



Asset Type: **Gas Transmission and Distribution** Date Issued/Updated: **October 2008**

Function: **Operation and Service** Page: **1** of **13**

Title: Deactivation and/or Retirement of Underground Gas Facilities

Overview

This work procedure (WP) establishes the responsibilities, requirements, and procedures to deactivate Pacific Gas and Electric Company's (the Company's) underground gas gathering lines, gas transmission lines, gas distribution mains, gas services, and disconnecting services in conformance with Code of Federal Regulations (CFR), Title 49, Parts 150, 161, 761, and 49 CFR, Part 192.727.

Properly cutting and sealing pipe ends reduces the risk of creating a path for the migration of leaking natural gas and groundwater intrusion.

Accurate documentation and recordkeeping for deactivated lines improves the Company's ability to respond to requests for information when facilities are encountered during excavation and construction.

The main sections of this document are structured as follows:

Section 1: General Procedures – Page 2

Section 2: Deactivating Distribution Gas Facilities – Page 4

Section 3: Deactivating Transmission Lines, Gathering Lines, and Distribution Mains – Page 5

Governing Document

Utility Standard S4100, "Gas Pipeline Maintenance, Construction, and Operation Requirements" *[not yet issued – expected publication 2009]*

Safety

Perform all work in compliance with the Company's Utility Standard Practice (USP) 22, "Safety and Health Program," and the Code of Safe Practices.

Properly deactivating gas facilities reduces soil settling and other environmental and safety concerns and reduces future liability to the Company.

Procedures to Deactivate Underground Gas Facilities

1. General Procedures

A. Safety Precautions

- 1) All employees must be operator-qualified for specific tasks to deactivate Company underground gas facilities.
- 2) Flammable conditions may be present in the facilities to be deactivated, due to prior natural gas transportation. Take proper precautions before making any cuts with tools that may generate a spark or fire.
- 3) Before starting work, tap the pipeline to be deactivated using a Mueller Save-A-Valve, valve tee, or other pressure controlling fitting to ensure that there is no pressure in the gas facility, due to the possibility of leaking isolation valves, mis-marked pipeline, unknown operating status, or other possibilities related to an unexpected pressurized pipeline.
- 4) Before sealing the ends of a pipeline section, perform a gas measurement to ensure that there is no remaining combustible atmosphere inside the retired pipeline.

B. Future Use Considerations

- 1) At the time of deactivation, consider removing deactivated facilities, as well as possible future uses such as sale, lease, or transfer.
- 2) Operating organizations must consider a facility's possible future use by the Company or third party. Do not slurry fill or sectionalize segments of the deactivated pipeline if there is a potential for future use.
- 3) Retire deactivated pipelines **not being held** for future use by the Company.
- 4) The operating department must prepare a retirement job to cover the cost and details of deactivating the pipeline and adjusting the financial and tax records.

C. Environmental and Health Considerations

- 1) Remove all known or identified pipeline liquids, including drips from gas gathering and transmission lines, by pigging or purging before deactivation.
- 2) Contact the local environmental specialist (coordinator) if liquids (pipeline drips, etc.) are encountered during deactivation at sectionalizing points. Follow WP4710-01, "Gas Pipeline Leak Response Procedures," as applicable.
- 3) Employees handling natural gas pipe must have California/Occupational Safety and Health Administration (Cal/OSHA) mandated hazard communication training, which covers polychlorinated biphenyls (PCBs), pipe wrap, natural gas, and natural gas liquids. Employees handling pipe that contained free liquids must wear Company-approved gloves and protective clothing.

- 4) Refer to Attachment 1, "Restrictions for Deactivation of Gas Facilities with PCBs," when the presence of PCBs is known or suspected.
- 5) Handle and remove pipe wrap in accordance with WP4711-01, "Gas Pipe Wrap Removal, Handling, and Disposal Procedures," as applicable.
- 6) If the deactivated facilities are to be leased, sold, or transferred, address environmental disclosures and waivers in the appropriate agreements.
- 7) For deactivated facilities located within Alameda, Contra Costa, Inyo, Kern, Marin, San Bernardino, San Francisco, San Mateo, and Santa Clara counties, perform sampling in accordance with Attachment 2, "Pipeline Sampling Requirements for PCBs in Specific Counties."

D. Consideration of Land Rights and Transfers

- 1) When considering deactivating gas facilities, contact Technical and Land Services (T&LS) to review the Company's land rights to determine if any easement, permit, lease, license, or agreement contains any special provisions that need to be addressed and what action should be taken.
- 2) T&LS and/or Law department personnel assist in determining the Company's obligation to remove a portion of a deactivated facility in a street to accommodate a government project or another franchisee's use.
- 3) The cost of removing deactivated/retired facilities for non-franchise-related third-party relocations is included in the cost of the relocation. If the third party requests and all concerns regarding hazardous material or residues are addressed, gas pipe may be sold in place to the third party in lieu of removal.
- 4) T&LS processes all easement quitclaims and land right assignments. When deactivated/retired facilities are sold in conjunction with a quitclaim, it is essential that a T&LS employee presents the Bill of Sale for execution before the delivery of the quitclaim.

E. Records and Forms

- 1) The Company retains all of the owner's obligations, rights, and responsibilities unless the deactivated/retired facility is removed, sold, or ownership is transferred to another individual or utility (subject to appropriate management, regulatory, local government, and landowner approvals).
- 2) Prepare and file a revised construction drawing after the work is completed. Mark such as-built drawings to confirm completion of each task associated with the deactivation.
- 3) If the deactivated/retired facilities are to be sold, assigned, or transferred to a third party, the responsible department engineer must prepare Form 62-3007, "Request for Disposition of Material," and forward it to Investment Recovery to prepare the Bill of Sale.
- 4) Each division or district must retain all deactivated line, main, and service facility information. This information must include, at minimum, the construction as-built drawings,

facility size, material type, physical location of the deactivated facilities, date installed, and date deactivated.

- a. Divisions or districts with electronic mapping must place deactivated facility information on the designated mapping layer.
- b. Divisions or districts without electronic mapping must establish a cross-reference or index system that allows facility information to be readily accessible.

2. Deactivating Distribution Gas Facilities

A. General Requirements

- 1) When the deactivation of gas service lines is requested, estimating/mapping personnel work with the Company's job scheduling system to schedule the deactivation. Estimating/mapping personnel must initiate this process in accordance with Attachment 3, "Documentation for Deactivation of Distribution Gas Facilities."
- 2) Disconnect and properly seal a service, according to standards, in a timely manner after the Company becomes aware of the destruction, demolition, or removal of the structure being supplied. If a new structure is started and the same service will supply the new structure, the cut-off may be made at the property line or within the property, if prudent. Otherwise, the cut-off must be made at the main.
- 3) Disconnect and properly seal a service supplying a riser without an accompanying building, according to standards, within 15 working days of discovery. If there is reason to believe that the service will supply a new structure in the future, the cut-off may be made at the property line or within the property, if prudent. Otherwise, the cut-off must be made at the main.
- 4) Do not transfer stub services to other mains if the original main is deactivated or abandoned, unless there is evidence that the service will be used within 1 year, to the date.
- 5) Each maintenance and construction (M&C) organization must establish a filing and monitoring procedure to ensure compliance with this work procedure. Review stub service records every 5 years for safety, exposure to hazardous conditions, and the likelihood of future use of the stub service. For stubs installed for new customer connections, the first review begins on the 10-year anniversary of the installation, and subsequent reviews must be made every 5 years thereafter, to the date.
- 6) Cut off stub services at the main within 1 year, to the date, if identified as not needed in the future. If authorized by the Gas System Integrity manager, stub services meeting all of the following conditions do not need to be cut off at the main:
 - The stub is not likely to be exposed to construction activity.
 - The stub is accurately mapped.
 - The stub is locatable.
 - Leaving the stub in place is safe for the public and employees.

B. Procedure for Deactivating Distribution Gas Facilities

- 1) Cut the pipe as close to the main connection as practical, and seal the open end of the deactivated pipe.
- 2) Remove the riser to below ground level and seal the remaining pipe. Or, if the service passed through or under the building foundation, cut the pipe outside the building and seal both ends.
- 3) When a distribution service is deactivated along with the main or when only a portion of the service is deactivated, cut the service at the property line. Remove the riser and meter and seal both ends. Make this cut at the most economical location, such as unpaved parking strips or lawn areas.
- 4) When a service supplied by a rear easement main is deactivated, remove the riser and meter and cut and seal the service at the main.
- 5) For stub service deactivation, if, after two attempts to locate the stub the stub cannot be found, document both attempts and complete the deactivation stamp on the service order in ink. Return the service order to the mapping personnel. The mapper places the appropriate symbol on the plat map. No further action is required.

3. Deactivating Transmission Lines, Gathering Lines, and Distribution Mains**A. General Procedures**

- 1) Physically disconnect all pipe sections to be deactivated from all gas sources.
- 2) Sectionalize long segments of deactivated pipe or main at intervals of approximately 1,000 feet (ft), or up to 4,000 ft for pipes under the following circumstances:
 - In rural areas
 - In private rights-of-way
 - For known third-party reuse
 - Other appropriate circumstances

Perform sectionalizing by closing a valve (for distribution only) or by removing a section of pipe and sealing the ends.

- 3) Purge all pipe sections to be deactivated of natural gas in accordance with Numbered Document A-36, "Procedures for Purging Gas Facilities."
- 4) Maintain cathodic protection (CP), patrolling, and line markers on deactivated pipelines if there is the possibility for the Company or a third party to use the pipeline for gas transportation in the future. If CP is removed, do not use the pipeline for transporting natural gas unless an extensive evaluation is performed to verify the pipeline's integrity and the pipeline engineering manager approves the reuse.

- 5) When deactivating pipelines 8 inches or larger in diameter, give consideration to the following treatments.
 - Purging with inert gas.
 - Filling the pipe with slurry or controlled low-strength material.
 - Removing the pipe from the ground.
- 6) For rivers, levees, and significant waterway crossings, slurry filling or removal is required for gas pipelines where no future use is expected. If future use is anticipated, consider the effects of buoyancy when choosing a deactivation method. Review the original installation permit conditions regarding potential navigation or dredging hazards or special deactivation or removal requirements. Under special circumstances, the pipeline engineering manager may authorize exceptions to slurry filling or removal.
- 7) When deactivating Caltrans crossings, filling pipelines with sand, two-sack slurry, or controlled low-strength material is mandatory for metal pipes 12 inches in diameter or larger (see [Section 613](#) of the *Caltrans Encroachment Permit Manual*) and may be required for smaller pipe diameters when necessary to protect the highway.
- 8) For paved surfaces, restore any bell holes or other excavations in accordance with the latest edition of *California Inter-Utility Site Restoration Guidelines*.
- 9) Upon deactivating any pipeline in a commercially navigable waterway, file a report, as required by [49 CFR 192.727 \(g\)](#), to the [National Pipeline Mapping System \(NPMS\)](#). The responsible gas engineer or local mapping group must send the date of the deactivation, diameter of pipe, and method of deactivation to the gas transmission and distribution (GT&D) mapping supervisor, who enters the deactivation in the GT&D Geographic Information System (GIS). The Company includes these deactivated sections in its annual submittal for gas transmission pipelines, as required by the NPMS, "Standards for Pipeline and Liquefied Natural Gas Operator Submissions."
- 10) Consider removing all aboveground markers, pipelines, rectifiers, electrolysis test station (ETS), valve extensions, and other facilities related to deactivated facilities.

B. Disposition of Pipelines

- 1) Remove liquids from pipelines as follows:
 - a. Remove free-flowing liquids from the line by pigging or purging.
 - b. Collect and dispose of liquids as instructed by the local environmental specialist (coordinator).
 - c. Remove drip legs from transmission pipe and drip pots on distribution pipe.
- 2) Dispose of pipe as follows:
 - a. [Table 1, "Disposal Options for Removed Deactivated Pipelines,"](#) below describes typical disposal options for removed natural gas pipe.

- b. Contact the local environmental specialist (coordinator) regarding the removal and disposal of pipe. Pipelines containing PCBs ≥ 50 parts per million (ppm) to be sold must be decontaminated to < 50 ppm before sale.
- c. Plastic pipe that is free of liquids and does not contain detectable levels of PCBs may be disposed of as trash.

Table 1. Disposal Options for Removed Deactivated Pipelines

Type of Pipe	PCB Concentration	Disposal Options
Metal	< 50 ppm (or < 10 micrograms per 100 square centimeters [cm ²])	Scrap metal
Metal	≥ 50 ppm (or ≥ 10 micrograms per 100 square cm)	Hazardous waste*
Plastic	< 50 ppm (or < 10 micrograms per 100 square cm)	Non-hazardous waste
Plastic	≥ 50 ppm (or ≥ 10 micrograms per 100 square cm)	Hazardous waste*

*Contact the local environmental coordinator to arrange for pipe disposal.

C. Pipe-End Seal Methods

- 1) Whenever a pipeline must be cut, remove a section of pipe, seal the ends, and thoroughly compact backfill in its place. Seal the ends of the pipe left remaining in the ground to **avoid future ground settlement and water intrusion**.
- 2) Place permanent Electronic Marker System (EMS) devices at all cut-off ends and sectionalizing points on distribution pipe. Gas engineering personnel must consider using the EMS or Global Positioning System (GPS) to mark cut-off and sectionalizing points for all gas pipe.
- 3) Seal open ends of deactivated pipes using the most appropriate method listed in Table 2 below. Additional sealing methods may be used if the responsible gas engineer approves them.

Table 2. Approved Pipe Sealing Methods

Method	Transmission/ Gathering	Distribution
1. Crush or flatten the pipe-end and seal-weld the opening.	x	x
2. Weld a plate or cap over the opening.	x	x
3. Seal with concrete or mortar products.	x	x
4. Securely seal with a tightly driven redwood plug (2 inches or smaller). See <u>Numbered Document A-81</u> .	x	x
5. For copper pipe, flatten and bend to 180 degrees.		x
6. Seal with polyurethane foam cast in place.	x	x
7. For plastic pipe, use either fusion or mechanical caps to seal the pipe or use methods 3, 4, and 6 above (see <u>Numbered Documents A-90</u> and <u>A-93.2</u>).		x

Table 2. Approved Pipe Sealing Methods, Continued

Method	Transmission/ Gathering	Distribution
8. For low-pressure cast iron or steel pipe, install a mechanical blanking head.		x
9. Securely seal with a tightly fitting, outside-diameter-seal plastic end cap.	x	x
10. Other methods approved by the responsible pipeline engineer.	x	x

D. Valve Deactivation

When a valve is no longer required for operations, the valve may either be removed from the system or left in place. Additionally, some valves may be leaking internally or no longer operable. A valve may also be worn or defective and cannot be repaired without removing it from service. Valves not required for emergency or system operation do not need to be replaced.

Remove and salvage valves and curb valves if the cost of removal is justified. Remove all equipment within 24 inches of the final grade. Seal the open ends of the pipe or valve remaining in the ground in accordance with Section 3.B, "Disposition of Pipelines," on Page 6.

Although this procedure allows unnecessary valves to remain in the piping system, remove valves at the first practical opportunity, since they will always be a potential source of external leakage.

- 1) Verify that the valve is no longer needed for any present or foreseeable use. The gas district superintendent or operating supervisor, or their designees, contacts the appropriate facility/pipeline engineer and gas system operations personnel to verify that the valve is no longer required.
 - a. If practical, remove the valve from the piping system and install a cap or spool piece as required.
 - b. In some cases, the cost of removing the valve can be substantial, especially if it is buried and/or a large quantity of gas must be blown down. In these instances, leave the valve in place. If unrelated piping construction is conducted adjacent to the valve in the future, remove the valve at that time. In these situations, skip the following Step 2) and proceed to Step 3).

Note: Since the valve body is qualified for the gas pressure and either transports gas through an open valve port or shuts off gas flow when it is closed, consider the valve body as part of the operating pipeline.

- 2) When the valve is removed, update the appropriate operating diagram and/or map, construction drawings, and operating and maintenance instructions (O&MI), if appropriate.
- 3) If the valve remains in place, take the following actions to render the valve inoperable:
 - a. If the valve is installed with a valve frame cover, remove any valve extension and valve frame and cover, externally coat the valve, and bury it.

- b. If the valve is installed with an extended manual gear operator or power operator and is located in an unsecured area, remove the operator (or power actuator) and valve extension, externally coat the valve, and bury it.
- c. If the valve is aboveground in a secured area and cannot be removed, take the most appropriate of the following actions:
 - Remove the valve operator or actuator from the valve.
 - For valves with a manual gear operator, remove the handwheel.
 - For valves with power actuation, disconnect the pneumatic/electric power connection.
 - Once the valve is disabled, use a stainless steel tag to label the valve, "Not in Service -- Inoperable." Attach the tag to the valve stem or handwheel stem, using a stainless steel hose clamp.
- d. Provide appropriate external coating protection, as required in Gas Standards and Specifications, Section E, "Coating and Wrapping."
- e. If the deactivated valve remains on an active pipeline, indicate on the operating diagram/map, "Not Required for Service -- Valve Inoperable." If applicable, also indicate on the OS&MI that the valve is inoperable.
- f. Indicate in ink on the "Valve Maintenance Record" (Form F4430-04-1) that the valve is "Retired" or "Not Required for Service -- Valve Inoperable." Move the "Valve Maintenance Record" to the inactive portion of the district's valve maintenance binder.
- g. Update the data on the computerized pipeline maintenance-scheduling program (PLM) to indicate that valve maintenance is not required for this particular valve.

E. Vault Removal and Demolition

- 1) Before vault abandonment, discharge water from utility enclosures in compliance with regulations. See National Pollutant Discharge Elimination System (NPDES) General Permit CAG990002.
- 2) Remove vaults up to 24 inches in depth, as follows:
 - a. Remove the frame assemblies.
 - b. Remove all piping, valves, and equipment within the vault. Salvage valves and equipment if the cost is justified.
 - c. Backfill with sand or other specified material and compact to the existing or proposed finished grade, whichever is less. Backfill and compact the excavation per *California Inter-Utility Site Restoration Guidelines*.
- 3) For vaults and pits with depths greater than 24 inches, perform the following tasks:
 - a. Remove all piping, valves, and equipment in the vault within 24 inches from the existing or proposed finished grade. Salvage valves and equipment, if the cost is justified.

- b. Piping, valves, and equipment in the vault 24 inches below the existing or proposed finished grade can remain in the abandoned vault or pit if there is no salvage value. Remove all oil- and grease-containing equipment.
- c. Remove frame assemblies, manhole castings, and manhole extensions.
- d. Break up and remove the walls and ceiling to a minimum depth of 24 inches below the existing or proposed finished grade.
- e. Remove all exposed structural steel and rebar.
- f. Break up a portion of the floor to allow for adequate underground water drainage.
- g. Backfill deactivated vaults or pits more than 24 inches below the existing or proposed finished grade with wet sand or other specified material to allow for flow.
- h. Backfill and compact the remaining 24 inches to the existing or proposed finished grade, in accordance with *California Inter-Utility Site Restoration Guidelines*.

Definition of Terms

Commercially navigable waterway: A waterway where a substantial likelihood of commercial navigation exists, as specified in 49 CFR 192.727 (g).

Controlled low-strength material: A mixture of concrete, water, fly ash, or other admixtures prepared in accordance with Section 201-6 of the *Standard Specifications for Public Works Construction*, 1997 edition.

Deactivated gas facilities: All facilities, including pieces or sections of gas pipe remaining in the ground after being disconnected from the active gas system.

Electronic Marker System (EMS): Passive antennas encased within polyethylene housing, used to identify the precise location of underground gas and electric facilities.

Future use: Any potential or forecast use of deactivated pipeline facilities by the Company or third parties for any purpose, such as reactivation as a gas-carrying pipe or as casing for gas or non-gas facilities. Examples include fiber optic installations by a third party.

Sealing ends: Closing off the ends of the pipe to prevent the potential migration of gas. Also, closing off the ends of the electrical conduit.

Sectionalizing: Isolating one section of pipe from the other to prevent the potential migration of gas. Also, de-energizing and isolating a section of conductor or cable from the rest of the system.

Stub service: Any service connected to the main that is not continuous from the main to the meter.

Acronyms

Cal/OSHA: California/Occupational Safety and Health Administration
CFR: Code of Federal Regulations
CP: Cathodic protection
CPUC: California Public Utilities Commission
EMS: Electronic Marker System
GIS: Geographic Information System
GS&S: Gas Standards and Specifications
GT&D: Gas Transmission and Distribution
M&C: Maintenance and Construction
NPMS: National Pipeline Mapping System
PCB: Polychlorinated biphenyl, environmentally regulated hazardous material
T&LS: Technical and Land Services

Recision

This work procedure cancels and replaces the following documents:

- Guideline G14129, "Retiring Gas Transmission Valves No Longer Required for Operation"
- UO Standard S4129, "Deactivation of Gas Facilities"

Reference Documents

Code of Federal Regulations (CFR), Title 40, "Protection of Environment":

Part 150, "General"

Part 161, "Data Requirements for Registration"

Part 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions

CFR 49, "Transportation":

Part 192.3, "Definitions"

Part 192.727, "Abandonment or deactivation of facilities"

California Inter-Utility Site Restoration Guidelines, 2nd Edition

California/Occupational Safety and Health Administration (Cal/OSHA)

Caltrans Encroachment Permit Manual, Section 613

Code of Safe Practices

Forms

F4430-04-1, "Valve Maintenance Record"

62-3007, "Request for Disposition of Material"

Gas Standards and Specifications, Section E, "Coating and Wrapping"

National Pipeline Mapping System (NPMS), "Standards for Pipeline and Liquefied Natural Gas Operator Submissions"

National Pollutant Discharge Elimination System (NPDES) General Permit CAG990002

Numbered Documents

A-38, "Procedures for Purging Gas Facilities"

A-81, "Plugs and Caps for Non-Pressurized Gas Pipelines"

A-90, "Plastic Main and Service Installation"

A-93.2, "Deactivation of Plastic Services"

B-10, "Standard Pipe Caps"

B-91.1, "Plastic System Mechanical Fittings"

Standard Specifications for Public Works Construction, 1997 Edition

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

Utility Standards

D-50457, "Gas Mapping Standard, 1" = 100' Plat Sheets"

Work Procedures

WP4710-01, "Gas Pipeline Leak Response Procedures"

WP4711-01, "Gas Pipe Wrap Removal, Handling, and Disposal Procedures"

Attachments

Attachment 1, "Restrictions for Deactivation of Gas Facilities with PCBs"

Attachment 2, "Pipeline Sampling Requirements for PCBs in Specific Counties"

Attachment 3, "Documentation for Deactivation of Distribution Gas Facilities"

Attachment 4, "Chain of Custody Record" (Form 62-1174)

Contact for More Information



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Approved by



Manager

Revision History

Chg No.	Date	Description	By (LAN ID)
00	October 2008	Initiated new document.	