



Asset Type: **Gas Distribution**

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Function: **Service**

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Title: Gas Leak and Odor Investigation

Overview

This work procedure describes responsibilities and procedures for the following processes:

- Dispatching and investigating Immediate Response (IR) emergency gas service orders with the objective of being on site in a timely manner.
- Responding to and investigating gas leak and odor complaints.

To ensure customer and public safety, Field Service employees are required to respond to gas Immediate Response (IR) emergency service orders in a prompt and timely manner. 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.

Important: The first and foremost concern must be to protect the lives of the public and personnel.

Gas Leak Immediate Response (IR) Process

Field Service employees are required to respond to gas IR field service orders in a timely manner. Dispatch and Field Service employees must follow this process to respond to IR service orders.

Because communication between dispatch and gas Field Service employees is critically important to responding to IR field service orders in a timely manner, Field Service employees must carry cell phones and pagers, as required, at all times. However, cell phones must be turned off when in a gaseous atmosphere, then immediately turned back on when deemed safe.

1. Dispatching an IR Field Service Order

Upon receiving an IR field service order, dispatch will take the following actions:

- A. Determine the appropriate Field Service employee to receive the order. To minimize dispatching multiple IR orders to one gas service representative (GSR), all GSRs in the headquarters or division will be considered when determining which to assign to the IR order.
- B. Call the employee to get a verbal acknowledgement of the IR order (e-page as a last resort).
- C. When the employee responds, confirm whether the Field Automation System (FAS) is/is not available. Document the estimated time of arrival (ETA) to the IR order in the dispatcher remarks (i.e., 13:40, not 30 min).
- D. Dispatch the order.
- E. If no contact is made (there is no mandated wait time), redirect the order to another employee. If that employee does not respond, repeat the process. Record all contact attempts in the dispatcher remarks.
- F. If no Field Service employee is available, contact the dispatch supervisor for further instructions.
- G. If more than one IR order comes in from the same area, first attempt to dispatch the IR order to the next closest appropriate field employee before dispatching multiple IR orders to the same GSR. If after hours, use the appropriate 212 list.

2. Field Service Response to an IR Field Service Order

IR field orders are to be considered critical emergency work requests. As such, a timely response is required under all circumstances. Under no circumstances should employees work on another service order or engage in other activities, including lunch or breaks, once they receive a pending IR order.

- A. Upon receiving an IR field order, take the following actions:
 - Answer the call from dispatch and provide the dispatcher with the ETA (i.e.13:40 not 30 min) to the IR site.
 - Acknowledge the IR order in FAS. (Advise dispatch if access to FAS is not immediately available.)

- B. If an IR order is received in the course of planning or conducting a Company (non-customer) work order, take the following actions:
- If work has not started, do not start the work order. Proceed to the IR order.
 - If work has started and can be completed in 10 minutes, finish the work order.
 - If the work requires more than 10 minutes to complete, make the work site safe for a return visit (see Section F, "Make Safe Actions").
 - Complete the order as an 0930 with the note, "Responding to an IR request."
 - Contact dispatch to request a follow-up service order or reassignment to another employee for completion.
 - Press the enroute button on the FAS unit and proceed to the IR site.
- C. If an IR order is received in the course of conducting a customer appointment, take the following actions:
- If the customer work order can be completed within 10 minutes, complete the service request and then proceed to the IR order as the next job.
 - If the customer order cannot be completed in 10 minutes, perform the following steps:
 - o Explain to the customer that the work must be interrupted because an IR emergency order has been received.
 - o Notify dispatch of the need for follow-up or reassignment to another employee to complete the work order.
 - o Complete the order as an 0930 with the note, "Responding to an IR request."
 - o If customer issues arise, contact dispatch to have a supervisor contact the customer to resolve the issues.
- D. If multiple IR orders are received in the same area and there are no additional field employees able to respond within a reasonable time, take the following steps:
- Proceed to the closest IR site.
 - Make safe the first IR site as instructed in Section E, "Make Safe Actions."
 - Complete the order as an 0930, note how the premises have been made safe, and note, "Responding to a second IR request."
 - Advise dispatch that the first IR site is safe and request a non-emergency follow-up field order.
 - Proceed to the next IR site.

Gas Leak and Odor Investigation Procedures

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

1. Initial Investigation

A. Approaching the Site

- 1) Take note of conditions when approaching the site.
 - Be alert to indications that an outside leak may be causing an inside odor.
 - Look for indications of recent or current construction, sunken trenches, washouts, sinkholes, vegetation damage, any outside odors, etc.
 - Listen for the sound of gas hissing.
 - Check the gas meter for an indication of high consumption.

- 2) Prepare the combustible gas indicator (CGI).

In an area free of natural gas, turn on, purge, and zero the CGI before beginning the investigation.

B. Contacting the Customer

Caution: When performing the next step, **do not** ring the doorbell, as electricity in the doorbell circuit could ignite leaking gas.

- 1) Knock on the door.
- 2) While awaiting the customer's response, begin the investigation by checking around the outside edges of the door, the keyhole, and, if present, the mail slot.
- 3) When the customer opens the door, without entering the structure, immediately test the environment for the presence of gas.
- 4) Request admittance to the structure.

If the customer grants admittance, proceed to Section C, "Initial Actions – Access Gained" below.

If the customer denies admittance, proceed to Section D, "Initial Actions – Access Denied."

If no one answers the door, proceed to Section E, "Initial Actions – No Customer Response."

C. Initial Actions – Access Gained**Cautions**

- Always presume a gas leak exists until proven otherwise.
 - If a gas leak is found, do not assume it is the only one.
 - Do not rely on a lack of odor as an indication that there is no gas leak. Even when gas is properly odorized, the odorant may have been stripped from the gas when the gas migrated through the ground.
- 1) Advise the customer not to turn on or off any lights, televisions, or any other electrical appliance.
 - 2) Immediately upon entry, sample the atmosphere for natural gas with the CGI.
 - a) If a continuous reading of 20% LEL or 1% natural gas in air or greater is obtained, a potentially hazardous situation may exist. Take the following actions:
 - Immediately evacuate all people from the structure.
Caution: If any customers refuse to vacate the premises, immediately call 911 for assistance.
 - Follow the instructions in Section F, "Make Safe Actions."
 - b) After initial tests indicate that a continuous reading is between 20% LEL or 1% gas in air and 40% LEL or 2% gas in air, which is considered safe for a qualified employee or emergency responder, take the following actions:
 - Shut off the gas supply.
 - If necessary, contact and wait for the fire department to assist with initiating ventilation before proceeding with an inside investigation, starting with Step 3 below.
 - 3) Inside the structure, first test where the customer has indicated that the odor has been most prominent.
Caution: Throughout the investigation, do not turn on or off any lights until you have determined that it is safe to do so.
 - 4) If a basement exists, use a CGI to check for gas leaks from the top of the stairwell before going down into basement. Then proceed to a basement investigation.

- 5) Check all rooms for potential accumulation of gas (i.e., the kitchen, bathroom, laundry room, family room, etc).
 - If any continuous readings between 20% LEL or 1.0% gas in air and 40% LEL or 2.0% gas in air are noted, take the following actions:
 - o Shut off the gas supply.
 - o Wait for the fire department to assist with initiating ventilation before continuing with the investigation.
 - If the CGI reading is greater than 40% LEL or 2.0% gas in air, proceed directly to Section F, "Make Safe Actions."
 - If neither of these situations exists, proceed to the remaining steps 6) thru 8), below.
- 6) Conduct CGI tests in any accessible areas of the structure in which gas might accumulate, such as basements, crawl spaces, or closets and attics containing gas piping (if appropriate and safe ladders are available). Also check the following as possible sources of gas leakage: appliances, around plumbing fixtures, conduit, retined piping, cracks in basement walls, and floor drains.

Caution: Do not enter or perform work in confined spaces, crawl spaces, manholes, or vaults until ventilated below continuous 20% LEL or 1.0% gas in air.
- 7) With a CGI, perform a perimeter investigation for indications of gas leakage that includes checking around windows, doors, crawl space vents, attic vents, and other available openings. Check around the foundation wall and along the gas service at the gas service riser, gas meter, and sewer and water service entrances, if available, within 5 feet of the structure.
- 8) Proceed to Section 2, "Criteria for Determining Appropriate Gas Leak Investigation Method" to select and complete a full or modified leak investigation

D. Initial Actions – Access Denied

- 1) Inform the customer that you will perform a perimeter investigation that includes but is not limited to a check for gas leakage around windows, doors, crawl space vents, attic vents, and other available openings.
- 2) With a CGI, check around the foundation wall and along the gas service.
- 3) If a gas leak is discovered through this process with CGI readings greater than 40% LEL or 2.0% gas in air and the customer continues to refuse entrance for an inside leak investigation, take the following steps:
 - Advise the customer that Company personnel must shut off the gas meter and vent flammable gas from the house line.
 - Call dispatch operations to request 911 assistance.
 - Notify the supervisor of the situation and request any necessary deviation from standard practice.

E. Initial Actions – No Customer Response

- 1) Perform a perimeter investigation of accessible areas, including but not limited to checking around windows, doors, crawl space vents, attic vents, and other available openings for indications of gas leakage.
- 2) With a CGI, check around the foundation wall and along the gas service at the gas service riser, sewer service entrance, and water service entrance, if available within 5 feet of the structure.
- 3) If gas is discovered, proceed directly to Section F, "Make Safe Actions." apply "Do Not Enter" tape across all accessible entrances (such as front door, side door, garage door, etc.) and stand by.

If no indication of gas is found, take action in accordance with Section 9, "Admittance Cannot be Gained (Can't Get In [CGI]) – Gas Meters are Accessible" or Section 10, "Admittance Cannot be Gained (CGI) – Gas Meters not Accessible," as appropriate.

F. "Make Safe" Actions

Important: When there is a continuous reading of 40% LEL or greater or 2% gas in air or greater inside a structure or 5 feet from the structure, all employees and first responders must evacuate the structure and perform the following actions:

- 1) Remembering the fire triangle (oxygen, fuel, ignition), eliminate sources of ignition and fuel before ventilating the building.
- 2) Turn off the gas at the meter or curb valve (if accessible).
- 3) Contact dispatch to request 911 assistance and isolate ignition sources (e.g., electric/telephone).

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

- 4) After calling dispatch, notify the supervisor of the situation.
- 5) Prevent entry into the structure by attaching "Do Not Enter" tape across all entryways (i.e., garage, basement, etc.).
- 6) Wait for the fire department to assist with initiating ventilation.
- 7) With a CGI, check buildings in the immediate area for any indications of gas where evacuated persons have been taken.
- 8) With a CGI, check nearby buildings, available underground openings (such as sewers and check valve boxes), and any areas of recent excavation activities.
- 9) Attempt to vent manholes, meter boxes, or similar confined spaces, if gas is indicated.

2. 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 house line 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.

3. 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 a buried house line from the gas meter to the house or any other gas appliances on the premises?

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

4. 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 checking for missed appliances or a high-volume leak. 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 checking for missed appliances or a high-volume leak.
- E. Determine gas pressure as outlined in Utility Work Procedure WP6436-28, "Gas Regulator Servicing and Pressure Determination."¹
- 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"¹ 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 6, "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 11, "Gas Main or Service Leak."

¹ Expected publication late 2009. Refer to Utility Standard 5.6436, "Gas and Electric Field Services and Dispatch and Scheduling Operating Practices" until published.

5. 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 CGI to identify and isolate the suspected leak.
 - 3) Correct faculty adjustments in accordance with WP6436-32, "Gas Burning Appliance and Equipment Inspection/Serviceing."
- B. If a gas leak **is found**, follow the work method outlined in Section 6, "Gas Leak Found."
- 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 4, "Full Gas Leak Investigation (Gas Meter Clock Test)" and Section 14, "Other Utility's Gas Main or Service Leak."
- D. Perform a meter spot check of **actual** gas flow as follows:
 - 1) If gas flow **is normal**, record clock test finding "**actual** gas 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 4, "Full Gas Leak Investigation (Gas Meter Clock Test)."
 - 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.

6. 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 6.C, below.

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, "Procedures for Discontinuing Gas Service."

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.

7. Above-Grade Riser Leak Orders Generated by Customers

Field Service employees must take the following steps for customer-generated above-grade leak orders:

- A. Correct any leaks on the gas meter set.
- B. Determine whether leaks that are on or below the service valve can be safely repaired with a clamp, thread clamp, tape seal, or valve change (i.e.; the riser is not heavily corroded, no digging is required).
 - 1) Based on the type of leak identified, if the leak can be repaired, install clamp, thread clamp, tape seal, or valve change and proceed to Step 7.C. below.
 - 2) If a leak **cannot** be repaired with a clamp or valve change, follow the normal process for referring a leak to gas maintenance and construction (M&C) personnel (includes calling PBX to create a case number to be forwarded to the M&C service person). The case number must be noted on the completed service order.
 - 3) If unable to make repairs due to lack of equipment or training, contact dispatch and refer the order to a qualified gas service representative (GSR) with the required repair equipment. (Dispatch personnel will be provided with list of GSRs who have equipment and training and will create orders for these internal Field Service referrals, then schedule and dispatch each one appropriately, as a hazardous or non-hazardous situation.)

Note: Be sure to advise dispatch of the urgency of the order. Hazardous situations must be handled per Section F, "Make Safe Actions." Non-hazardous situations are to be scheduled within 21 days..

Field Service employees taking over an order reassigned through dispatch continue the leak repair, beginning with Step 7.C. below.

- C. Complete the required leak repair work.
- D. Complete documentation of the leak repair.
 - 1) Enter the completed repair information into FAS using the proper code.
 - 2) Add completion remarks to the FAS Order, specifying "Leak Repair" and the actual repairs made (e.g.; "Leak Repair, changed valve to correct leak" or "Leak Repair, installed clamp on riser to correct leak").

- 3) For all jobs that require a clamp or tape seal repair, complete a Form 62-4060, "Leak Survey, Repair, Inspection, and Gas Quarterly Incident Report (Form "A")" and turn the form into the Field Service supervisor.

Note: The completed Form "A" **must** be turned into the Field Service supervisor by the following workday.

- E. Upon receipt of completed Form "A" for repairs completed by the Field Service employee, the Field Service supervisor must:
 - 1) Contact M&C personnel to obtain the leak number which must be transferred onto Form "A."
 - 2) Review Form "A" for completeness and accuracy. Sign and date all forms.
 - 3) Immediately forward the completed Form "A" to mapping personnel for entry into the Integrated Gas Information System (IGIS). (All completed repairs must be entered into IGIS within 10 days.)
- F. Field Service clerical employees review FAS Timecards for orders completed with completion Codes 6202 and 4023 and process leak repair accounting as follows:
 - 1) Completion Code 6202 (valve changes) to be charged to accounting shown on FAS Timecard.
 - 2) Completion Code 4023 (clamp repairs) to be charged to division-specific leak survey accounting (See Table A).

Note: Separate accounting will be established for Accelerated Leak Survey and Non-Accelerated Leak Survey.
- G. Field Service will generate a weekly report via BRIO Scorecard Drill Down and identify all Completion Code 4023 orders. The Field Service supervisor must review the report and ensure that a Form "A" was completed for all addresses listed.

8. Above-Grade Riser Leak Orders Generated by Leak Survey

- A. Leak documentation is handled as specified in the following paragraphs:
 - 1) The M&C supervisor will perform the following tasks:
 - Review the IGIS Open Leaks Report monthly and request mapping personnel to print information on all Grade 2+ leaks required to be repaired within the next 90 days,
 - Review each Form "A" to identify all riser and valve leaks that can be repaired by a GSR.
 - Forward these identified Grade 2 leaks to M&C clerical personnel to issue a Customer Care and Billing (CC&B)/FAS order for Field Service.
 - 2) M&C clerical personnel will enter Grade 2+ leaks into CC&B as undated orders, with a 90-day follow-up date (from date leak discovered), the leak number, and required repair in

Office Remarks of order. An example of remarks for an order for leak found on 1/2/09 is 4/2/09, Leak # 1234567, PM#8765432, fuzz leak on riser threads per leak survey.

- 3) Upon verification of the CC&B entry, the M&C supervisor will deliver every identified Form "A" to the Field Service supervisor.
 - 4) The Field Service supervisor will coordinate with the scheduler and the dispatcher to ensure that Field Service employees are identified and have corresponding FAS orders and Form "A" forms.
- B. Determine whether leaks that are on or below the service valve can be safely repaired with a clamp, thread clamp, tape seal, or valve change (i.e.; the riser is not heavily corroded, no digging is required).
- 1) Based on the type of leak identified, if the leak can be repaired, proceed with the installation of clamp, thread clamp, tape seal, or valve change and proceed to Step B.C. below.
 - 2) If a leak **cannot** be repaired with a clamp or valve change, notify the Field Service supervisor of the situation.

The Field Service supervisor will consult with the M&C supervisor. If mutually agreed, a non-automated (warm) hand-off will occur and M&C personnel will complete the leak repair.
- C. Complete the required leak repair work.
- D. Complete documentation of the leak repair.
- 1) Enter the completed repair information into FAS with the proper code listed below.
 - Comp Code 6202 (G Change SM SP Svc Valve) for valve changes.
 - Comp Code 4023 (G Dmg Dist Pipe-Repair G Svc) for clamp repairs.
 - 2) Add completion remarks to the FAS Order, specifying "Leak Repair" and the actual repairs made (e.g., "Leak Repair, changed valve to correct leak" or "Leak Repair, installed clamp on riser to correct leak").
 - 3) Complete Form "A" with repair notations and turn the form into the Field Service supervisor by the following workday.

Note: The completed Form "A" **must** be turned in to the Field Service supervisor by the following workday.
- E. Upon completion of the work, the Field Service supervisor must perform the following tasks:
- 1) Advise Field Service clerical personnel of completed orders for graded leaks and instruct them to change repair time to PM accounting listed on Form "A" for each order.
 - 2) Review the gas leak repair report (Form "A") for completeness and accuracy. Sign and date all forms.
 - 3) Immediately forward the reports to mapping personnel for entry into IGIS.

9. 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 and record the **actual** gas flow.
- B. If the gas flow is **not normal**, shut the gas meter off and record the **actual** gas flow on the Field Order.
- C. If the flow is **normal**, leave the gas meter on and record the **actual gas** flow on the Field Order.
- D. Take CGI readings around the structure where access can be gained, note service order with LEL read(s) and location(s).

Note: Be aware of potential sources of leakage or odors, including leakage in mains and services and in other units in multiple-unit buildings. An inside sweep of the structure in accordance with Section 1, "Initial Investigation" will be required if the CGI detects gas leakage around the structure.

- E. 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).
- F. Note the Field Order as appropriate.

10. 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, CGI LEL readings, main or service leakage, or where indicated on service order), leave a Service Report Form at the premises, advising the customer of the field condition.

Note: In the case of multi-unit apartments where a Service Report Form cannot be left at the premises, the Field Service employee must note on the work order that a Service Report Form could not be left.

- A. If a **hazardous leak is suspected**:
 - 1) Notify dispatch personnel in the resource management center (RMC) and request additional assistance (e.g., crew, leak surveyor, supervisor, public agency - fire, police).
 - 2) Take corrective action 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).

11. 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 using the CGI 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. 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.

12. 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's) LAN ID on the Field Order (e.g., small leak under service valve that is located outside and is not migrating into premises, referred to M&C, Case #012345678, PBX CSR LAN ID ABC1.). The field employee is to provide the customer a Service Report Form with the explanation that the gas leak is not dangerous and that one of our construction personnel will respond within three business days (M-F). The Service Report Form should also list the Case ID number. In addition, initiate a Form "A" and fill out the required information. Give Form "A" to the supervisor on the following work day.
- C. If the **gas leak is hazardous, or could become hazardous**, notify dispatch operations and follow the procedure in Section E, "Make Safe Actions." Field Service employees 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 CSR's LAN ID on the Field Order (i.e., 20% LEL or 1% gas in air at foundation, stood by for M&C crew, Case #012345678, PBX CSR LAN ID ABC1.). The field employee must explain to the customer that the field employee will stand-by until construction personnel respond. A Service Report Form will be provided to customer listing the Case ID number.

13. 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 personnel in the Resource Management Center (RMC) of the findings and if further action is warranted. Record pertinent information on the Field Order as outlined in Section 15, "Field Order Information."
- B. Odor complaints whose source is identified as garden sprays, lumber preservatives, etc. require no further action.
- C. Note the Field Order as appropriate.

14. Other Utility's 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 personnel in the RMC or the appropriate Field Service supervisor immediately. Dispatch personnel will contact the proper utility.

15. 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 and if a company meter is used as test meter note the company meter number and read information.
- Location of the gas leak(s), the volume of leakage, and corrective action taken in the field.
- Inside and outside LEL readings or % Gas in air from the CGI.

16. 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 3, "Selecting a Gas Leak Investigation Method."

B. Small-Flow Time Requirements

Table 1. Small-Flow Time Requirements

TEST HAND DIAL SIZE	MINIMUM OBSERVATION TIME AFTER DIAL GEARS ARE ENGAGED
1/4 10	seconds
1/2 15	seconds
1 15	seconds
2 25	seconds
5 25	seconds

17. 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.

Revision

This revision supersedes Utility Work Procedure WP6434-01, "Gas Leak and Odor Investigation," issued 12-07.

This work procedure revision cancels and supersedes Customer Field Service Bulletin 2009-42.

Reference Documents

Code of Safe Practices

Utility Standard Practice (USP) 22, "Safety and Health Program"

Utility Work Procedures

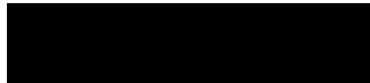
WP6435-04, "Procedures for Discontinuing Gas Service."

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

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

*(Expected publication in late 2009. Refer to Utility Standard S6436, "Gas and Electric Field Services and Dispatch and Scheduling Operating Practices" until the work procedures are published.)

Contact for More Information



CORE Team

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Approved by



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 <u>Section 16.A.2</u> .	
02	June 2009	Updated document to add Gas Leak Immediate Response process and include the utilization of Combustible Gas Indicators.	