Title: Gas Leak and Odor Investigation

Overview

This work procedure describes responsibilities and procedures for investigating gas leak and odor complaints.

To ensure customer and public safety, Field Service employees must conduct an appropriate gas leak investigation when performing **any** of the following field activities:

- Gas leak and/or odor complaints
- Gas pressure complaints
- Incident investigations
- Energy cost inquiry (ECI) complaints (when entry is required)

Governing Document

Utility Standard S6434, "Gas Leak and Odor Response."

Safety

To ensure safety when investigating any gas leak and/or odor, employees must follow all applicable precautions and requirements in Utility Standard Practice (USP) 22, "Safety and Health Program," and the *Code of Safe Practices*.

Gas Leak and Odor Investigation Procedure

1. Criteria for Determining Appropriate Gas Leak Investigation Method

Field Service employees have options when determining which method to use for investigating a gas leak. **When any of the conditions below exist**, conduct a **"full" gas leak investigation**.

- Customer cannot identify the source of the odor.
- Responding field employee cannot identify the source of the odor.
- Buried gas houseline on the premises.
- Prior gas leak call at the premises, as determined by Order History.
- Dialog with customer.
- Odor is present at multiple appliances and/or locations.
- Over pressuring condition is present (i.e., higher-than-usual pilot flame observed when appliance is on).
- Meter spot check indicates excessive gas flow.

2. Selecting a Gas Leak Investigation Method

A. Field Service employees must consider the following information when determining how to investigate the gas leak:

1) Read the entire Field Order. The Remarks section may indicate a second request or cannot locate odor, or other pertinent information. The Service History section may list previous service calls at premises.

   If the Field Order is dispatched by telephone or radio, ask the dispatcher for the Field Order Remarks and History information.

2) Attempt to gain cooperation from the customer to obtain additional information. Probe for information by asking the customer the following questions:

   a) Can you identify the source of the odor?

   b) Have you called Pacific Gas and Electric Company (the Company) in the past to investigate a gas leak?

   c) Is the odor restricted to one location or is the smell in the general area?

   d) Did you notice if the range burners flared up (delayed ignition) when they were turned on?

   e) Do you have a spa, swimming pool, gas barbecue, or gas light on the premises?

3) Observe premises conditions.

a) Can a spa be seen? Does the spa have a buried house line to the heater?

b) Does the customer have knowledge of construction in a tract that has buried houselines from the gas meter to the house?

B. Select an appropriate gas leak investigation method that ensures customer and public safety.

3. Full Gas Leak Investigation (Gas Meter Clock Test)

Field Service employees must perform a "full" gas leak investigation as follows:

A. Go to the gas meter location and check for gas flow. If flow is excessive, shut off the meter.

If a high-volume leak is suspected, the meter may be shut off before entry into the structure and ~~e~~ beginning the leak investigation. If a high-volume leak is not suspected, continue with the leak investigation process outlined below.

B. Explain the gas leak procedure to the customer and enlist their help in locating all gas burning appliances.

1) Close all pilot and burner valves on connected appliances and leave the main gas shut-off valve open.

2) Soap test all upstream fittings and eliminate leaks.

Note: Field Service employees are not required to shut off 100% automatic shut-off valves.

C. Observe the gas meter test hand to ensure that all gas appliances are off.

D. If excessive flow is detected, it may be due to a missed appliance or high-volume leak. If a high-volume leak is suspected the meter may be shut-off before entry into the structure and beginning the leak investigation.

E. Determine gas pressure as outlined in Work Procedure WP6436-28, "Gas Regulator Servicing and Pressure Determination."

F. Perform any meter set upgrades, including required regulator changes or scheduled meter change as outlined in WP6436-29, "Gas and Electric Meter Changes and Removals" and WP6436-28

G. Soap test the gas meter set for leakage and eliminate any leakage found.

H. Perform a gas meter clock test for leakage. If leakage is detected, follow the procedure outlined in Section 5, "Gas Leak Found."

If the customer has a sub meter and the meter does not have a test hand and swivels exist, temporarily substitute the Company meter for the meter clock test. If the sub meter does not have a test hand or swivels, temporarily install the Company meter, and use the quick-change device for the meter clock test.

Note: Appliance valves may be turned off when attempting to isolate leakage.

I. As appliances are relit, soap test all exposed fittings downstream of the pilot and burner valves and eliminate any gas leakage found.

J. Correct faulty adjustments in accordance with WP6436-32, "Gas Burning Appliance and Equipment Inspection/Servicing."

K. If a gas leak **is not found** and the odor still exists, seek out other sources of leakage and/or odors as outlined in Section 8.

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4. Modified Gas Leak Investigation (No Gas Meter Clock Test)

A. Upon arrival at the customer's premises, Field Service employees must perform the following tasks:

1) Inspect the suspected appliance and determine if the pilot is out.

2) Conduct a soap test of exposed fittings, houseline, and gas meter assembly. Use the combustible gas leak detector to identify and isolate the suspected leak.

3) Correct faulty adjustments in accordance with WP6436-32, "Gas Burning Appliance and Equipment Inspection/Servicing."

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B. If a gas leak **is found**, follow the work method outlined in Section 5, "Gas Leak Found."

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C. If a gas leak **is not found** and the odor still exists, seek out other sources of leakage and/or odors as outlined in Section 3 and Section 8.

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D. Perform a meter spot check for gas flow as follows:

1) If gas flow **is normal**, record clock test finding "actual pilot flow" on the Field Order.

2) If the gas flow **is not normal**, conduct a gas meter clock test of the customer's houseline as outlined in Section 3, "Full Gas Leak Investigation (Gas Meter Clock Test)."

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3) Be aware of a possible "does not register" (DR) meter. DR meters during a meter spot check **will not** indicate known pilot flow, appliance main burner load, or flow created by loosening the meter outlet connection to induce a small flow.

E. Advise the customer of any required action.

5. Gas Leak Found

A. Permanent Leak Repair

1) Field Service employees must attempt to permanently eliminate gas leakage found at an appliance valve, control, exposed houseline, or adjacent fittings as follows:

a) Tighten any loose fittings.

b) Remove, dope, and re-tighten fittings.

c) Re-flare leaking tubing, replace ferrules, and tighten screws and bolts.

2) Advise the customer of any required action.

B. Temporary Leak Repair – Acceptable Repair Methods

When assessing the need to discontinue gas service or disconnect a gas appliance, Field Service employees must consider the customer's business activity and personal health and safety.

1) Gas service may be left on if a practical, effective, temporary repair can be made. Thoroughly advise the customer of their responsibilities and the Company's responsibilities. Explain any action taken to temporarily repair the gas leak and allow time for a permanent repair. Advise the customer how they can expedite the permanent repair (i.e., calling a plumber or appliance dealer).
2) Issue a follow-up Multipurpose Customer Service Order to verify that required repairs have been made. Inform the customer that a follow-up service visit will be conducted to determine if the leak condition has worsened.
3) Advise the customer that if repairs are not made, gas service may be discontinued or the appliance disconnected to ensure customer and public safety.
4) If a temporary repair is not practical or effective, follow the procedures outlined in Section 5C, below.

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C. Hazardous Gas Leak - Cannot Eliminate by Permanent or Temporary Repair

(2 cubic feet per hour [cfh] or more; less than 2 cfh if the field employee deems the level a threat to life or property)

Field Service employees must take the following steps for hazardous leaks that cannot be repaired:

1) Explain to the customer what the gas leak investigation revealed and what required action is needed to correct the hazardous condition. Advise the customer how they can expedite the permanent repair (i.e., calling a plumber or an appliance dealer).
2) Explain to the customer that disconnecting the hazardous appliance or house line can eliminate the gas leakage.
3) If the customer grants permission, disconnect the appliance or houseline segment.
4) If the customer does not approve of the appliance or houseline disconnect, explain that isolation of the leaking appliance/houseline is done to ensure safety without interrupting gas service.
5) If the customer still refuses to allow isolation of the problem, advise the customer that it is the Company's responsibility to protect customer and public safety and that gas service will be discontinued to the premises.
6) Discontinue gas service and seal the meter as outlined in WP6435-04, "Discontinuing Gas Service."

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Note: When sealing the meter is required, protect the meter against over-pressure by a plumber performing a houseline pressure test (e.g., solid swivels or other appropriate measure).

7) Issue a Hazard Notice.

D. Non-Hazardous Gas Leak – Cannot Eliminate by Permanent or Temporary Repair

Field Service employees must take the following steps for non-hazardous leaks that cannot be repaired:

1) Explain to the customer what the leak investigation revealed and what required action is needed to correct the non-hazardous gas leak. Advise the customer how they can expedite the permanent repair (i.e., calling a plumber or an appliance dealer).

2) Leave the gas service on. No follow-up service visit is required.

6. Admittance Cannot be Gained (Can't Get In [CGI]) – Gas Meters are Accessible

Field Service employees must take the following steps for CGIs where the gas meter is accessible:

A. Perform a meter spot check for gas flow.

B. If the gas flow is **not normal**, shut the gas meter off and record the actual pilot flow on the Field Order.

C. If the flow is **normal**, leave the gas meter on and record the actual pilot flow on the Field Order.

Note: Be aware of potential sources of leakage or odors, including leakage in mains and services and in other units in multiple-unit buildings.

D. Leave a Service Report form advising the customer of the gas leak condition and any required action (e.g., call the Customer Contact Center at **1-800-743-5000** to arrange for access to the premises).

E. Note the Field Order as appropriate.

7. Admittance Cannot be Gained (CGI) - Gas Meters not Accessible

Field Service employees must take the following steps for CGIs where the gas meter is not accessible:

If there is **no indication of gas leakage** (e.g., odor, main or service leakage), leave a Service Report form at the premises, advising the customer of the field condition.

A. If a **hazardous leak is suspected:**

1) Notify Dispatch Operations in the resource management center (RMC) and request additional assistance (e.g., crew, leak surveyor, supervisor, public agency - fire, police).

2) Take corrective action(s) to safeguard the property and public safety while assistance is enroute (e.g., evacuating building, ventilating buildings, investigating main and service leakage, shutting off curb valves, securing the site from foot traffic).

8. Gas Main or Service Leak

Field Service employees must look for gas main and service leak indicators on all service visits.

A. Check for gas main and service leakage in the following circumstances:

- Odor persists following a thorough "full" leak investigation that included a meter clock test.
- Gas odor is detected outdoors, regardless of the original nature of the service visit.
- Visual evidence exists of service or main leakage (i.e., dead shrubs or grass, bubbling in wet soil).
- Service visit is for an area odor.
- Service visit is for outdoor leakage or leakage at the gas meter.

B. **Hazardous Gas Leaks Requiring Stand-by**

Field Service employees must stand-by for M&C personnel or Leak Surveyor to arrive to ensure public safety when but not limited to:

A gas leak that represents an existing or probable hazard to persons or property requiring immediate repair or continuous action until conditions are no longer hazardous. This criteria includes:

1. Any reading with a combustible Gas Measurement Instrument on underground gas facilities where the gas would likely migrate to within 5 feet of the outside wall of a building
2. Any gas reading with a combustible Gas Measurement Instrument on underground gas facilities in, at, or under a building or tunnel including but not limited to:
   - At the building wall or in a paved wall to wall area
   - Within 5 feet of the building wall in a non-paved area
3. Escaping gas that has ignited
4. Gas that can be seen, heard, or felt on both above grade and underground gas facilities where the presence of gas endangers the general public or property and cannot be immediately repaired by the Field Service employee and would likely migrate within 5 feet of the outside wall of a building
5. A gas leak which falls outside of the above criteria and poses an immediate hazard in the judgment of:
   - The Field Service employee and Field Service Supervisor (or on-call supervisor)

C. Field Service employees may squeeze off (pinch off) ruptured plastic gas service lines, which are visible (and can be accessed safely to protect life and property, and may affix dead-end fittings as outlined in their job definition.

9. Gas Leak Test Using a Combustible Gas Measurement Instrument

Field Service employees must take the following actions when using a combustible gas measurement instrument to test for a gas leak:

A. Check building ventilation openings, water meter boxes, gas meter locations, gas services, gas mains, and sewer vents (if practical to do so) for the presence of gas.

B. Refer **non-hazardous gas main and gas service line leaks** to a crew for repair by calling the PBX Field Helpline at **1-415-973-7000** and initiating an M&C Gas Leak Referral case. Record the gas leak referral reason, Case ID number, and the PBX customer service representative's (CSR) Corp ID on the Field Order (i.e., small leak under service valve located outside and gas is not migrating into premises, referred to M&C, Case #012345678, PBX CSR ID ABC1.). The employee provides the customer a Service Report Form explaining that the gas leak is not dangerous and that Company construction personnel will respond within three business days (M-F). The Service Report Form should also list the Case ID number

C. If the **gas leak is hazardous, or could become hazardous,** notify Dispatch Operations in the RMC immediately if additional resources are needed (e.g., send a crew, leak surveyor, supervisor, or public agency such as the fire department or police). The Field Service employee must also call the PBX Field Helpline at **1-415-973-7000** and initiate an M&C Gas Leak Referral case. Record the gas leak referral reason, Case ID number, and the PBX CSRs Corp ID on the Field Order (i.e., strong gas readings at foundation, stood by for M&C crew, Case #012345678, PBX CSR ID ABC1.). The field employee stands by until construction personnel arrives and provides a Service Report Form to the customer listing the Case ID number. The Field Service employee may also need to take further immediate actions to safeguard life and property (e.g., evacuating building, ventilating buildings, shutting off curb valves, securing the site from foot traffic).

10. Area Odor

Field Service employees must investigate "area odor" complaints as follows:

A. Attempt to determine the source of the odor (e.g., mains, services, garden sprays, lumber preservatives, excessive gas odorant, etc.). Notify Dispatch Operations in the RMC of the findings and if further action is warranted. Record pertinent information on the Field Order as outlined in Section 12.

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B. Odor complaints whose source is identified as garden sprays, lumber preservatives, etc. require no further action.

C. Note the Field Order as appropriate.

11. Other Utilities Gas Main or Service Leak

When the gas leakage source is identified as another utility's gas main or service, Field Service employees must notify Dispatch Operations in the RMC or the appropriate Field Services supervisor immediately.

12. Field Order Information

Field Service employees must include the following information on the Field Order:

- Gas meter number, index reading, and results of pressure determination (when required). This also includes meter information from a sub-meter.
- Location of the gas leak(s), the volume of leakage, and corrective action taken in the field.

13. Gas Meter Clock Test

A. Field Service employees must clock test gas meters as follows:

1) Clock test for gas leakage by observing the gas meter test hand on the upsweep after all pilot and burner valves have been shut off, with only the main appliance shut-off valves on and the gas meter has been checked for ability to register small flow.

2) Meter clock test for leakage for at least the following time periods:

- ¼ cu.ft. Test hand 2 minutes
- ½ cu.ft. Test hand 2 minutes
- 1 cu.ft. Test hand 2 minutes
- 2 cu.ft. Test hand 3 minutes
- 5 cu.ft. Test hand 5 minutes
- 10 cu.ft. Test hand 10 minutes

3) If **no test hand movement** is noted after the specified time, gas service may be left on.

4) If **test hand movement** is noted, follow the appropriate gas leak investigation procedure (appropriate work steps) as outlined in Section 2.

B. Small-Flow Time Requirements

Table 1. Small-Flow Time Requirements

TEST HAND DIAL SIZE	MINIMUM OBSERVATION TIME AFTER DIAL GEARS ARE ENGAGED
¼	10 seconds
½	15 seconds
1	15 seconds
2	25 seconds
5	25 seconds

14. Soap Test

Field Service employees must perform soap tests as follows:

A. Perform a soap test for gas leakage on all meter set assemblies, houseline, or gas appliance connections that have been loosened, disconnected, or reconnected during the course of work or suspected of leakage by the customer.

B. When a gas leak complaint indicates a suspected leak at a specific appliance and the clock test indicates no gas leakage, soap test the fittings downstream of the main burner and pilot valves (if accessible).

C. On manifold installations, soap test any adjacent meter(s) and all plumbing from the service riser valve inlet to the manifold.

Recision

This document cancels and supersedes Customer Service Support (CSS) – Field Service Procedure – Gas Leak and Odor Investigation, issued 05-02.

Reference Documents

Code of Safe Practices — Field Code Changed

Utility Standard Practice (USP) 22, "Safety and Health Program" — Field Code Changed

Utility Work Procedures:

WP6435-04, "Discontinuing Gas Service."

WP6436-28, "Gas Regulator Servicing and Pressure Determination"*

WP6436-32, "Gas Burning Appliance and Equipment Inspection/Servicing"*

*(Expected publication in late 2008. Refer to CSS Field Service Procedures until WPs are published) — Field Code Changed

Contact for More Information

[redacted] – Meter Service

Date Issued

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Approved by

[redacted]
Manager

Revision History

Chg No.	Date	Description	By (LAN ID)
01	December 2007	Updated document in new Work Procedure template. Added 10 cu. ft. meter clock test leakage requirement to Section 13.A. 2.	MAZ2
02	December 2008	Updated document to define procedures for a Hazardous gas leak requiring stand – by, Section 8.B	REW0