Leak Survey Process

SUMMARY

This utility procedure establishes the overall process for performing, monitoring, and documenting gas leak surveys for Pacific Gas and Electric Company (PG&E or Company) gathering, transmission, and distribution pipeline facilities.

Level of Use: Informational Use

TARGET AUDIENCE

Personnel who perform leak surveys, including their supervisors; gas mapping personnel and supervisors; geographic information system (GIS) sponsor; systems, applications, and products (SAP) asset strategists; gas superintendents; gas engineers; pipeline engineers; public safety and asset integrity personnel; distribution integrity management program (DIMP) and transmission integrity management program (TIMP) personnel and supervisors; and regulatory compliance personnel.

SAFETY

In addition to information in the Company Code of Safe Practices, identified hazards of performing leak survey are listed in Utility Procedure TD-4110P-03, "Performing and Documenting Leak Survey," and Utility Procedure TD-4110P-09, Leak Grading and Response."

BEFORE YOU START

Personnel performing leak survey must be qualified for all Operator Qualification (OQ) tasks according to the procedure(s) followed. Required OQs are identified in the respective supplemental guidance documents referenced in this procedure.

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PROCEDURE STEPS

NOTE

Leak survey requirement(s) are identified once final posting of a gas facility is completed on new or updated distribution maps.

1 Determining the Frequency and Schedule of Distribution Leak Surveys

1.1 Gas mapping personnel apply the leak survey frequency to leak survey maps in accordance with Table 1. Leak Survey Frequency."

NOTE

The following definitions apply to Table 1. Leak Survey Frequency:

- Quarterly: Four times each calendar year, not to exceed 4½ months to the date
- Semi-Annual: Twice each calendar year, not to exceed 7-1/2 months to the date
- Annual: Once each calendar year at intervals not to exceed 15 months to the date
- 3-year: Once every three calendar years at intervals not to exceed 39 months to the date
- 5-year: Once every five calendar years at intervals not to exceed 63 months to the date

Table 1. Leak Survey Frequency

Facility Types	Survey Frequency
All Distribution Facilities within designated business districts	Annual
Distribution maximum allowable operating pressure (MAOP) less than or equal to 60 psig	
Business district and public buildings	Annual
Buried metallic facilities not under cathodic protection and not covered by an annual requirement.	3 years
Balance of underground distribution facilities	5 years
Transmission	
DOT Transmission All Odorized Transmission with the exception of Non-HCA pipe within a Class III & IV location.	Annual
DOT Transmission Non-HCA Class III & IV	Semi-Annual
Un-Odorized DOT Transmission and Un-Odorized DOT Gathering	
Class I & II	Annual
Class III	Semi-Annual
Class IV	Quarterly
Gathering (Odorized)	
Class I, II, III, & IV	Annual
Transmission Stations	
Class I & II	Annual
Class III & IV	Semi-Annual

1.2 Gas mapping personnel review the survey schedule to ensure that the leak survey of a new gas facility posting will not exceed the required frequency prior to its next scheduled survey for the associated plat map.

1. IF the posted gas facility **will exceed** the required survey frequency by the time of the next scheduled survey.

   THEN perform the following steps:

   a. Notify local engineering personnel and the leak survey supervisor.

   b. Prepare documentation to survey identified facilities.

   c. Forward the documentation to the leak survey supervisor AND request they direct leak surveyors to perform a leak survey of the facilities.

1.3 Gas mapping personnel update the map information to indicate the revised service count and miles of main, if applicable.

2 Planning Changes and Updates to the Distribution Leak Survey Schedule

2.1 Local mapping personnel notify the leak survey supervisor of any field changes that will require a change in the division's leak survey plan. Changes can include:

- New maps
- Map frequency (e.g., for a new business district, changing frequency from 3 years to 5 years)
- Service count
- Miles of main
- Maintenance and operations (M&O) jurisdictional responsibilities and boundaries
- Systems applications and products (SAP) asset registry as required

2.2 Gas mapping personnel perform the following:

1. **Process Control Point**--Conduct annual review of distribution maps scheduled in the leak survey electronic database (e.g., SAP) to verify that all existing maps are included in a leak survey schedule.
2. Ensure maps with **no** posted distribution facilities are assigned and scheduled a survey anniversary month that is consistent with the surrounding area.
3. Obtain the list of scheduled maps for the current year and perform the following:
   a. Evaluate the defined business district areas and compare them programmatically to current parcel information (e.g., residential, commercial).
   b. Update business district boundaries on assigned maps.
      (1) IF a new business district is assigned to a map that is not on an annual leak survey frequency,

      THEN assign an annual survey anniversary month that is consistent with the surrounding area for the appropriate map.
4. Submit Request for Work (RW) to asset strategist AND update the leak survey maintenance plans in the electronic database.

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2.3 The gas asset strategist updates leak survey maintenance plans according to the RW information in a timely manner.

2.4 **Process Control Point**—Leak survey performance management optimization (LSPMO) team personnel perform an annual frequency analysis of the leak survey plan.

2.5 **Process Control Point**—LSPMO team personnel communicate with local supervisors to plan for the survey year accordingly.

3 Gathering Distribution Leak Survey Documentation

3.1 Leak Mobile Platform (LMP) automatically performs and completes certain process steps and functions in this procedure.

1. IF LMP (SAP-integrated) is unavailable,

   THEN gas mapping personnel perform the assigned steps.

NOTE

SAP-generated Recheck Work Tickets are used to identify the existence or lack of open leaks on maps, and to record rechecks of open leaks.

3.2 Gas mapping personnel gather distribution leak survey documentation, including the following required information:

- Gas distribution map with Form TD-4110P-03-F07, "Leak Survey and Field Inspections"
- Recheck Work Tickets (from SAP)

4 Preparing Distribution Leak Survey Documentation

4.1 Gas mapping personnel prepare documentation for leak survey per the following steps:

1. Prepare distribution plat maps.
2. Obtain the list of scheduled maps from the leak survey plan in the electronic database.

4.1 (continued)

NOTE
GIS automatically maps leak numbers at open leak locations to a specific layer within GIS..

a. Confirm all open leaks are documented on maps (including the location and leak number).

b. IF leaks are missing,

THEN communicate this to the local leak survey supervisor AND submit a Pathfinder ticket.

c. **Process Control Point--Do not** print out distribution leak survey maps more than 30 days prior to their scheduled survey date.

- SAP prevents printing these maps greater than 30 days from the scheduled survey date.

d. Print scheduled distribution leak survey maps in color.

e. Review all maps to determine whether or not distribution assets are on each map.

f. Include in survey documentation plat sheets that are identified as containing no distribution assets (e.g., map contains posted transmission facilities only, map contains preliminary postings).

(1) IF confirmed that no gas distribution facilities exist on the map,

THEN write “No facility”, date, and LAN ID on the front of the map. Mark map as complete in the electronic data base (e.g., SAP) and do not include with the leak survey package.

g. IF new distribution facilities are discovered,

THEN proceed to Step 1.3 of this procedure.

h. Print Form TD-4110P-03-F07 on the back of all distribution leak survey maps issued for distribution leak survey.

i. Ensure the previous leak survey start date fields are indicated on the stamp.

- These dates represent the earliest dates recorded for the previous survey performed for the same map.

4.1 (continued)

NOTE

Recheck Work Tickets (from SAP) are not generated more than 30 days prior to the survey date for the following purposes:

- To allow the surveyor to recheck those open leaks within the scope of the routine leak survey
- To prevent duplicate leak number assignments and entries

j. Generate AND print the Recheck Work Tickets for each open leak on a specific plat scheduled to be surveyed.

- Leak surveyors use Recheck Work Tickets to re-check open leaks and to prevent assignment of duplicate leak numbers.
- Leak numbers are provided by electronic dispatch (e.g., SAP).

k. **Process Control Point**—Gas mapping personnel review leak survey documentation (maps, work tickets) for completion prior to sending to leak survey supervisor.

l. Send the leak survey documentation to the supervisor.

5 Reviewing Distribution Leak Survey Documentation and Assigning Work Resources

5.1 The leak survey supervisor completes the following steps:

1. **Process Control Point**—Reviews the leak survey documentation for completeness (e.g., maps, recheck work tickets, etc.).

2. Using the monthly schedule for comparison, confirms that all plats on the schedule have been received.

3. Assigns the work by considering the following:

- Number of resources
- Number of maps to allocate to each of the surveyors
- Type of equipment that is available
- Type of survey (foot, mobile, aerial)
- Water crossings
- Weather conditions and other factors

5.1 (continued)

4. Reviews the map to evaluate the number of services, feet of main, and area to be surveyed (e.g., alleyways, meters in front of gate/behind gate, residential or commercial).

   a. IF no distribution facilities are indicated on the map,

      THEN return the map to mapping personnel for evaluation.

5. **Process Control Point**—Plans maps that have a history of excessive "Can't Get Ins" (CGIs) early enough to complete within the compliance time-frame per Step 2 of this procedure.

6. Monitors the pace of the work AND reviews the documented work submitted by the surveyors.

7. IF the leak survey is completed beyond the required frequency.

   THEN the leak survey supervisor notifies the superintendent and regulatory compliance and support personnel per Utility Procedure TD-4413P-05, "CPUC Resolution ALJ-275 Citation Program Requirements."

6 Performing Distribution Leak Surveys

6.1 The leak surveyor performs leak survey per Utility Procedure TD-4110P-03.

6.2 **Process Control Point**—The leak survey supervisor performs field observations per Utility Procedure TD-4110P-03.

6.3 **Process Control Point**—Quality control personnel (QC) perform next day assessments (NDA) per Utility Procedure TD-4021P-03, "Gas Quality Control Leak Survey Next Day Assessment Procedure," to ensure a leak survey was conducted per PG&E requirements.

6.4 **Process Control Point**—The leak survey process owner or designate holds a periodic meeting with leak survey supervisors to review the LSPMO team progress report.

7 Submitting Distribution Leak Survey Documentation to Supervisor

7.1 The leak surveyor forwards the completed survey documentation to the supervisor for review when the map is completed.

1. Refer to Utility Procedure TD-4110P-03 for document submission requirements.

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8 Reviewing and Approving Distribution Leak Survey Documentation (Leak Survey Supervisor)

8.1 Leak Mobile Platform (LMP) automatically performs and completes certain process steps and functions in this procedure.

1. IF LMP (SAP-Integrated) is unavailable,

   THEN the leak survey supervisor performs the assigned steps.

8.2 **Process Control Point**—The leak survey supervisor reviews the survey documentation for completeness by performing the following steps:

1. Critically review the required leak survey documents as specified in Utility Procedure TD-4110P-03 to identify potential conflicts, errors, and omissions.

2. Ensure documentation accuracy and confirm the following:

   a. All corrections are indicated by a single line through the incorrect material and are accompanied by the date and the LAN ID of the corrector.

   b. All leaks and leak rechecks are justified and adequately documented according to Utility Procedure TD-4110P-09.

   c. All map correction transmittal forms are complete and entered in the Corrective Action Program (CAP).

   d. All abnormal operating conditions (AOCs) are submitted.

3. IF documents are submitted with conflicts, errors, or omissions,

   THEN return documents to the surveyor for correction, and perform follow-up activities.

8.3 **Process Control Point**—The leak survey supervisor or superintendent tracks outstanding distribution leak survey document packages by using the progress reports provided by the LSPMO team.

8.4 The leak survey supervisor sends the completed documentation to gas mapping personnel.

9 Reviewing Distribution Daily Leak Survey Logs

9.1 The leak survey supervisor reviews and transmits electronically daily leak survey logs to mapping personnel.

1. IF logs are not transmitted electronically,

2. THEN the leak survey supervisor completes the following steps:

9.1 (continued)

a. Obtains the daily leak survey log.

b. Reviews the daily leak survey logs for completeness and accuracy.

c. Confirms the review by writing his or her LAN ID and dating the log.

d. Transmits all daily leak survey logs to gas mapping personnel.

10 Entering Distribution Leaks into the Electronic Database

10.1 Gas mapping personnel update the appropriate electronic database (e.g., SAP) with leak information from leak survey documentation or Recheck Work Tickets no later than 14 days after the survey date.

1. **Process Control Point**—The leak survey supervisor and the gas mapping supervisor monitor the 14-day requirement and verify that leaks are entered into the electronic database (e.g., SAP) no later than 14 days after the survey date.

11 Reviewing and Approving Distribution Leak Survey Documentation (Mapping Personnel)

11.1 **Process Control Point**—Gas mapping personnel review the leak survey documentation by completing the following steps:

1. Critically review the documentation and information to identify the following:
   - Potential conflicts (e.g., geographical boundary, device-related)
   - Errors
   - Omissions and incomplete documentation
2. Return documents with conflicts, errors, and omissions to the leak survey supervisor for correction.
3. Begin processing of map correction transmittal forms if applicable and complete.

11.2 IF the survey of map is complete and all documentation has been returned,

THEN proceed to Step 13, "Archiving Completed Distribution Leak Survey Documentation."

OTHERWISE, return the documentation to the leak survey supervisor to ensure the documents are completed. See Sub-step 4.12.l of this procedure.

12 Entering Distribution Leak Survey Completion Data into the Electronic Database (SAP)

12.1 **Process Control Point**—Mapping personnel enter current leak survey units, including:

- Survey Date
- Surveyor's LANID
- Type of Instrument used to perform the leak survey task, including the serial number OR Company Identifier of the instrument(s) used.
- Wind reads
- Feet of main and number of services surveyed.
- **Process Control Point**—SAP validations ensure all required fields are completed.

12.2 **Process Control Point**—LSPMO team personnel review notifications for potential discrepancies.

1. IF discrepancies are found,

   THEN request gas mapping personnel update the electronic database.

13 Archiving Completed Distribution Leak Survey Documentation

NOTE

Completed daily leak survey logs are retained regardless of whether or not a leak was found. Daily leak survey logs are filed by map, not by date.

13.1 Gas mapping personnel file the following leak survey documentation:

- Leak survey plat with Form TD-4110P-03-F07, "Leak Survey and Field Inspections"
- Form TD-4110P-03-F03, "Daily Leak Survey Log"
- Form TD-4110P-03-F14, "Leak Survey Can't Get In (CGI) Log"

13.2 Gas mapping personnel return completed original DIMP special leak survey packages to DIMP personnel.

13.3 Gas mapping personnel archive locally completed copy of DIMP special leak survey packages.

13.4 Gas mapping personnel retain and maintain all leak survey, special leak survey, and repair records per the PG&E record retention schedule.

Leak Survey Process

14 Determining Frequency of Transmission Leak Surveys

14.1 TIMP personnel generate the local leak survey schedule.

1. LMP automatically performs and completes certain process steps and functions in this procedure.

   a. IF LMP (SAP-integrated) is unavailable,

      THEN the appropriate transmission personnel perform the assigned steps.

14.2 The GIS sponsor completes the following steps to determine survey frequency:

1. Refers to Table 1. Leak Survey Frequency, to apply the required leak survey frequency for any new facilities.

2. Semi-annually in June, completes a supplemental gas leak survey analysis to identify those facilities that have become operational since the previous annual analysis.

3. Makes adjustments in leak survey designations as required.

4. IF the posted gas facility will exceed the required survey frequency by the time of the next scheduled survey,

   THEN consults with pipeline engineering personnel to schedule a leak survey.

14.3 **Process Control Point**—GIS sponsor completes an annual frequency analysis for the leak survey schedule by December of each year.

15 Planning Changes and Updates for Transmission Leak Surveys

15.1 TIMP personnel notify LSPMO team personnel of any transmission frequency changes.

16 Planning Transmission Leak Survey Work for the Year

16.1 The leak survey supervisor plans the annual work by considering the following:

- Number of resources
- Number of maps to allocate to each of the surveyors
- Type of equipment that is available
- Type of survey (foot, mobile, aerial)
- Weather conditions and other factors
- Water crossings

Leak Survey Process

17 Transmission Leak Survey Methods

NOTE

Visual inspection leak survey and vegetation leak survey are not approved leak survey methods.

17.1 The following list defines the Company-approved methods for gas leak surveys:

1. Mobile-type survey:
   - Use only approved equipment and procedures to conduct a mobile-type survey, as detailed in Utility Procedure TD-4110P-24, "Optical Methane Detector (OMD) Operating Procedures," and Utility Procedure TD-4110P-26, "Mobile Leak Survey – DP-IR and HFIs."
2. Foot survey:
   - When performing a foot survey, follow Utility Procedure TD-4110P-03 and the corresponding procedure for the instrument(s) used.
3. Aerial survey:
   - See Utility Procedure TD-4110P-30, "Aerial Leak Survey Process," for additional information.

18 Preparing Transmission Leak Survey Documentation

18.1 **Process Control Point**—The GIS sponsor ensures the most up-to-date maps are used for the leak survey.

18.2 LSPMO team personnel notify gas mapping personnel that the transmission leak survey plan is available.

NOTE

Leak numbers are provided by electronic dispatch (SAP).

18.3 Gas mapping personnel prepare the transmission leak survey documentation, including the following required documents:

- Form TD-4110P-03-F08, "Attachment 15 - Sample Transmission Sign-Off Sheet"
- Frequency table
- Overview map
- Aerial plat

18.3 (continued)

- Reduced gas distribution plat map, as applicable
- Recheck Work Tickets
  - Leak surveyors use Recheck Work Tickets to recheck open transmission leaks within the survey area and to prevent duplicate leak numbers.

18.4 Gas mapping personnel prepare AND send the printed transmission leak survey package to the leak survey supervisor.

19 Reviewing Transmission Leak Survey Documentation and Assigning Work

19.1 The leak survey supervisor reviews the leak survey packages.

1. Using the transmission frequency table for comparison, confirm that all distribution plats and aerial plats on the schedule have been received.

19.2 The leak survey supervisor assigns work based resource availability, using route planning strategies for efficiency and current weather conditions. Additional considerations when assigning work include:

1. Reviewing the map to evaluate the number of feet of main and area to be surveyed (e.g., consider vegetative cover, water crossings, distance to headquarters, growing season, and residential or commercial areas).

2. Determining the aerial leak survey process for required locations per Utility Procedure TD-4110P-30.

19.3 **Process Control Point**—The leak survey supervisor completes the following steps:

1. Schedules leak surveys to be completed within the anniversary month.

2. Monitors the pace of work and reviews the documented work submitted by the surveyors.

3. IF the leak survey is completed beyond the required frequency,

   THEN the leak survey supervisor notifies the superintendent and regulatory compliance and support personnel per TD-4413P-05, "CPUC Resolution ALJ-275 Citation Program Requirements."

Leak Survey Process

20 Performing Transmission Leak Surveys

20.1 The leak surveyor performs leak surveys per Utility Procedure TD-4110P-03 and Utility Procedure TD-4110P-30.

20.2 **Process Control Point**—The leak survey supervisor performs field observations per Utility Procedure TD-4110P-03.

20.3 **Process Control Point**—QC performs next day assessments (NDA) per Utility Procedure TD-4021P-03, "Gas Quality Control Leak Survey Next Day Assessment Procedure," to ensure that a leak survey was conducted to PG&E requirements.

20.4 **Process Control Point**—The leak survey process owner or designate holds a periodic meeting with leak survey supervisors to review the progress report.

21 Submitting Transmission Leak Survey Documentation to Supervisor

21.1 The leak surveyor forwards the completed survey documentation to the supervisor for review when the map is completed.

1. Refer to Utility Procedure TD-4110P-03 for document submission requirements.

22 Reviewing and Approving Transmission Leak Survey Documentation (Leak Survey Supervisor)

22.1 **Process Control Point**—The leak survey supervisor reviews the survey documentation package by completing the following steps:

1. Critically review the records to identify potential conflicts, errors, and/or omissions and ensure the following:
   a. All CGIs are completed on the plat map.
   b. All corrections are indicated by a single line through the incorrect material AND are marked with the date and the LAN ID of the corrector.
   c. All leaks are properly documented.
   d. All map correction transmittal requests are complete.
   e. All segments have been completed.
   f. All AOCs have been submitted.
2. Return any documents with conflicts, errors and/or omissions to the surveyor for correction, and perform follow-up activities.

22.1 (continued)

NOTE
Locations surveyed using the aerial survey procedure are included for supervisor review.

3. Review documentation as applicable from completed aerial leak surveys, and include the documents in the completed package (Utility Procedure TD-4110P-30).

4. Send the completed package to gas mapping personnel (or GIS sponsor for transmission districts).

22.2 **Process Control Point**—The leak survey supervisor tracks outstanding leak survey document packages.

23 Reviewing Transmission Daily Leak Survey Logs

23.1 Leak supervisor reviews and transmits daily leak logs to gas mapping personnel electronically, if applicable.

1. IF logs are not transmitted electronically,

   THEN the leak survey supervisor completes the following steps:

   a. Obtains the handwritten daily leak survey log or prints the daily leak survey log (if electronic).

   b. Reviews the daily leak survey logs for completeness and accuracy.

   c. Documents the review by writing his or her LAN ID AND dating the log.

   d. Transmits all daily leak survey logs to gas mapping personnel.

24 Reviewing Transmission Sign-Off Sheets and Gas Transmission (Backbone GT) Station Leak Survey Report

24.1 Leak survey supervisor documents the review by writing his or her LAN ID AND dating the review on the transmission sign-off sheet.

24.2 Leak survey supervisor transmits transmission sign-off sheet to gas mapping personnel.

24.3 Leak survey supervisor documents review by writing his or her LAN ID and dating the review on the GT Station leak survey report.

24.4 Leak survey supervisor transmits GT Station leak survey report to gas mapping personnel.

Leak Survey Process

25 Entering Transmission Leaks into the Electronic Database

25.1 Gas mapping personnel update the appropriate electronic database (e.g., SAP) with information from leak survey documentation no later than14 days after the survey date.

25.2 **Process Control Point**—The leak survey supervisor AND the gas mapping supervisor monitor the 14-day requirement that leaks must be entered into the electronic database (e.g., SAP) no later than 14 days after the survey date.

25.3 Gas mapping personnel archive records for retention purposes per Step 28, "Archiving Completed Transmission Leak Survey Documentation."

25.4 Gas mapping personnel upload electronically-recorded leak survey data to the appropriate computer system database.

26 Reviewing and Approving Transmission Leak Survey Documentation Package (Mapping Personnel)

26.1 **Process Control Point**—Gas mapping personnel review the survey documentation package by completing the following steps:

1. Critically review the documentation and information to identify the following:
   - Potential conflicts in documentation
   - Errors
   - Omissions and incomplete documentation
2. Return documents with conflicts, errors, or omissions to the leak survey supervisor for correction.
3. Begin processing of map correction transmittal forms if applicable and complete.

26.2 IF the survey of map is complete and all documentation has been returned,

THEN proceed to Step 27, "Entering Transmission Leak Survey Completion Data into the Electronic Database."

OTHERWISE, return the documentation to the leak survey supervisor who confirms that the documents are completed. See Step 19, "Reviewing Transmission Leak Survey Documentation and Assigning Work."

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27 Entering Transmission Leak Survey Completion Data into the Electronic Database

27.1 **Process Control Point**—Gas mapping personnel enter current leak survey units, including the following data:

- Survey Start Date
- Survey Completion Date
- Date Sign-Off Sheet Received in Gas Mapping
- Sign-Off Sheet Returned to Construction: Yes/No
- Date Sign-Off Sheet Review Completed by Gas Mapping
- Mapping personnel comments

27.2 **Process Control Point**—LSPMO team personnel review notifications for potential discrepancies.

1. IF discrepancies are found,

   THEN gas mapping personnel update the electronic database.

28 Archiving Completed Transmission Leak Survey Documentation

28.1 Gas mapping personnel file the leak survey documentation by pipeline group including:

- Transmission Sign-Off Sheet
- Daily Leak Survey Logs, as applicable
- CGI Logs, as applicable
- Aerial plat
- Distribution plat map, as applicable
- Overview map
- Frequency table
- Aerial leak survey documentation (as defined in Utility Procedure TD-4110P-30).

28.2 District personnel scan the leak survey sign-off sheets and forward them to gas mapping personnel.

28.3 Gas mapping personnel return completed original TIMP special leak survey packages to TIMP personnel.

28.4 Gas mapping personnel archive locally completed copy of TIMP special leak survey packages.

29 Recordkeeping

29.1 Retain and maintain leak survey, special leak survey, and repair records per the PG&E record retention schedule.

END of Instructions

DEFINITIONS

Abnormal operating condition (AOC): A condition identified by the operator that may indicate a malfunction of a component or a deviation from normal operations that may indicate an operating condition that could exceed design limits or result in hazard(s) to persons, property, or the environment.

Business district: The principal business areas of a community. When determining business districts, the following areas should be considered:

- Non-wall-to-wall areas, typically at least entire blocks, where the vast majority of the buildings on both sides of the street are used for commercial, industrial, religious, educational, health, and/or recreational purposes
- Wall-to-wall areas, typically an entire block, where the vast majority of the properties on both sides of the street have no lawns, green strips, or trees. There are instances of wall-to-wall areas in residential areas.
- Areas where the mains and services are in private property serving a shopping center from the roadway or parking lot
- Strip malls in commercial areas
- Business districts do not include small commercial areas (e.g., a small store or a strip mall) in residential areas where the mains are in the franchise area and the businesses are served from lateral services off of the mains.

Can't get in (CGI): A location where an attempt has been made to access a gas facility for maintenance purposes without success. CGIs are often accessed by making customer contact, or re-attempting access at another time.

DEFINITIONS (continued)

Class locations: Class locations apply to transmission lines only. An area defined and classified by criteria set forth in Code of Federal Regulations (CFR) Title 49, Transportation, Part 192—Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards, Subpart A – General, Section 192.5, "Class locations," which reads as follows:

(a) This section classifies pipeline locations for purposes of this part. The following criteria apply to classifications under this section.

(1) A "class location unit" is an onshore area that extends 220 yards (200 meters) on either side of the centerline of any continuous 1- mile (1.6 kilometers) length of pipeline.

(2) Each separate dwelling unit in a multiple dwelling unit building is counted as a separate building intended for human occupancy.

(b) Except as provided in paragraph (c) of this section, pipeline locations are classified as follows:

(1) A Class 1 location is:

(i) An offshore area; or

(ii) Any class location unit that has 10 or fewer buildings intended for human occupancy.

(2) A Class 2 location is any class location unit that has more than 10 but fewer than 46 buildings intended for human occupancy.

(3) A Class 3 location is:

(i) Any class location unit that has 46 or more buildings intended for human occupancy; or

(ii) An area where the pipeline lies within 100 yards (91 meters) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)

(4) A Class 4 location is any class location unit where buildings with four or more stories above ground are prevalent.

(c) The length of Class locations 2, 3, and 4 may be adjusted as follows:

(1) A Class 4 location ends 220 yards (200 meters) from the nearest building with four or more stories above ground.

(2) When a cluster of buildings intended for human occupancy requires a Class 2 or 3 location, the class location ends 220 yards (200 meters) from the nearest building in the cluster.

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DEFINITIONS (continued)

Compliance due date: Final date that a task may be performed and remain within compliance with federal and state requirements.

Distribution line: For purposes of leak survey, a distribution line is a gas main operated at less than or equal to 60 pounds per square inch gauge (psig).

Distribution feeder main (DFM): For the purpose of leak survey, a pipeline operating over 60 psig that does not meet the definition of transmission in 49 CFR 192.3.

Gas facilities: All Company-operated gas lines and related appurtenances.

High consequence area (HCA): As defined in TD-4127P-05, "Criteria for Identifying High Consequence Areas." **Inaccessible Locations:** Gas facilities that are located in an area which persons or vehicles cannot safely access. This may be due to barriers, vegetation, animals, road condition or terrain. An inaccessible location is unlike a CGI in that at an inaccessible location, it would be unreasonable to expect that access would be gained through customer contact.

Leak: The unintentional escape of gas from containment.

Leak Grade: A classification of a leak based on leak readings, public exposure, and location.

Leak Recheck: Any leak survey performed with a leakage detection instrument in the area of an existing Grade 2+, Grade 2, or Grade 3 leak.

Leak Repair: An action to restore a gas facility to sound condition by eliminating a gas leak.

Leak Survey: A search for possible gas leakage in any area where Company gas facilities exist, or where a gas leak is reported or suspected.

Operator Qualified: Personnel trained, evaluated, and qualified in accordance with the Company Operator Qualification Program requirements (Utility Standard S4450, "Operator Qualification Program"), as referenced in 49 CFR 192, Subpart N.

Quarterly: Four times each calendar year, not to exceed 4½ months to the date.

Systems Applications and Products (SAP): The Company's accounting and work scheduling system.

Service: A pipeline that serves as the common source of supply to an individual customer, to two adjacent or adjoining residential or small commercial customers, or to multiple residential or small commercial customers served through a meter header or manifold.

Leak Survey Process

DEFINITIONS (continued)

Station: For the purpose of leak surveying, all transmission gas pipes and appurtenances within the company property lines, including:

- Compressor stations
- Terminals
- Storage holder facilities
- Transmission to transmission pressure regulator stations
- Other gas operating installations

Transmission Line: A pipeline, other than a gathering line, that meets ANY of the following criteria:
(1) Transports gas from another transmission line, gathering line, or storage facility to any of the following:
a. Distribution center
b. Storage facility
c. Large-volume customer that is not downstream of a Distribution Center
(2) Operates at or above a hoop stress of 20 percent specified minimum yield strength (SMYS), or is upstream of a segment of pipe operating at or above a hoop stress of 20 percent SMYS.
(3) Transports gas within a storage field.

Two other key terms needed to understand this revised definition are “distribution center” and “large-volume customer.” These terms are defined as follows:
a. Distribution center: The location at which a transmission line changes function to a distribution line. It occurs at the downstream side of the inlet fire valve to a regulator station transporting natural gas into a distribution main primarily serving non-large volume customers who purchase gas for consumption (as opposed to purchasing for resale).
b. Large-volume customer: A customer served by PG&E gas facilities that have the capability of delivering 40,000 standard cubic feet per hour (scfh) or more.

Vegetation Survey: A gas leakage survey conducted by observing the conditions of the soil and the vegetation along the gas facilities.

IMPLEMENTATION RESPONSIBILITIES

Once published on the Technical Information Library (TIL), this utility procedure revision is communicated via email by Gas TDM Communications as a Monday morning announcement.

Leak survey technical team personnel must facilitate face-to-face meetings and conference calls with the target audience’s affected work groups according to Codes, Standards, and Training (CS&T) change management plan schedule.

GOVERNING DOCUMENT

Utility Standard TD-4110S, “Gas Leak Survey and Detection Program”

Leak Survey Process

COMPLIANCE REQUIREMENT / REGULATORY COMMITMENT

49 CFR 192.197, "Control of the pressure of gas delivered from high-pressure distribution systems"

49 CFR 192.706, "Transmission lines: Leakage surveys"

49 CFR 192.709, "Transmission lines: Record keeping"

49 CFR 192.723, "Distribution systems: Leakage surveys"

49 CFR 192.933, "What actions must be taken to address integrity issues?"

California Public Utilities Commission (CPUC) General Order 112-E, §143.1, "Leakage Surveys and Procedures"

REFERENCE DOCUMENTS

Developmental References:

Utility Standard TD-4110S, "Gas Leak Survey and Detection Program"

Supplemental References:

Gas Design Standard A-34, "Piping Design and Test Requirements"

Utility Procedure TD-4021P-03, "Gas Quality Control Leak Survey Next Day Assessment Procedure"

Utility Procedure TD-4110P-03, "Performing and Documenting Leak Survey"

Utility Procedure TD-4110P-30, "Aerial Leak Survey Process"

TD-4413P-05 "CPUC Resolution ALJ-275 Citation Program Requirements"

APPENDICES

Appendix 1, Special Leak Surveys

Appendix 2, Leak Survey Process Control Plan

ATTACHMENTS

NA

DOCUMENT RECISION

Utility Procedure: TD-4110P-01, "Leak Survey Process" Rev 0, published 05/22/2013

Leak Survey Process

DOCUMENT APPROVER

Kevin Armato, Superintendent, Gas Transmission and Distribution Leak Survey

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REVISION NOTES

Where?	What Changed?
Target Audience	Revised and included DIMP and TIMP
Safety	Revised
Before you start	Revised
Section 2 – Determine Frequency and Schedule of Distribution Leak Surveys	Updated Table 1 to reflect frequency changes for transmission leak survey
Section 3 – Plan Changes and Updates for Distribution Leak Surveys Schedule	Updated – replaced engineering process owner with leak survey supervisor or leak survey performance management optimization team Added clarity when reviewing "blank maps" Added step for asset strategists
Section 4 – Prepare Distribution Leak Survey Documentation	Revised and renamed section for clarity to include leak mobile platform and pertinent documents provided by mapping.
Section 5 – Leak Survey Documentation Preparation	Removed A-form and added Recheck Work Tickets Revised for clarity
Section 6 – Leak Survey Methods	New section moved from step 4.3
Section 7 - Receive and Review Distribution Leak Survey Documentation and Assign Work	Revised to add clarity Included process point to review areas with excessive CGIs for compliance time-frames.
Section 8 – Perform Distribution Leak Survey	Added Observation, QC, and progress report control points
Section 10 – Review and Approve Distribution Leak Survey Documentation (Supervisor)	Added Leak Mobile Platform Revised section for clarity

Section 12 – Review and Approve Distribution Leak Survey Documentation (mapper)	Revised section – removed IGIS and electronic device
Section 14 – Enter Distribution Leak Survey completion Data into electronic Database (SAP)	Revised section to clarify data entry into SAP Replaced Integrity Management with Leak Survey Program Management Optimization Team.
Section 15 – Archive Completed Distribution Leak Survey Documentation	Revised section for record retention Added DIMP special leak surveys
Section 16 - Determine Frequency of Transmission Survey	Added leak mobile platform
Section 17 – Plan Changes and Updates for Transmission Leak Surveys	Replaced Leak Survey Engineer with leak survey program management optimization team
Section 19 – Leak Survey Methods	New section
Section 22 – Perform Transmission Leak Survey	Added field observation, Quality Control, and progress report process control points.
Section 24	Added Gas Transmission (Backbone GT) Station Leak Survey Report
Section 27 – Enter Leaks Into Leak Management System (Electronic Database)	New Section
Section 29 – Enter Transmission Leak Survey Completion Data into Electronic Database	Revised and replaced Integrity Management with Leak Survey Program Management Optimization Team.
Section 30 - Archive Completed Transmission Leak Survey Documentation	Revised record retention schedule
Definitions	Revised High Consequence Area Removed Integrated Gas Information System (IGIS)
Reference Documents	Added Gas Design Standard A-34 “Piping Design and Test Requirements”
Document Recision	Updated for this revision.
Approved by	Revised
Document Owner	Revised
Document Contact	Revised
Leak Survey Process Map (former Appendix 1)	Removed

Appendix 1, Special Leak Surveys
Page 1 of 1

Assigned personnel (Gas Mapping, Engineering, DIMP, etc.) determine the need for special leak surveys based upon the circumstances listed below. Once the need for a special survey is determined, gas mapping personnel prepare the documents needed for the leak surveyor to perform the special survey.

Perform special leak surveys for the following situations:

- Before, during, and after maximum allowable operating pressure (MAOP) uprates of gas distribution facilities (Utility Procedure TD-4125P-03, " Revising the MAOP of Pipelines Operating at 60 PSIG or Less").
- Perform special one-time leak surveys following exposure of the gas facilities to unusual stresses caused by significant events. See Utility Procedure TD-4110P-08, "Leak Survey After Significant Events."
- Perform special surveys of areas as deemed appropriate by local engineering, Integrity Management or leadership.
- Substations: Perform special leak surveys near designated PG&E substations and known third party electric substation where transformers and switching equipment are located inside an enclosed building. Control buildings inside fenced substations are excluded. Semi-annual surveys are required.
- Perform special leak surveys identified in Gas Design Standard A-34 (e.g., surveying after facilities are damaged by construction work, survey after strength testing, etc.).

Special leak surveys are strongly recommended for the following situations:

- Repair Grade 1, 2+, 2, and 3 leaks found prior to the known street work commencing.
- Before, during, or after major third-party construction projects that involve a large trench, chamber or vault excavations.

Appendix 2, Leak Survey Process Control Plan

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Process Step	Control	Control Type	Frequency	Sample Size/Scope	Responsibility	Contingency
Plan Changes and Updates for Distribution Leak Survey Schedule	Review of all plat maps against the leak survey schedule to detect maps not on schedule – Distribution only.	Detective	Annually	All gas plat maps	Mapping personnel	Add missing maps to schedule and determine cause of missing maps
Determine Frequency of Transmission Surveys	GIS sponsor completes an annual frequency analysis for the leak survey schedule by December of each year – Transmission only.	Detective	Annually	All data	GIS sponsor	Make changes to class location as necessary
Plan Changes and Updates for Distribution Leak Survey Schedule	Perform annual frequency analysis for the LS schedule (% of total services on annual, schedule re-balancing, etc.).	Detective/ Preventive	Annually	All schedule data	Leak Survey Program Management Optimization Team	Make changes to the schedule as needed
Plan Distribution (Transmission) Leak Survey work for the year	Supervisor monitors work by reviewing progress report.	Preventive	Daily/ Weekly	Current and next month data	LS supervisor	Make resource adjustments and determine cause of schedule slip
	Plan maps that have a history of excessive CGIs/ inaccessible locations early enough to complete before the end of the anniversary month.	Preventive	Monthly	All affected maps	LS supervisor	
	Regularly schedule meetings with LS Supervisors to review progress report.	Preventive	Weekly or as required	All affected maps	Leak survey process owner	Make resource adjustments and determine cause of schedule slip

Leak Survey Process

Process Step	Control	Control Type	Frequency	Sample Size/Scope	Responsibility	Contingency
Prepare Distribution (Transmission) Leak Survey Documentation	For Distribution – printing of maps is to be done within 30 days of the leak survey	Preventive	Monthly	All maps	Mapping personnel	
	For Transmission - GIS sponsor must ensure the most up-to-date maps are used for leak survey	Preventive Detective	As required prior to survey	All maps	Mapping personnel	Correct the package and determine the cause
	Review leak survey documentation (maps/logs/rechecks) for completeness prior to sending to the LS supervisor					
Receive and Review Distribution (Transmission) Leak Survey documentation and Assign work	Review leak survey package (maps/logs/rechecks) for completeness prior to leak survey execution	Detective	As needed	All packages	LS supervisor	Follow up with mapping if issues exist
Perform distribution leak survey Utility Procedure TD-4110P-03, "Performing and Documenting Leak Survey."	Monitor surveyor and contractor OQ status to confirm surveyors are qualified	Detective	As required prior to assigning LS work	All surveyors and contractors	LS supervisor	Follow up
	Perform Field Observations	Detective	At least once per quarter	Sample all surveyors and contractors	LS supervisor	When issues are found perform coaching and training
	Next Day Assessments	Detective	Random/ scheduled	All surveyors and contractors	Quality Control	Follow up with LS supervisor and recommend coaching and training

Leak Survey Process

Process Step	Control	Control Type	Frequency	Sample Size/Scope	Responsibility	Contingency
Enter leaks into leak Management system	Monitor the 14 day requirement that leaks must be entered into (or SAP) within 14 days of the survey date	Detective	Monthly	All leaks	LS Supervisor/ Mapping supervisor	Take appropriate action
Review and Approve Distribution (Transmission) Leak Survey Documentation (Supervisor)	Track outstanding LS documentation by using the progress report	Detective	As needed	Each package	LS supervisor/ Superintendent	Follow up with surveyor if issues exist
Review and Approve Distribution Leak Survey Documentation (Mapping)	Review of document package by Mapper	Detective	As needed	Each package	Mapper	Correct the errors, coach employee
	Validate current leak survey units against forecast	Detective	When recording on electronically	SAP Notifications	Leak Survey Program Management Optimization Team	Follow up with mapping if issues exist
Enter Distribution (Transmission) Leak Survey Completion Data into Electronic Database	Validate data entry	Preventive	All data entry sessions	All data	SAP validation controls	Enter appropriate data as required

Changes to Leak Survey Frequency

SUMMARY

This bulletin identifies changes to the survey schedule and frequency within the leak survey process, to align with requirements identified in California Public Utility Commission General Order 112F, Section 143.1, "Leak Surveys and Procedures."

Level of Use: Informational Use

AFFECTED DOCUMENT

Utility Procedure TD-4110P-01, "Leak Survey Process"

TARGET AUDIENCE

Personnel who perform leak surveys, including their supervisors; gas mapping personnel and supervisor; geographic information system (GIS) sponsor; systems, applications and products (SAP) asset strategists; gas superintendents; gas engineers; pipeline engineers; public safety and asset integrity personnel; distribution integrity management program (DIMP) and transmission integrity management program (TIMP) personnel and supervisors; and regulatory compliance personnel.

WHAT YOU NEED TO KNOW

1 Leak Survey Frequency Change

1.1 Use the following information to determine frequency and schedule of distribution leak surveys.

NOTE

The following definitions apply to Table 1, "Leak Survey Frequency:"

Quarterly: Four times each calendar year, not to exceed 4½ months to the date

Semi-Annual: Twice each calendar year, not to exceed 7½ months to the date

Annual: Once each calendar year, not to exceed 15 months to the date

3-year: Once every three calendar years, not to exceed 39 months to the date

5-year: Once every five calendar years, not to exceed 63 months to the date

Leak management may direct mapping to apply an increased scheduled frequency (e.g., a 5 year [63-month] survey may be requested in a 4 year [51-month] timeframe).

1.2 Refer to Table 1, "Leak Survey Frequency," for the required frequencies for various facility types.

Changes to Leak Survey Frequency

Table 1. Leak Survey Frequency

Facility Types	Survey Frequency
Distribution - Maximum Allowable Operating Pressure (MAOP) less than or equal to 60 psig	
Distribution Facilities within designated Business District and Public Building areas	Annual
Buried metallic facilities not under cathodic protection and not covered by an annual requirement	3 years
Balance of underground distribution facilities	5 years
Transmission	
All Odorized DOT Transmission within a Class I, II, III, & IV locations.	Semi-Annual
Transmission Stations	
Class I, II, III, & IV	Semi-Annual
Gathering	
Class I, II, & III, & IV	Annual
Un-Odorized DOT Transmission and Un-Odorized DOT Gathering	
Class I, II, & III	Semi-Annual
Class IV	Quarterly

DOCUMENT APPROVER

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INCLUSION PLAN

This bulletin will be included in the next revision of TD-4110P-01.

IMPLEMENTATION PLAN

This bulletin will be communicated through email from Gas TDM Comms, local conference calls, and tailboards from supervisors to their personnel.