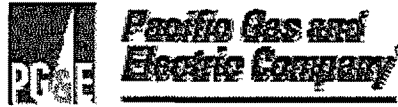


Attachment 5



ATTENDANCE ROSTER

CONFIDENTIAL - Provided Pursuant to P.U. Code §583

COURSE NAME(s): 2012 Kettleman CPUC Review	COURSE CODE(s): Gas Valve Maintenance Requirements and Procedure WP4430-04	LOCATION NAME/ADDRESS: Kettleman Compressor Station	Date: 1/9/13
INSTRUCTOR: <div style="border: 1px solid black; width: 100px; height: 20px; display: flex; align-items: center; justify-content: center;">Redacted</div>	INSTRUCTOR'S PERNER #:	LAN ID: <div style="border: 1px solid black; width: 50px; height: 20px; display: flex; align-items: center; justify-content: center;">Redacted</div>	Notes: Review Section 5 Operating Valves During Maintenance and Valve Card Service History <div style="border: 1px solid black; width: 100px; height: 20px; display: flex; align-items: center; justify-content: center; margin-top: 5px;">Redacted</div>

Check for Non-PG&E	Legal First & Last Name (NO NICK NAMES)	Signature	Personnel # REQUIRED	LAN ID REQUIRED	PCC	Supervisor Name	Pass/Fail (If Applicable)
<input type="checkbox"/>	Redacted	Redacted					<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<input type="checkbox"/>							<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<input type="checkbox"/>							<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<input type="checkbox"/>							<input type="checkbox"/> Pass <input type="checkbox"/> Fail
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<input type="checkbox"/>							<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<input type="checkbox"/>	8.						<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<input type="checkbox"/>	9.						<input type="checkbox"/> Pass <input type="checkbox"/> Fail
<input type="checkbox"/>	10.						<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Notes: LEGIBILITY IS IMPORTANT TO ENSURE YOU RECEIVE CREDIT FOR ATTENDANCE. If you do not check pass or fail, we will assume the student passed.

SB_GT&S_0503654



**Pacific Gas and
Electric Company™**

Utility Work Procedure WP4430-04

Asset Type: **Gas Distribution and Transmission**

Date **March 2009**

Function: **Maintenance and Operation**

Issued/Updated:

Page: **1** of **23**

Title: Gas Valve Maintenance Requirements and Procedures

Overview

This work procedure provides maintenance requirements and procedures for plug, ball, and gate valves (referred to as “valves”) installed in and necessary for the safe or emergency operation of Pacific Gas and Electric Company’s (the Company’s) gas systems and facilities.

Governing Document

S4430, “Gas Facilities Requirements,”– *Expected publication 2009*

Safety

Failure to perform required maintenance could pose a risk to public safety in the event of equipment or pipeline failure.

Perform work safely and in accordance with all applicable safety rules, the Code of Safe Practices, and Utility Standard Practice (USP) 22, “Safety and Health Program.”

Compliance

The manager of Gas Transmission and Distribution (GT&D) Pipeline Engineering and the manager of Gas System Integrity are responsible for establishing and maintaining procedures to comply with this work procedure.

Division and district Maintenance and Construction (M&C) superintendents are responsible for implementing this work procedure within their respective organizations.

Division and district M&C superintendents must ensure that their valve maintenance supervisors are aware of and follow the requirements in this work procedure. Periodic audits by Company personnel may be conducted to ensure compliance with these requirements.

Responsible superintendents and supervisors must measure the implementation and effectiveness of this work procedure through the record reviews described in Attachment 1, “Valve Maintenance Record.” and regular field verifications. The California Public Utilities Commission (CPUC) also conducts compliance audits on the requirements set forth in this work procedure.

Utility Work Procedure WP4430-04

Title: Gas Valve Maintenance Requirements and Procedures

Page: 5 of 23

needed as frequently as every other day.

D. Modifying the Valve Maintenance Schedule

Modify the valve maintenance frequencies specified in Paragraphs 3.B., “Manually Operated Valves,” and 3.C., “Power-Actuated Valves,” to provide additional inspecting, servicing, and lubricating, when necessary. This is especially important when valves are operated more frequently or when there are special operating conditions. Reducing any of the specified maintenance frequencies to make them less stringent is not allowed.

4. Inspection Procedures

- A. Before lifting the lid and entering any pit or vault, observe the necessary precautions regarding barricading, identifying sources of ignition, and checking for combustible gases in accordance with Utility Standard S4414, “CGT Confined Space Entry Program,” Work Procedure WP4414-01, “Work Procedures in Confined Spaces,” and the Code of Safe Practices.
- B. If a valve is located in a valve box or a vault, follow these steps:
- 1) Ensure that the valve box or vault is cleared of any debris that would interfere with or delay the operation of the valve.
 - 2) Ensure that there is adequate access to the valve (the vault cover opens, etc.), the valve is adequately protected (the vault and vault cover have integrity), and the vault is safe for the employee to enter.
- C. Inspect the valve for the following problems:
- 1) Missing valve number tag.
 - 2) Broken or missing valve components (e.g., lubrication fitting, handwheel, padlock).
 - 3) Any gas or oil leaking on the valve body, high-head extension, or valve operator.
 - 4) Signs of external corrosion and/or degradation of coating. For buried valves with high-head extensions, inspect the air-to-soil transitions for signs of corrosion or disbondment of the wrap.
 - 5) Valve not locked in the appropriate position.
 - 6) Identify any issues on the “Valve Maintenance Record” (Attachment 1) and schedule for repair, if appropriate.

5. Operating Valves During Maintenance

- A. When servicing a valve as required in Section 3, “Valve Maintenance Schedule,” the valve must be **operated** (or “stoked”) through its complete range when operating conditions permit. When operating conditions do not permit full operation of the valve (such as the downstream piping would be over pressured or the flow through the valve would be adversely affected), stroke through the maximum range that is practicable. For normally closed valves, never stroke the valve less than the amount required to establish flow through the valve. Listed below are recommendations for partially operating various types of valves.

Utility Work Procedure WP4430-04

Title: Gas Valve Maintenance Requirements and Procedures

Page: 6 of 23

- **Plug valves with gearing:** For a normally open valve, take the “slop” out of the gearing and then turn the valve handle three complete turns. For a normally closed valve, just barely initiate flow or until the operator indicates approximately 25% of travel (22.5° open position).
Note: Plug valves do not start to flow until 20-23° open.
- **Plug valves without gearing:** For a normally open valve, take the “slop” out of the keyway, then move through approximately 25% of travel (67.5° open position). For a normally closed valve, just barely initiate flow or until the valve wrench indicates approximately 25% of travel (22.5° open position).
- **Ball valves with gearing:** For a normally open valve, take the “slop” out of the gearing and then turn the valve handle three complete turns. For a normally closed valve, just barely initiate flow.
Note: Ball valves do not start to flow until 6-8° open position.
- **Ball valves without gearing:** For a normally open valve, take the “slop” out of the keyway, then move through approximately 25% of travel (67.5° open position). For a normally closed valve, just barely initiate flow.
- **Gate valves:** For a normally open valve, take the “slop” out of the gearing, and then turn the valve handle one complete additional turn. For a normally closed valve, just barely initiate flow.

- B. Verify the number on the valve tag against the Operating Map, Operating Diagram, Division Station Sketch, or Division Plat Sheet and on the Valve Maintenance Record.
- i.) If they do not match, notify the maintenance supervisor immediately.
 - ii.) For any changes required on an Operating Diagram or Operating Map, submit revisions to the GT&D Principal Mapper, per the requirements of S4460, Attachment 1.
- C. After operating a valve, return it to the “as found” position. Log the “as found” and “as left” positions on the Valve Maintenance Record.
- i.) If a valve is found in the wrong position according to a diagram or maintenance record, investigate the system operation to determine in which position the valve should be left. Notify the appropriate personnel (supervisor, GSO, planning engineer) to validate any valve position change prior to correcting valve position.
 - ii.) Log that change on the Valve Maintenance Record along with the reason for the change. Redline local diagrams, or submit changes per section 5-B-ii above.
- D. To report problems encountered when operating any valve, either during scheduled maintenance or at any other time, either print out and submit a Material Problem Report (Company Form 62-0113), or, to submit the report on-line, go to “Material Problem Reporting Online” at <http://mpr/mpr/mpr.do>. Complete a PLM Work Request or a Corrective Notification, which ever is appropriate, to correct any problem on a valve.
- E. If a valve is inoperable, immediately notify the maintenance supervisor so that prompt action is

Utility Work Procedure WP4430-04**Title: Gas Valve Maintenance Requirements and Procedures**

Page: 7 of 23

initiated to remedy the problem. Also, note the inoperability on the "Valve Maintenance Record" (Attachment 1) and either print out and submit a Material Problem Report (Company Form 62-0113), or, to submit the report on-line, go to "Material Problem Reporting Online" at <http://mpr/mpr/mpr.do>. For inoperable valves that are not under CPUC jurisdiction, the supervisor determines what action to take. At a minimum, identify non-jurisdictional valves left inoperable on the appropriate Operating Diagram, Operating Map, or Division Wall Map.

6. Lubrication Procedures**A. General**

Periodic lubrication ensures that valves operate with minimal effort and seal properly to provide shut-off. In addition, lubrication can prevent external stem leaks in plug valves.

All equipment, such as valve lubrication guns, hyperguns, and pumps must be appropriate for the particular valve being maintained. Equipment must be kept in good condition and operated by qualified employees.

- 1) All lubricants must be clean. Only use specific lubricants recommended by the valve manufacturer. Refer to Section 7, "Approved Valve Lubricants." on Page 16. Using lubricants that are not recommended by the appropriate valve manufacturers voids the warranties and leaves the Company vulnerable in any potential lawsuit involving third-party damages that are considered caused by valve leakage. Refer to the manufacturer's lubrication instructions for the proper use of lubricants.
- 2) When lubricating valves equipped with buttonhead lubricating fittings, use a high-pressure grease gun that includes the appropriate pressure gauge. For valves equipped with lubricant screws, use stick-type lubricants.
- 3) **[Optional]** Attach a tag to the valve to indicate if lubrication is required. The tag must state the type of lubricant to use.
- 4) When double block-and-bleed type valves are exposed to water, condensate, or other foreign matter, drain/blow the valve body to prevent damage to the valve. Always drain/blow the valve body after hydrotests.
- 5) If a valve is difficult to operate or leaks from upstream to downstream, it may be necessary to flush out the old lubricant. See Section 8, "Valve Flushing Procedures," on Page 18.
- 6) If a valve will not seal off completely after performing the manufacturer's recommended procedures to stop leakage, inject the valve with limited amounts of Sealweld 5050 (10-oz. cartridge, Code M500042, 10-lb. pail, Code M500041). At the first occurrence that any valve needs Sealweld 5050 to operate properly, bring that valve to the attention of the M&C supervisor and Engineering. The valve may need to be replaced as soon as economically feasible. Note the use of Sealweld 5050 on the "Valve Maintenance Record" (Attachment 1).

B. Plug Valves

- 1) Always lubricate plug valves in the fully-open (preferred) or fully-closed position. In either of these positions, all grease grooves in the body connect with the circular grooves at the top

**Gas Valve Maintenance Requirements and Procedures,
Attachment 1****3. Service History**

Use this portion of the "Valve Maintenance Record" to document the maintenance performed on the valve, as well as to document any required repairs and action taken. **If a valve is found to be inoperable, notify the maintenance supervisor immediately.** Retain the valve maintenance service history for a minimum of 5 years.

Date/Initial/LAN ID: Enter the Date, your Initials and LAN ID after the "DATE" field for each new valve maintenance data entry.

VERIFY VALVE NO: Verify (Y/N) the number on the valve tag against the Operating Map, Operating Diagram, Division Station Sketch, or Division Plat Sheet, and on the Valve Maintenance Record.

- i.) If they do not match, notify the maintenance supervisor immediately.
- ii.) For any changes required on an Operating Diagram or Operating Map, submit revisions to the GT&D Principal Mapper, per the requirements of S4460, Attachment 1.

INSPECT: (Y/N) See "Inspection Procedures" in Section 4, on Page 5 of the main work procedure.

LUBE: (If required) (Y/N). **Note:** "If required" refers to the need to lubricate all plug valves and all ball valves having power actuation. Gate valves do not require lubrication.

OPERATE: Check (Y/N) box to show that the valve has been operated. Identify if the valve was partially (P) or fully (F) operated.

VALVE POSITION: Log the "As Found" and "As Left" positions as C (closed), O (open), or T (throttling). After operating a valve, return it to the "As Found" position.

- i.) If a valve is found in the wrong position according to a diagram or maintenance record, investigate the system operation to determine in which position the valve should be left. Notify the appropriate personnel (supervisor, GSO, planning engineer) to validate any valve position change prior to correcting valve position.
- ii.) Log that change on the Valve Maintenance Record along with the reason for the change. Redline local diagrams as needed.
- iii.) For any changes required on an Operating Diagram or Operating Map, submit revisions to the GT&D Principal Mapper, per the requirements of S4460, Attachment 1.

Upon completion of maintenance on a valve, the maintenance supervisor must:

- a. Critically review *each* "Valve Maintenance Record" to ensure that it is accurate and complete. Return the "Valve Maintenance Record" to the person that performed the maintenance to correct errors and omissions.
- b. During the review required above, check to see if any erasures, obliterations, or other document changes have been made.
 - ◆ **Write "Valve Maintenance Record" information in permanent black or blue ink with NO white-outs.**
 - ◆ Review the "Valve Maintenance Record" with the person that performed the maintenance to ensure compliance with these requirements.
 - ◆ Enter your "LAN ID" and initial and date the "REVIEWED DATE" field for each new valve maintenance entry to indicate that the information has been reviewed and is correct.

SAMPLE



VALVE MAINTENANCE RECORD FORM

Line / Station Name:

Redacted

F4430-04-1
Rev. 5/13/09

(make all entries in black or blue permanent ink)

Valve Number: V- 298.99 KTK590310

SERVICE HISTORY (see notes)

DATE MM/DD/YY	INITIAL	VERIFY VALVE NUMBER Y/N	INSPECT Y/N	LUBE (If req'd) Y/N or N/A	OPERATE	VALVE POSITION As Found	REPAIRS REQUIRED (If any)	ACTION TAKEN (If required)	REPAIRED DATE	REVIEWED DATE
	LAN ID				Y/N				F/P	As Left
								INITIAL - LAN ID	INITIAL - LAN ID	
1	1/2/12	BBQ	Y	Y	Y	O				1/5/12
		BBQ1			P	O			-	CAR - CAR1
2	2/2/12	JIM	Y	Y	Y	O				2/6/12
		JIME			F	O			-	GTO - GTO2
3	3/2/12	TAT	Y	Y	N	C	Notified Supervisor	Valve Repaired	6/6/12	3/7/12
		TAT2				C	WR 361833		FOR - FORD	FOR - FORD
3A	5/28/12	TAT	Y	Y	Y	C	See WR 361833			6/6/12
		TAT2			F	C			-	FOR - FORD
4	6/3/12	ANT	Y	Y	N	C	Notified Supervisor			6/8/12
		ANTM				C	MOL Hydro test WR 336915		-	GOG - GOGO

NOTES: 1) Use Y/N for yes/no to indicate item performed and completed. 2) "LUBE" pertains to lubrication of the ball or plug. 3) "OPERATE" means to partially operate as minimum.
4) Use F/P to indicate Full or Partial Operation. 5) Valve positions = C (closed), O (open), T (throttling)