



SOUTHWEST GAS CORPORATION

Jerome T. Schmitz, P.E., Vice President/Engineering

April 16, 2015

Kenneth Bruno
Program Manager
Gas Safety and Reliability Branch
Safety and Enforcement Division
State of California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

**Subject: General Order 112-E Inspection of the Southwest Gas Corporation's
(SWG) Operation and Maintenance Plan on January 12-15, 2015**

Dear Mr. Bruno:

Southwest Gas Corporation (Southwest Gas or Company) respectfully submits the following response to the "Summary of Inspection Findings" (Summary) issued by the Safety and Enforcement Division (SED) on March 17, 2015, with respect to its General Order 112-E inspection of the Company's Operations and Maintenance Plan on January 12-15, 2015 .

A. Inspection Findings and Violations

Title 49 Code of Federal Regulations (CFR) & 192.605 Procedural manual for operations, maintenance, and emergencies, states in part:

"(b) Maintenance and normal operations. The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.

(1) Operating, maintaining, and repairing the pipeline in accordance with each of the requirements of this subpart and Subpart M of this part... "



1. Title 49 CFR §192.745 Valve maintenance: Transmission lines, states in part:

"Each transmission line valve that might be required during any emergency must be inspected and partially operated at intervals not exceeding 15 months, but at least once each calendar year."

Title 49 CFR §192.747 Valve maintenance: Distribution systems, states in part:

"Each valve, the use of which may be necessary for the safe operation of a distribution system, must be checked and serviced at intervals not exceeding 15 months, but at least once each calendar year. "

SWG's Operation and Maintenance (O&M) Manual effective date 12/31/14, Valves Procedure states in part:

a) Page 1-1: *"Southwest Gas typically utilizes various valves for controlling flow:"* (and then shows pictures of Plug, Ball, Gate, and Needle steel valves).

SED reviewed SWG's Valves Procedure, effective date 12/31/2011 and determined that it does not include procedures for operating, maintaining or repairing two of these valve types: gate and needle valves.

b) Page 2-6, Table 2 mentions the "CVT" or Curb Valve Tee valve type.

This table is the only mention of the CVT valve. The O&M manual does not give operating, maintenance, or repair procedures for the CVT valve type.

SED determined the following:

- SWG Valve Procedures must clearly state what types of valves are used in its system.
- SWG must revise its procedures to include the valve operation, maintenance, and repair procedures and requirements for each type of valve used in its transmission and distribution systems.
- SWG training material and instructions provided to its employees and contractor employees must contain detailed procedures on how to perform related covered tasks.
- SWG must communicate the changes to the procedure that affects the covered task to all its personnel performing the covered task, and re-qualify the



affected personnel as necessary. If re-qualification is not needed, SWG must state the reason why conducting re-qualification is not necessary.

Please describe the corrective actions taken to address the deficiencies identified above and provide SED with a copy of the revised version of the Valve Procedures including the training material for the relevant covered tasks. If SWG determines that re-qualification is needed, please indicate the date when it plans to complete the re-qualification and the number of personnel to be qualified.

Southwest Gas Response:

Southwest Gas agrees that the Valves Procedure contained within the Company's Operations Manual must clearly state what types of valves are used in its transmission and distribution systems and provide procedures for the operation and maintenance of such valves, consistent with Title 49 CFR Parts 192.745 and 192.747. Southwest Gas will revise its Valves Procedure to include the required procedures for operating and maintaining gate and CVT valves. Southwest Gas will also review and modify its training materials as necessary to ensure that they contain detailed procedures for performing the related covered tasks. Additionally, upon reviewing its Valves Procedure, Southwest Gas identified an error in Section 1.1, VALVE TYPES, which indicates that needle valves are used for controlling flow. Southwest Gas only uses needle valves on above ground facilities, as a testing point for the installation of a pressure gauge.

Revisions to the Valves Procedure will be included in the Company's Operations Manual to be published as an "interim revision" no later than September 30, 2015. In addition, personnel who are qualified to maintain underground valves, or who may be called upon to operate a valve during an emergency, will be trained and re-qualified as necessary. Upon publication of the Operations Manual revisions Southwest Gas will provide SED with a copy of the revised Valves Procedure, the number of affected personnel, and a schedule for completing the requisite training and re-qualification.

2. Title 49 CFR §192.751 Prevention of accidental ignition, states in part:

"Each operator shall take steps to minimize the danger of accidental ignition of gas in any structure or area where the presence of gas constitutes a hazard of fire or explosion, including the following: ...

(b) Gas or electric welding or cutting may not be performed on pipe or on pipe components that contain a combustible mixture of gas and air in the area of work."

a) SWG's O&M Manual Pipeline Safety Procedures Section 2.1.2.4 states:



"Do not weld or flame-cut pipe or other facilities containing a combustible mixture of gas and air.

NOTE: This does not prohibit the "Fire Controlled" tie-in method. This method allows the welding operation to go on while gas is present at slightly higher than atmospheric pressure."

b) SWG's O&M Manual Section Steel Welding Procedure Section 4.3.2 states:

"Step 4 Cut out the old section and install the new section of line. For pipe 6 in. and larger, the fire control tie-in method may be used"

SWG O&M manual does not contain a "Fire Controlled" tie-in procedure. SWG stated that "Fire Controlled" tie-in procedure remains to be a valid optional method to prevent accidental ignition during welding operation.

SED determined the following:

- SWG must add work procedures for the Fire Controlled tie-in method to the O&M manual.
- SWG training material and instructions provided to its employees and contractor employees must contain detailed procedures on how to perform related covered tasks.
- SWG must communicate the changes to the procedure that affects the covered task to all its personnel performing the covered task, and re-qualify the affected personnel as necessary. If re-qualification is not needed, SWG must state the reason why conducting re-qualification is not necessary.

Please describe the corrective actions taken to address the deficiencies identified above and provide SED with a copy of the Fire Controlled tie-in procedures including the training material for the relevant covered tasks. If SWG determines that re-qualification is needed, please indicate the date when it plans to complete the re-qualification and the number of personnel to be qualified.

Southwest Gas Response:

Southwest Gas agrees that a procedure for the "Fire-Controlled" tie-in method should be included in the Company's Operations Manual. Revisions to the procedures will be reflected in training materials and persons who are qualified to weld on Company facilities will be



trained under the new procedure. Southwest Gas will revise its Operations Manual to include the "Fire-Controlled" tie-in procedure to be published as an "interim revision" no later than September 30, 2015. Upon publication of the Operations Manual revisions, Southwest Gas will provide SED with a copy of the "Fire-Controlled" tie-in procedure, the number of the affected personnel, and a schedule for completing the requisite training.

B. Observations and Concerns

1. Title 49 CFR § 192.475 Internal corrosion control: General, states in part:

"(b) Whenever any pipe is removed from a pipeline for any reason, the internal surface must be inspected for evidence of corrosion. If internal corrosion is found— (1) The adjacent pipe must be investigated to determine the extent of internal corrosion"

SWG's O&M Manual Section 5.2.3.4 Corrosion Control Procedure states in part:

"If internal corrosion is discovered during pipe replacement, abandonment or repair, the extent of the internal corrosion shall be documented and the Division/District Corrosion Control personnel informed. Engineering will conduct an assessment/ evaluation of the pipe condition; and the pipe may be replaced to remove the affected pipe to restore the integrity of the pipeline."

SWG's procedure states that "Engineering will conduct an assessment/evaluation of the pipe condition". While it may be implied that such assessment would include adjacent pipe, SED recommends that SWG explicitly state in its procedure that "adjacent" pipe will be included in the assessment/evaluation.

Southwest Gas Response:

Southwest Gas agrees with SED's recommendation, and will revise Section 5.2.3.4 of the Corrosion Control Section I Procedure to explicitly state that "adjacent" pipe will be included in the assessment and evaluation of internal corrosion. Southwest Gas will revise the Corrosion Control Section I Procedure to be published as an "interim revision" no later than September 30, 2015.

2. Title 49 CFR §192.487 Remedial measures: Distribution lines other than cast iron or ductile iron lines, states in part:

"(a) General corrosion. Except for cast iron or ductile iron pipe, each segment of generally corroded distribution line pipe with a remaining wall thickness less than that required for the MAOP of the pipeline, or a remaining wall thickness less than 30 percent of the nominal wall thickness, must be replaced. "



SWG's O&M Manual covers this code requirement within the Steel Welding Procedures, Repair section 4.6.2. The requirement for remediation of pipe with less than 30 percent of the nominal wall thickness has been interpreted by SWG as a defined wall thickness of 0.10 inch in the Table of section 4.6.2. SWG explained that the table was prepared with the knowledge that any pipe used, under the circumstances, would have a wall thickness such that 0.10 inch would always be greater than 30 percent of wall thickness; thus, the criteria was more conservative than code.

SED recommends that the Table should clearly state the assumptions made about pipe wall thickness or reference the standard that contains material properties of pipelines used in SWG's distribution system, to clearly demonstrate how it determined that the 0.10 inch wall thickness criterion sufficiently addresses the requirement of Title 49 CFR §192.487(a). Further, SED suggests that these remedial procedures be moved to the "Remedial" chapter of the O&M manual.

Southwest Gas Response:

Southwest Gas will revise the REPAIR OPTIONS TABLE - DEFECTIVE/DAMAGED DISTRIBUTION PIPE in Section 4.6.2 of the Steel Welding Procedure contained within the Company's Operations Manual, to remove the 0.10 inch wall thickness criteria. The revised table will specify that any corrosion or metal loss that results in less than 50% of the pipe's original wall thickness will require remediation of the pipe. This is a more conservative approach than Title 49 CFR Part 192.487, which requires a repair when less than 30% of the wall thickness remains. Southwest Gas will revise the Steel Welding Procedure to be published as an "interim revision" no later than September 30, 2015.

In response to SED's suggestion to move the remedial procedures to the "Remedial" chapter of the Operations Manual, Southwest Gas believes the REPAIR OPTIONS TABLE should remain within the Steel Welding Procedure, as the Remediation Design section specifically applies to transmission pipeline anomalies and defects.

3. Title 49 CFR §192.605 Procedural manual for operations, maintenance, and emergencies, states in part:

"(a) General. Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response... This manual must be reviewed and updated by the operator at intervals not exceeding 15 months, but at least once each calendar year..."

- a) During the inspection, SWG presented their flow chart that details actions for O&M Manual reviews and updates.



SED recommends that the flow chart should be included within the O&M Manual Section 1 that contains SWG annual O&M review.

b) SWG's O&M review and procedures do not specify how they make updates to the Manual in response to a Title 49 CFR or General Order 112-E requirement change, Pipeline and Hazardous Materials Safety Administration (PHMSA) Advisory Bulletin, or safety-related conditions that may require a more timely revision than the annual update.

SWG related that they respond promptly to such requirements on an ad hoc basis. SED recommends that SWG should add specific procedures to the O&M Manual for updating the O&M Manual in case of immediate safety concerns. SWG should consider the list in its Distribution Integrity Management Program Plan Section 6.2.3, as possible sources that could trigger such updates:

- i. Membership or participation in local, regional or national trade associations, including workshops, meetings and other forums;
- ii. Networking with peer companies;
- iii. Manufacturers of gas carrying materials;
- iv. Relevant regulatory agencies;
- v. Gas distribution pipeline journals and magazines;
- vi. PHMSA Advisory Bulletins; and
- vii. The National Transportation and Safety Board (NTSB) Reports and Recommendations applicable to natural gas pipelines.

Southwest Gas Response:

a) Southwest Gas agrees with SED's recommendation to include its flow chart, which details the actions necessary for the review and update of the Company's Operation Manual, within the manual.

b) Safety is paramount at Southwest Gas. Although Southwest Gas' Operations Manual does not currently include a specific written procedure to address revisions in the event of an immediate safety concern, Southwest Gas has the ability to issue an "interim revision" with an immediate effective date should this scenario occur. Notwithstanding, Southwest Gas agrees with SED's recommendation and will add specific written procedures to address revisions in the event of an immediate safety concern.

Southwest Gas will revise its Operations Manual to be published as an "interim revision" no later than September 30, 2015.



4. Title 49 CFR §192.243 Nondestructive testing, states in part:

"(b) Nondestructive testing of welds must be performed:... (2) By persons who have been trained and qualified in the established procedures and with the equipment employed in testing"

SWG's Steel Welding Procedure 6.1.6 states in part:

"The radiographic contractor may be allowed to do production radiography for the

Company only if:

- All of the required licenses and permits are in order"*

SED recommends the Procedure should describe how SWG verifies that radiographic contractor personnel possess the necessary licensing to perform the expected level of work.

Southwest Gas Response:

Southwest Gas agrees with SED's recommendation that Section 6.1.6 of the Steel Welding Procedure contained within the Company's Operations Manual should include a procedure to verify that contractor personnel possess the necessary licensing to perform nondestructive testing. Southwest Gas will revise the Steel Welding Procedure to be published as an "interim revision" no later than September 30, 2015.

Southwest Gas appreciates SED's consideration of this matter. Please do not hesitate to contact me if you have any questions, or require additional information.

Sincerely,

A handwritten signature in blue ink, appearing to be "A. Lee".

cc: M. Epuna (CPUC)
D. Lee (CPUC)
V. Ontiveroz (electronically with attachments)
C. Mazzeo
K. Lang
E. Trombley
L. Brown