak source is near (baked soil may have restricted the gas flow right around the gas leak).
  - e. Examples of locations to check:
    - i. Along building foundations
    - ii. Along utility trenches

- iii. At available manholes and catch basins
- iv. At vaults and substructures
- v. Excavations
- vi. Along Curb Line
- vii. Cracks in Pavement

**Outside Points to Check**

Other items to check when investigating an odor in the air include: meter sets, gas lights, gas grills, regulator stations, and farm taps.

The following diagram illustrates points that should be checked during an outside gas leak investigation.



**Legend**

- |           |           |   |
|-----------|-----------|---|
| -----     | Telephone | A. Along Building Foundations             |
| - - - - - | Gas       | B. Along Water Service                    |
| —————     | Sewer     | C. At Available Manholes and Catch Basins |
| .....     | Water     | D. At Telephone Vaults/Pedestals          |
|           |           | E. Along Gas Service                      |
|           |           | F. Excavations                            |
|           |           | G. Along Curb Line                        |
|           |           | H. Cracks in Pavement                     |

**C. "MAKE SAFE" actions:**

***Remember: Upon attaining a continuous reading of 40% LEL, all employees and first responders must evacuate the structure and perform the following actions***

1. Remember the fire triangle (oxygen, fuel, ignition), and eliminate sources of ignition and fuel before ventilating the building.
2. Turn off the gas at the meter or curb valve.
3. Contact Dispatch to request 911 assistance and have ignition sources isolated (electric/telephone).

***Warning: Do not shut off the electric at the panel. Do not pull the electric meter to disconnect service. Have the electric service cut off at the pole or box.***

4. Notify Supervisor after calling dispatch to inform him/her of the situation
5. Wait for the fire department to assist with initiating ventilation
6. Use a CGI to check buildings in the immediate area for any indications of gas where evacuated persons have been taken.
7. Use a CGI to check nearby buildings, available underground openings (such as sewers and check valve boxes), and any areas of recent excavation activities.
8. Attempt to vent manholes and meter boxes, etc. if gas is indicated.

**Note:** Record all readings as % gas in air.

**Approved by:**

Robert P. Fassett

**Date:** 05/18/2009

**Author:** 

**If you have any questions about this bulletin, please call the employee(s) listed below:**

Contact(s):  
LAN ID(s):  
Phone(s):

