Overview

This document describes the procedures to follow when Pacific Gas and Electric Company (Company) operator-qualified leak survey personnel or a competent first responder detects a subsurface leak indication.

Governing Document

Utility Standard S4110, "Leak Survey and Repair of Gas Transmission and Distribution Facilities"

Safety

Following the instructions in this work procedure ensures public safety of both people and property when a probable subsurface natural gas leak exists.

Perform all gas leak survey and facility-related maintenance and operations work safely and in accordance with all applicable safety rules, the *Code of Safe Practices*, and Utility Standard Practice (USP) 22, "Safety and Health Program."

Detailed Leak Investigation and Evaluation Procedure

1. General Information

Company personnel must investigate, grade, and take action to remedy possible subsurface gas leaks when they are discovered.

Follow this work procedure to investigate and evaluate subsurface natural gas leaks identified by Company-qualified leak survey personnel.

Note: *Only* Company operator-qualified personnel may grade subsurface leaks. They must use approved, properly calibrated combustible gas indicators (CGIs) and follow the procedures specified in Utility Standard S4110, Attachment 1, "Leak Survey and Repair Procedures," dated December 21, 2006, and the "Gas Leak Grades" card, dated May 23, 2008, (Attachment 1).

2. Leak Evaluation

Upon discovering an indication of a subsurface natural gas leak, immediately perform the following steps to evaluate whether the leak may present an existing or probable hazard to persons or property:

A. If access to check the gas leak is not impeded, perform the following steps:

1. Evaluate the possible hazard with leak survey equipment such as a hydrogen flame ionization unit (HFI).
2. Confirm the possible hazard with a CGI.

B. If any condition exists that impedes access to check the leak (if, for example, there are wall-to-wall concrete surfaces and it is impossible to create bar holes), perform the following steps:

1. When leak indications detected with an HFI are under continuous pavement, activate a Grade 1 leak response. Utility Standard S4110, Attachment 1, dated December 21, 2006, for information about activating a Grade 1 leak response.
2. Request prompt assistance to make bar holes. Standby and continuous aboveground evaluation and surveillance are required.
3. Evaluate the possible hazard with leak survey equipment such as an HFI.
4. Confirm the possible hazard with a CGI.

3. Action When A Hazard Is Present

If it is determined that a hazard exists, immediately take the following actions:

A. Stop the survey.

B. Perform the procedures necessary to protect persons and property as specified in Utility Standard S4110, Attachment 1, dated December 21, 2006, and the "Gas Leak Grades" card, dated May 23, 2008, (Attachment 1).

4. Action When No Hazard Is Present

If the leak indication does not represent an existing or probable hazard to persons or property, take the following actions on a walking survey:

A. Note the location of the gas leak indication.

B. Continue the survey route to its conclusion.

C. Return to the Company vehicle to collect the tools required to investigate and grade the indicated leak: a probe device and an approved CGI.

D. Return to the location of the leak indication.

E. Perform a subsurface leak investigation (center the leak by determining the location of gas migration) according to the following steps:

1. With a CGI, inspect all surrounding subsurface vent locations, such as manholes, hand holes, sewers, subsurface meter boxes, valve boxes, and catch basins.

2. Survey the area with an HFI to determine where bar holes are required; doing so can save time and effort and can reduce the number of bar holes required.

3. With an approved probe, prepare bar holes according to the following guidelines and restrictions:

   a. Make only the number of bar holes required to determine the extent of migration of the gas and establish the leak grade.

      Note: Making bar holes that are not required unnecessarily increases the risk of causing underground damage.

   b. Carefully probe away from facilities to avoid damaging any substructures.

   c. Make the bar holes parallel and perpendicular to the gas main or service.

   d. Make the bar holes deep enough to penetrate the ground or street surface, but not deeper than 12 inches.

      Note: If it is impossible to create bar holes (e.g., if wall-to-wall concrete surfaces block access), evaluate the *potential* gas migration based on the known conditions.

4. Sample the bar holes with an approved CGI until the extent of the gas migration is determined.

5. Follow the procedure in Utility Standard S4110, Attachment 1, dated December 21, 2006, and the "Gas Leak Grades" card, dated May 23, 2008, (Attachment 1) to grade the leak and take the appropriate actions.

6. Complete and submit the required documentation as directed in Utility Standard S4110 and modifying bulletins.

Definition of Terms

CGI: Combustible gas indicator.

Company operator-qualified leak survey personnel: Company employees currently qualified under Operator Qualification Subtask 09-01, "Conduct Survey" and Operator Qualification Subtask 09-02, "Leak Investigation" to perform leak surveys and investigations.

HFI: Hydrogen flame ionization unit.

Recision

This is the initial issue of this document.

Reference Documents

Utility Standard

S4110, "Leak Survey and Repair of Gas Transmission and Distribution Facilities"

Gas Numbered Documents

M-53, "Portable Combustible Gas Indicator Specification"

M-53.1, "Portable Combustible Gas Indicator Operations and Maintenance Instructions"

M-53.2, "Portable Hydrogen Flame Ionization Gas Detector"

M-53.3, "Verifying the Calibration of Portable Combustible Gas Indicators, Hydrogen Flame Ionization Units, Optical Methane Detectors, and Remote Methane Leak Detectors"

M-53.4, "Mobile Leak Survey - Hydrogen Flame Ionization"

M-53.5, "Mobile Leak Survey - Optical Methane Detection"

M-53.6, "Remote Methane Leak Detector"

M-54.1, "Impact Bar Probe"

Attachment

"Gas Leak Grades" card, dated May 23, 2008, (Attachment 1)

Contact for More Information

[redacted]

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Approved by

Robert P. Fassett
Director

Revision History

Chg No.	Date	Description	By (LAN ID)
00	March 2009	This is a new document.	[redacted]