



Asset Type: **Gas Transmission and Distribution**

Date Issued/Updated: **August 2009**

Function: **Maintenance and Construction**

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Title: District Regulator Station Maintenance

Overview

This work procedure describes work activities for Pacific Gas and Electric Company (Company) district regulator stations, including inspecting, testing, maintenance, and recordkeeping.

This work procedure is effective 11/1/09, and must be followed to perform all maintenance activities for district regulator stations.

Governing Document

This work procedure is governed by Utility Standard S4540, “Gas Pressure Regulation Maintenance Requirements.”

Safety

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

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

Before You Start

Personal Protective Equipment (PPE): Employees conducting work under this procedure must use Company-approved PPE such as hard hats and flame-resistant (FR) traffic vests, as well as proper work attire (e.g., footwear, long-sleeved shirts, eye and face protection, and gloves), as described in the Code of Safe Practices.

Employee Qualifications: Employees who perform inspections or maintenance in accordance with this procedure must be properly trained and qualified under the following Operator Qualification (OQ) tasks:

03-04, “Atmospheric Corrosion”

04-01, “Leak Test Soap Test”

14-02, “Pressure Regulators - Pilot Operated, Spring Loaded”

16-01, “Relief Devices”

17-01, “Valve Maintenance”

Tools, Materials and Equipment: Use only Company-approved tools and equipment. Equipment includes but is not limited to calibrated test gauges, calibrated pressure recorders, air monitoring instruments, and leak test soap solution.

Maintenance Procedures

I. General Requirements for Class A and Class B Inspections

There are two categories of inspections, Class A (Diagnostic) and Class B (Internal). Class A Inspections are “external” inspections and can usually be performed while stations are in service. Class B Inspections require taking district regulator stations out of service and disassembling component parts for inspection.

- A. District regulator station maintenance records, diagrams, and data sheets must be taken to the station work site whenever scheduled maintenance is performed.
- B. Before beginning district regulator station maintenance work, follow the clearance procedures for natural gas facilities in accordance with Work Procedure WP4100-10, “Gas Clearance Procedures for Facilities Operating Over 60 PSIG.”
- C. Continuously monitor downstream system pressure during all station inspections.
- D. Before disassembling any equipment components, verify that the components are depressurized and that the spring tensions in the components are relaxed.
- E. Ensure that all test gauges have been calibrated within the past 12 months.
- F. At every stage of an inspection, correct any deviations from proper station and equipment operation. During a Class A inspection, individual components may be repaired and/or replaced without performing a complete Class B inspection.
- G. If proper operation cannot be achieved, immediately inform the supervisor.
- H. Complete the following inspection tasks and record the information on Form 62-6321, “District Regulator Station Maintenance Record” (Attachment 2) or Form 62-6321A, “District Regulator Station Maintenance Record (HPR Type)” (Attachment 3):
 1. Inspect to ensure that yards and pits are free of debris, weeds, and standing water and confirm that the ground level around the vault provides adequate drainage and is not a hazard to the general public or to Company personnel.
 2. Before beginning work, locate station inlet fire valve(s) and (if present) outlet fire valve(s). Ensure that the valves are accessible, tagged, and operable.

If the fire valves are not accessible or operable, determine whether alternate valves are available to perform this function. Note the use of alternate valves on the back of the maintenance form.
 3. Before entering any pit or vault, observe the necessary precautions regarding barricading, identify sources of ignition, and check for combustible gases. (See Gas Information Bulletin 280, “Requirements for Entering Subsurface Gas Enclosures” and CES/GS/CS Standard D-S0213, “Work Procedures in Confined Spaces.”)
 4. Inspect vault covers, fencing, and enclosures for proper security and safety. Confirm that the vault covers open and close properly and are not a hazard to the general public or to Company personnel.

5. Remove water from vaults as needed. For proper liquid disposal procedures, refer to the “Field Guide for Vault Discharges” or to Environmental Services Procedure P-023, “Discharges from Vaults and Other Underground Structures.”
 6. Inspect to ensure that the vault structure, ladders, hooks, and related equipment are in good condition.
 7. Verify the accuracy of the station diagram and that the maximum operating pressures (MOPs), the maximum allowable operating pressures (MAOPs), and the normal position of the station valves are shown on the diagram. Verify that all major valves and components are properly tagged, that the tag numbers match the diagram, and that Form 62-6271, “District Regulator Data Sheet” (Attachment 1) is correct.
 8. Test fittings and connections for leakage with a combustible gas indicator or liquid soap.
 9. Check to ensure that ventilating ducts and openings are clear and operational.
 10. Check to ensure that relief valve stacks are clear and intact.
 11. Check to ensure that the piping and related equipment, including regulators, valves, and overpressure protection devices are undamaged, intact, and free of external corrosion, including atmospheric corrosion.
 12. Maintain all station valves in accordance with Work Procedure WP4430-04, “Gas Valve Maintenance Requirements and Procedures.” For the inlet fire valves and (if present) outlet fire valves, document the maintenance on Form F4430-04-1, “Valve Maintenance Record” (Attachment 1 of WP4430-04).
 13. Check to ensure that the filter and the filter closure are in good mechanical condition.
 14. Check to ensure that required locking devices are present and that they operate properly.
- I. Class A and Class B inspections must be performed until a station is taken out of service by removing all regulators and relief valves and blind-flanging the connecting pipe. For stations that have been taken out of service but have not been completely abandoned, other maintenance is still required, such as leak surveys and inspections for atmospheric corrosion.

II. Instructions for Conducting Inspections, Testing, and Maintenance

A. Class A Inspection – Diagnostic

Operational and diagnostic testing for a Class A Inspection must follow the instructions below.

As Found Information

1. Before disassembling any equipment components, document all “as found” information, including filter differential pressure, regulator and monitor set points, and the ability of the monitor and regulator to lock-up.

Filters

2. Check the filter drip for dirt, liquids, or other debris. Inspect the filter element for cause.

Note: There are acceptable and safe methods for checking the filter drip for liquids and debris. One option, depending upon the system operating conditions, could be to lower the filter pressure until a very slight opening of the filter drip valve into a container confirms the presence of liquids or debris without compromising the safe operation of the system.

3. Using an approved analog or digital differential pressure gauge, perform a filter differential pressure test and record the pressure reading. If the differential pressure is 2 pounds per square inch (psi) or greater, the filter element must be inspected¹ and immediately changed² out if necessary. If a specific filter element is not available, contact the senior gas distribution engineer for assistance.
 - a. If the filter differential pressure check cannot be performed because of a lack of pressure taps, the filter element must be visually inspected¹ and replaced² as necessary. Record the condition of the filter element that is inspected or replaced on the back of the regulator station maintenance record (Form 62-6321, “District Regulator Station Maintenance Record” or Form 62-6321A, “District Regulator Station Maintenance Record (HPR Type)”). If differential pressure taps do not exist, create an SAP Corrective Notification to install pressure taps in the station to allow filter differential testing. Note the SAP Corrective Notification number on the back of the district regulator maintenance record.
 - b. Under flowing conditions, if the differential pressure across the filter is less than 5” water column (WC) (0.02 psi), visually inspect¹ the filter element and replace² as necessary, since low differential pressure may indicate a collapsed or damaged filter element. Record the condition of the filter element that is inspected or replaced on the back of the regulator station maintenance record (Form 62-6321 or Form 62-6321A).

¹ Exception: filters with Sillers closures. Create an SAP Corrective Work Notification to replace the Sillers filter units.

² Effective January 1, 2010.

Pressure Regulation and Overpressure Protection Equipment Vents and Vent Lines

4. Inspect all upper diaphragm chamber and slam-shut mechanism box vents and vent lines to ensure that they are clear of debris. Remove and examine restricting devices, if installed.
5. **Regulators must be taken out of service before performing the pressure test described in this step.** On low-pressure regulator stations that are constructed below grade, pressure test the full length of all vent lines and regulator and pilot upper diaphragm chambers for leaks. Confirm the integrity of the vent lines and the upper diaphragm chambers with a pressure gauge or by soap testing. This pressure test may be done with air, nitrogen, or natural gas at 1 to 2 pounds per square inch gauge (psig) maintained for at least 1 minute.

Operating Tests for Regulator Runs

6. Check the regulator for proper set point and control.
 - a. Establish the set point of the regulator under flowing conditions using the long/short line technique shown in Attachment 5, "Establishing Pressure Set Points and Checking for Lock-Up for Regulators and Monitors Using the Long/Short Line Technique."
 - b. If actual flow conditions cannot be achieved due to low demand, contact the local distribution planning engineer for input on modifying operations (e.g., changing associated district regulator station set points) or changing the inspection schedule to achieve adequate flow.
7. Test the regulator for lock-up using the long/short line technique.

Note: Backing off the pilot is not an acceptable method of testing for lock-up.

If the station configuration is such that it prohibits performing the lock-up check, note that fact on the back of the regulator station maintenance record (Form 62-6321 or Form 62-6321A). Ensure that the documented problem is discussed with the responsible supervisor.

Create an SAP Corrective Notification to reconfigure the station to allow for a lock-up test. Note the Corrective Notification number on the back of the district regulator maintenance record.

8. Check the overpressure protection system.

Note: See Attachment 4, "Set Point Limits for District Regulator Stations," for pressure-setting requirements.

 - a. Using the long/short line technique shown in Attachment 5, check monitor regulators for proper set point and control by causing the monitor regulators to operate and take over pressure control at the set point under flowing conditions. The pressure at which a monitor regulator operates and takes over pressure control must not exceed the MAOP plus the allowable limit. Test the monitor for lock-up as described in Step II.A.7 above.
 - b. Test relief valves for the ability to operate at the overpressure set point. If changes have been made to the equipment or relief valve settings, another relief valve analysis is required. Notify the senior gas distribution engineer who will then perform the analysis.

- When testing a pilot-operated relief valve, be sure to check the main relief valve cracking pressure (as opposed to the pilot's bleeding pressure point).
- c. Test automatic shutoff valves for the ability to operate at both the over pressure and the under pressure set points, as applicable.
 - d. The monitor regulator must be the upstream device. If the monitor regulator is not the upstream device, the station must be reconfigured during the current maintenance. If, for operating reasons, reconfiguration is not possible, obtain written documentation allowing an exception for a downstream monitor and ensure that it is filed in the regulator station's maintenance folder. The exception must be granted by the senior gas distribution engineer.
9. Repeat steps 6 through 8 for additional regulator runs at the station.

Valve Positions and Equipment Settings

10. At the completion of every inspection, make certain that all valves are returned to their proper operating positions and that all station equipment is returned to normal operation. Ensure that the required locking devices are in place and that they operate properly.
11. At the end of an inspection for dual run stations, switch the working and the standby regulator runs. If, for operating reasons, it is not possible to switch the runs, obtain written documentation allowing an exception for switching the runs and ensure that it is filed in the regulator station maintenance folder. The exception must be granted by the division senior gas distribution engineer.

Pressure Recording

12. At the end of maintenance work, perform pressure recordings as described in Section II.C, "Pressure Recordings."

B. Class B Inspection – Internal

A Class B Inspection requires taking the district regulator station out of service and disassembling its component parts for inspection. Perform a Class B Inspection as follows:

As Found Information

1. Before disassembling or adjusting any equipment components, document all “as found” information, including filter differential pressure, regulator and monitor set points, and the ability of the monitor and regulator to lock-up.

Filters

2. When performing a scheduled Class B inspection, change^{1,2} out the filter element and record the condition of the filter element that is replaced and the “as left” differential pressure. If a specific filter element is not available, contact the senior gas distribution engineer for assistance.
3. If the station configuration is such that it prohibits performing the filter differential pressure check because of a lack of pressure taps, record that fact on the back of the regulator station maintenance record (Form 62-6321, “District Regulator Station Maintenance Record” or Form 62-6321A, “District Regulator Station Maintenance Record (HPR Type)”). If differential pressure taps do not exist, create an SAP Corrective Notification to install pressure taps in the station to allow filter differential testing. Note the SAP Corrective Notification number on the back of the district regulator maintenance record.

Pilot-Operated Regulators, Monitors, and Relief Valves³

4. Disassemble and inspect the equipment in accordance with the manufacturer’s guidelines.
 - a. If sulfur is present, notify the senior gas quality engineer in gas engineering and note it on the back of the district regulator station maintenance record.
 - b. Replace diaphragms, O-ring seals, and gaskets.
 - c. After reassembly, soap test before conducting the operating tests.
 - d. It is not necessary to disassemble automatic shutoff devices unless they do not maintain a consistent shutoff pressure.

¹ Exception: filters with Sillers closures. Create an SAP Corrective Work Notification to replace the Sillers filter units.

² Effective January 1, 2010.

³ Relief valves and relief valve pilots need not be disassembled, except under the following conditions: 1) they do not operate properly when tested, 2) the Class “B” inspection is being performed due to the 1 year after installation requirement, or 3) the Class “B” inspection is being performed due to cutting and welding between the filter and relief valve.

Pilot Systems on Regulators, Monitors, and Relief Valves³

5. Disassemble and inspect the equipment in accordance with the manufacturer's guidelines.
 - a. If sulfur is present, notify the senior gas quality engineer in gas engineering and note it on the back of the district regulator station maintenance record.
 - b. Inspect the pilot filter, strainer, and dehydrator (if installed).
 - c. Clean the dehydrator, filter, and strainer; replace the filter element and the dehydrator desiccant, as applicable.
 - d. Inspect the pilot orifice for scoring or wear and replace as needed.
 - e. Replace the pilot diaphragms, gaskets, O-rings, and seat.
 - f. Disconnect, inspect, and clear loading, supply, vent, sensing, and bleed lines.
 - g. Remove restricting devices on the pilot control loop, examine or test for obstructions or foreign matter, and replace all O-rings.
 - h. After reassembly, soap test for leaks before conducting any operating tests.
 - i. Test the pilot for mechanical operation including freedom and movement of the linkage.

Non Pilot-Operated Regulators, Monitors, and Relief Valves³

6. Disassemble and inspect the equipment in accordance with the manufacturer's guidelines.
 - a. If sulfur is present, notify the senior gas quality engineer in gas engineering and note it on the back of the district regulator station maintenance record.
 - b. Replace diaphragms, O-rings, gaskets, and seats.
 - c. Inspect orifices for scoring or wear and replace as needed.
 - d. After reassembly, soap test before conducting the operating tests.

Pressure Regulation and Overpressure Protection Equipment Vents and Vent Lines

7. Inspect all upper diaphragm chamber and slam-shut mechanism box vents and vent lines to ensure that they are clear of debris. Remove and examine restricting devices, if installed.
8. **Regulators must be taken out of service before performing the pressure test described in this step.** On low-pressure regulator stations that are constructed below grade, pressure test the full length of all vent lines and regulator and pilot upper diaphragm chambers for leaks. Confirm the integrity of the vent lines and the upper diaphragm chambers with a pressure gauge or by soap testing. This pressure test may be done with air, nitrogen, or natural gas at 1 to 2 psig maintained for at least 1 minute.

³ Relief valves and relief valve pilots need not be disassembled, except under the following conditions: 1) they do not operate properly when tested, 2) the Class "B" inspection is being performed due to the 1 year after installation requirement, or 3) the Class "B" inspection is being performed due to cutting and welding between the filter and relief valve.

Operating Tests for Regulator Runs

9. Check the regulator for proper set point and control.
 - a. Establish the set point of the regulator under flowing conditions using the long/short line technique shown in Attachment 5, "Establishing Pressure Set Points and Checking for Lock-Up for Regulators and Monitors Using the Long/Short Technique."
 - b. If actual flow conditions cannot be achieved due to low load demand, contact the local distribution planning engineer for input on modifying operations (e.g., changing associated district regulator station set points) or changing the inspection schedule to achieve adequate flow.
10. Test the regulator for lock-up using the long/short line technique.

Note: Backing off the pilot is not an acceptable method of testing for lock-up.

If the station configuration is such that it prohibits performing the lock-up check, note that fact on the back of the regulator station maintenance record (Form 62-6321 or Form 62-6321A); ensure that the documented problem is discussed with the responsible supervisor. Create an SAP Corrective Notification to reconfigure the station to allow for a lock-up test. Note the Corrective Notification number on the back of the district regulator maintenance record.

11. Check the overpressure protection system.

Note: See Attachment 4, "Set Point Limits for District Regulator Stations," for pressure setting requirements.

- a. Using the long/short line technique shown in Attachment 5, check monitor regulators for proper set point and control by causing the monitor regulators to operate and take over pressure control at the set point under flowing conditions. The pressure at which a monitor regulator operates and takes over pressure control must not exceed the MAOP plus the allowable limit. Test the monitor for lock-up as described in Step II.B.10 above.
 - b. Test relief valves for the ability to operate at the overpressure set point. If changes have been made to the equipment or relief valve settings, another relief valve analysis is required; notify the senior gas distribution engineer who will then perform the analysis. When testing a pilot-operated relief valve, be sure to check the main relief valve cracking pressure (as opposed to the pilot's bleeding pressure point).
 - c. Test automatic shutoff valves for the ability to operate at both the overpressure and the underpressure set points, as applicable.
 - d. The monitor regulator must be the upstream device. If the monitor regulator is not the upstream device, the station must be reconfigured during the current maintenance. If, for operating reasons, reconfiguration is not possible, obtain written documentation allowing an exception for a downstream monitor and ensure that it is filed in the regulator station maintenance folder. The exception must be granted by the senior gas distribution engineer.
12. Repeat steps 9 through 11 for additional regulator runs at the station.

Valve Positions and Equipment Settings

13. At the completion of every inspection, make certain that all valves are returned to their proper operating positions and that all station equipment is returned to normal operation. Ensure that the required locking devices are in place and that they operate properly.
14. At the end of an inspection for dual run stations, switch the working and the standby regulator runs. If, for operating reasons, it is not possible to switch the runs, obtain written documentation allowing an exception for switching the runs and ensure that it is filed in the regulator station maintenance folder. This exception must be granted by the division senior gas distribution engineer.

Pressure Recording

15. At the end of maintenance work, perform pressure recordings as described in Section II.C, "Pressure Recordings," below.

C. Pressure Recordings

Recording Station Performance

1. At the end of Class A and Class B inspections, start pressure recordings after the regulator runs are returned to operation and before the crew leaves the job site. For HPR-type district regulator stations, a recorded pressure check is not required.

Pressure Recorder Accuracy Verification and Calibration

2. Accuracy tolerances for mechanical pressure recorders are $\pm 1.0\%$ of full scale for each two-point check and $\pm 0.5\%$ of full scale for each three-point calibration. Accuracy tolerance for electronic pressure recorders is $\pm 0.5\%$ of full scale for both accuracy verifications and calibrations.
 - a. For district regulator stations with a **permanent mechanical recorder**, annually perform a two-point check of the recorder (zero and operating pressure) using a calibrated test gauge when performing each Class A inspection. The serial number and the calibration date of the test gauge must be written on the pressure chart.

At the time of any new installation, perform a three-point calibration of the recorder (zero, 50%, and 100% of the recorder element range). Also perform a three-point calibration at each Class B inspection, or whenever a two-point check indicates that a calibration is necessary. Record the serial number and the calibration date of the test gauge on the pressure chart.
 - b. For district regulator stations with a **permanent electronic recorder**, ensure that the permanent electronic recorder has been calibrated within the past 12 months. Note the serial number and the calibration date of the test equipment in the district regulator maintenance file.
 - c. For locations with a **portable mechanical recorder**, perform a two-point check (zero and operating pressure) with a calibrated test gauge at the beginning of the recording.

Write the serial number and the calibration date of the test gauge on the pressure chart. Ensure that the portable mechanical recorder has been calibrated within the past 12 months. Note the recorder's calibration date on the pressure chart.

- d. For locations with a **portable electronic recorder**, perform a two-point check (zero and operating pressure) with a calibrated test gauge at the beginning of the recording. Ensure that the portable electronic recorder has been calibrated within the past 12 months. Note the serial number and the calibration date of the test gauge in the district regulator maintenance file.

Creating a Pressure Record

3. For **mechanical recorders**, record a pressure chart and include a zero check at the start and at the finish of the recording when the chart is picked up. Start the chart when the maintenance work is completed and before the crew leaves the job site. The recording period must be a minimum of 16 hours but may be extended up to a maximum of 120 hours.

Note: Recording a pressure chart for more than one chart revolution is discouraged. If an overwritten chart recording has less than 16 hours of non-overwritten data, the chart must be redone.

At the end of the recording period, retrieve and review the chart and provide it to the supervisor for signature. The chart must be filed in the district regulator station file folder.

4. For **electronic recorders**, start the recording when the maintenance work is completed and before the crew leaves the job site. The recording period must be a minimum of 16 hours but may be extended up to a maximum of 120 hours. At the completion of the recording period, download, print, graph and review the pressure data and ensure that it is filed in the district regulator station file folder. When graphing the data, the vertical scale must not exceed two times the highest-value data point on the chart.

III. Records

- A. Prepare Form 62-6271, “District Regulator Data Sheet,” (Attachment 1) for each stage of regulation. The data sheet must be reviewed during every inspection and updated, as needed. Data sheets must be filed in the district regulator maintenance folder.
- B. Document inspection, testing, and preventive maintenance work activities on Form 62-6321, “District Regulator Station Maintenance Record,” (Attachment 2) or Form 62-6321A, “District Regulator Station Maintenance Record (HPR Type)” (Attachment 3). **Do not leave any field on either of these forms blank.** Clearly indicate any field for which there is no data with a dash (-), a slash (/), “N/A” or “N.A.”
- C. The lead qualified mechanic on the crew and the supervisor must sign and date all maintenance records, including pressure recordings, with their printed LAN ID and initials. All entries and signatures must be made with non-erasable ink. Maintenance records must be filed in the district regulator maintenance folder.
- D. For distribution systems with multiple feeds, identify at least one or two associated district regulator stations (i.e., the closest associated stations). List these associated stations on Form 62-6271. If it is not obvious which are the associated stations, consult the senior division gas engineer for assistance.
- E. Retain all district regulator data sheets, maintenance records, pressure recordings, permanent pressure recorder calibration records, and relief valve capacity checks for 10 years or for the life of the facility, whichever is less.
- F. On the back of Form 62-6321 or Form 62-6321A, show any corrective work that was done. This corrective work may include the following:
 1. Any regulator, monitor, or relief valve set point changes. Specify the reasons for the changes.
 2. Replacement of failed parts. Specify the reason for the replacement.
 3. Component replacement (e.g., replaced filters, regulators, pilots, and valves). Specify the reason for the replacement.
 4. Leak and/or equipment repairs. Provide a brief description of repairs.
 5. Miscellaneous work such as touch-up painting, filter blowdowns, or cleanouts.
 6. Valves flushed or other corrective maintenance.

Note: Form 62-6271 must also be updated, as applicable, to reflect any of the corrective work that is listed above.
- G. On the back of Form 62-6321 or Form 62-6321A, note the reasons for any maintenance record items whose results are “no”, “poor”, or “fail” (on the front of the form, identify these items with an asterisk (*) to indicate that there is an explanation on the back). Also, discuss with the supervisor all outstanding and/or planned corrective maintenance work to be performed in the future and record the SAP Corrective Work Notification number.

- H. Pressure-recording charts used in district regulator pressure tests must include notations for the district regulator location, the chart on time, the chart off time, and the serial number and calibration date of the test gauge that was used for the recorder's accuracy check.
- I. Electronic recorder pressure graphs used in district regulator pressure tests must include notations for the district regulator location, the chart on time, and the chart off time.
- J. Retain and file a copy of the water discharge forms in the local office files.
- K. Retain and file a copy of the confined space air monitoring forms in the local office files.
- L. Fill out an on-line Material Problem Report as required by Utility Standard S2333, "Material Problem Reporting (MPR)."

IV. Compliance and Control

- A. Supervisors are responsible for the proper completion of all district regulator station inspection, testing, and maintenance for their areas of work responsibility.
- B. Supervisors must review and approve all records for work performed at each district regulator station within 30 days of the completion of maintenance.
- C. Supervisors must ensure that a recordkeeping system for their area of responsibility exists, and that it is periodically reviewed and verified to be complete and up-to-date.

Definition of Terms

C.F.R.: Code of Federal Regulations.

CPUC: California Public Utilities Commission.

District regulator station: A pressure regulator station (including both single and multiple stages of pressure regulation) that controls pressure to a high- or low-pressure distribution main serving more than two services.

HPR-type district regulator station: A district regulator station that uses non-pilot-operated regulators, specifically: Fisher 621, Fisher 627, Fisher 630, Reliance Model HPR 10, Reliance Model HPR 20, Reliance Model HPR 268, Rockwell 141, Rockwell 141A, and Sprague 041 regulators.

For cause: When the equipment is suspected of not being in good operating condition.

MAOP: Maximum allowable operating pressure is the maximum pressure at which a pipeline, pipeline segment, or component is qualified to operate in accordance with the requirements of CFR Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards."

MOP: Maximum operating pressure is the maximum pressure at which a gas pipeline system may be operated in accordance with the criteria established in GTS Standard S4125.

OPP: Over pressure protection.

UPP: Under pressure protection.

Recision

This work procedure supersedes UO Standard S5351, "District Regulator Station Maintenance," and all previous instructions, oral or written.

Reference Documents

CFR Title 49, Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards"

Company Form 62-0113, "Material Problem Report"

CPUC General Order 112-E, "State of California Rules Governing Design, Construction, Testing, Operation, and Maintenance of Gas Gathering, Transmission, and Distribution Piping Systems"

Gas Information Bulletin 280, "Requirements for Entering Subsurface Gas Enclosures"

Gas Numbered Document J-66, "Measurement and Control Mechanics' Test Instrument List"

Utility Standards:

D-S0213, "Work Procedures in Confined Spaces."

D-S0430/GTS Standard S4125, "Maximum Allowable Operating Pressure Requirements for Distribution Systems and Transmission and Gathering Lines"

D-S0456, "Recording Pressures in Distribution Systems"

S2333, "Material Problem Reporting"

Utility Work Procedures:

WP4100-10, "Gas Clearance Procedures for Facilities Operating Over 60 PSIG"

WP4100-11, "Deactivation and/or Retirement of Underground Gas Facilities"

WP4430-02, "Gas Station Facilities Inspection, Testing, and Maintenance Procedures"

WP4430-04, "Gas Valve Maintenance Requirements and Procedures"

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Attachments

Attachment 1, Form 62-6271, "District Regulator Data Sheet"

Attachment 2, Form 62-6321, "District Regulator Station Maintenance Record"

Attachment 3, Form 62-6321A, "District Regulator Station Maintenance Record (HPR Type)"

Attachment 4, "Set Point Limits for District Regulator Stations"

Attachment 5, "Establishing Pressure Set Points and Checking for Lock-Up for Regulators and Monitors Using the Long/Short Line Technique"

Contact for More Information

Redacted

Company phone Redacted

Date Issued

August 2009

Approved by

Redacted

Manager

Revision History

| Chg No. | Date | Description | By (LAN ID) |
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| 00 | August 2009 | Issued work procedure. | Redacted |