

**PG and E**  
**FOR INTRA-COMPANY USES**

DIVISION OR DEPARTMENT VICE PRESIDENT - GAS OPERATIONS

FILE NO.

RE LETTER OF SUBJECT Standard Practice 463-6:  
Maximum Allowable Operating Pressure of  
Gas Distribution Systems

February 13, 1978

DIVISION MANAGERS:  
MANAGER, PIPE LINE OPERATIONS:

Attached is new Standard Practice 463-6, "Maximum Allowable Operating Pressure of Gas Distribution Systems," effective March 1, 1978.

CPUC General Order 112-C Sections 192.619, 192.621 and 192.623 set forth certain limitations and requirements for establishing distribution system MAOP. The application of these requirements is covered by this Standard Practice.

E. F. SIBLEY



Attachment

PACIFIC GAS AND ELECTRIC COMPANY  
STANDARD PRACTICESTANDARD PRACTICE NO. 463-6ISSUING OFFICE OR DIVISION GAS OPERATIONSPAGE NO. 1 EFFECTIVE 3/1/78ISSUING DEPARTMENT GAS DISTRIBUTIONREPLACING  
PAGE NO. \_\_\_\_\_ EFFECTIVE \_\_\_\_\_

## SUBJECT:

MAXIMUM ALLOWABLE OPERATING PRESSURES OF GAS DISTRIBUTION SYSTEMS

PURPOSE:

1. To prescribe a uniform procedure to establish, document, review and revise Maximum Allowable Operating Pressure (MAOP) for all distribution systems which contain plastic, cast iron, wrought iron, or copper pipe and steel pipe which is operated below a hoop stress of 20% of Specified Minimum Yield Strength (SMYS).

RESCISSIONS:

2. Any previous instructions and practices in conflict with this Standard Practice.

EXCLUSIONS:

3. Excluded from this Standard Practice are steel pipelines and transmission and distribution mains and systems which:
  - a. Operate at or above 20% SMYS.
  - b. Are listed in Standard Practice 463-8.

REFERENCES:

4. S.P. 463-8, "Maximum Operating Pressures of Pipelines and Mains Operating at or above 20% SMYS."  
CPUC General Order 58-A.  
CPUC General Order 112-C.

RESPONSIBILITY:

5. Establishing, documenting, reviewing, and revising distribution system MAOP's shall be the responsibility of the Division Gas Superintendent.

All personnel responsible for distribution system operation and pressure regulation shall be kept informed of the established MAOP of each system.

DEFINITIONS:

6. Maximum Allowable Operating Pressure (MAOP) is the maximum pressure at which a pipe segment or system may be operated in accordance with all the applicable provisions of General Orders 58-A and 112-C.

\* Paragraph Revised  
\*\* Paragraph Added

(SEE OVER)

PACIFIC GAS AND ELECTRIC COMPANY  
STANDARD PRACTICE

STANDARD PRACTICE NO. 463-6

EXECUTIVE OFFICE OR DIVISION GAS OPERATIONSPAGE NO. 2 EFFECTIVE 3/1/77ISSUING DEPARTMENT GAS DISTRIBUTIONREPLACING  
PAGE NO. \_\_\_\_\_ EFFECTIVE \_\_\_\_\_

## SUBJECT:

MAXIMUM ALLOWABLE OPERATING PRESSURES OF GAS DISTRIBUTION SYSTEM

DEFINITIONS (continued)

Specified Minimum Yield Strength (SMYS) is the minimum yield strength in psi prescribed by the specification under which the pipe is purchased from the manufacturer, or as specified in Section 192.107 of General Order 112-C.

Standard Pressure is 7" w.c.

Low Pressure Distribution System is a system which operates at a pressure of 3½" w.c. through 10½" w.c. Service regulators are not required.

High Pressure Distribution System is a system which operates at a pressure greater than 10½" w.c. through 60 psig. Service regulators with the characteristics listed in Section 192.197 (a) of General Order 112-C are required.

Semi-High Pressure Distribution System is a system which has traditionally operated at a pressure greater than 10½" w.c. but not more than 25 psig. Service regulators with the characteristics listed in Section 192.197 (a) of General Order 112-C are required.

Note: This SHP designation may continue to be used. However, General Order 112-C does not recognize or distinguish between HP and SHP. Therefore, in this Standard Practice, SHP and HP distribution systems will be treated in the same manner.

Distribution Feeder Main is a distribution main which operates at a pressure greater than 60 psig. Mains operating at a pressure less than that which would cause a hoop stress of 20% of SMYS are covered by this Standard Practice. Those operated at or above 20% of SMYS are covered by Standard Practice 463-8. Service regulators having overpressure protection with the characteristics listed in Section 192.197 of General Order 112-C are required.

Documented Pressure consists of a properly identified record of the actual operating pressure. The record may be a pressure chart; a log (station, foreman's, superintendent's, etc.); a dispatcher's order, or similar written record.

Certified Pressure consists of written statements by personnel knowledgeable about a system attesting to the actual operating pressure. Certification of a system MAOP is to be accomplished by completing Exhibit A.

\* Paragraph Revised  
\*\* Paragraph Added

(SEE OVER)

PACIFIC GAS AND ELECTRIC COMPANY  
STANDARD PRACTICE

STANDARD PRACTICE NO. 463-6

ISSUING OFFICE OR DIVISION GAS OPERATIONS

PAGE NO. 3 EFFECTIVE 3/1/78

ISSUING DEPARTMENT GAS DISTRIBUTION

REPLACING PAGE NO. \_\_\_\_\_ EFFECTIVE \_\_\_\_\_

SUBJECT:

MAXIMUM ALLOWABLE OPERATING PRESSURES OF GAS DISTRIBUTION SYSTEM

SUPPLEMENT:

- 7. Procedural details for establishing, reviewing, revising, and documenting distribution system MAOP's are given in the Supplement to the Standard Practice.

ISSUED BY: [REDACTED]  
Manager, Gas Distribution Department

APPROVED BY: E. F. SIBLEY  
Vice President - Gas Operations

DISTRIBUTION: Division Managers  
Division Gas Superintendents  
District Managers  
District Gas Superintendents  
Director, Procedures Analysis  
Division Administrative Analyst (or equal)  
Inspection and Maintenance Plan Holders

Additional copies of this Standard Practice may be obtained from Gas Operations, 77 Beale Street, San Francisco (Extension 9-1604).

\* Paragraph Revised  
\*\* Paragraph Added

GENERAL

8. New or replacement distribution feeder mains shall be designed and tested to qualify for the ultimate MAOP of the system.

New or replacement mains and services in both low-pressure and high-pressure distribution systems shall be designed and tested to qualify them for a future MAOP of 60 psig. Those with a potential for future conversion to feeder main should be designed and tested to that criterion.

An MAOP of 60 psig for existing distribution systems is desirable. Any system with a lower MAOP for which uprating is planned should be considered for an ultimate MAOP of 60 psig.

LIMITATIONS OF MAOP

9. Distribution systems shall not be operated at a pressure higher than the established MAOP. The MAOP of a system shall not exceed the lowest of the following:

a. Distribution Feeder Main Systems:

- (1) For systems or portions of systems installed prior to July 1, 1970, the highest operating pressure for the 5 years ending July 1, 1970, which can be documented or certified, unless subsequently uprated in accordance with Subpart K of General Order 112-C, or pressure tested after June 30, 1965, in accordance with Gas Standard A-34.
- (2) For systems or portions of systems installed after June 30, 1970, the MAOP established by a test conducted as outlined in Gas Standard A-34.
- (3) The rated working pressure of the weakest component in the system.
- (4) The MAOP of any connected system of lower MAOP unless adequate overpressure protection is provided between them.
- (5) A pressure limited by operating conditions, or the condition of the system.

b. High Pressure Distribution Systems:

- (1) 60 psig. (25 psig for systems having cast iron pipe with unreinforced bell and spigot joints.)
- (2) For systems or portions of systems installed prior to July 1, 1970, the highest operating pressure for the 5 years ending July 1, 1970, which can be documented or certified, unless subsequently uprated in accordance with Subpart K or General Order 112-C, or pressure tested after June 30, 1965, in accordance with Gas Standard A-34.

- (3) For systems or portions of systems installed after June 30, 1970, the MAOP established by a test conducted as outlined in Gas Standard A-34.
- (4) The rated working pressure of the weakest component in the system.
- (5) The MAOP of any connected system of lower MAOP, unless adequate overpressure protection is provided between them.
- (6) A pressure limited by operating conditions, or the condition of the system.

c. Low Pressure Distribution Systems:

- (1) A pressure which would cause the unsafe operation of any approved, connected, and properly adjusted low-pressure appliance.
- (2) 150% of Standard Pressure. (For standard pressure of 7" w.c., MAOP is 10½" w.c.)

ESTABLISHING MAOP

10. Describe or identify each distribution system and distribution feeder main. Assign to each the highest MAOP that can be established in accordance with Paragraph 9. An MAOP established by a documented or certified pressure shall be recorded on the attached form (Exhibit A).

If there is no pressure record available to document the operating pressure of a system during the 5 years prior to July 1, 1970, the MAOP may be established as the documented pressure of the system when the most recent leak survey demonstrated the system to be safe while operating at the documented pressure (documented pressure at time of time of survey or before and after survey). If a leak survey has been made but there is no record of the pressure at the time of survey (or before and after the survey), the MAOP should be established as the pressure of record (which may be the current pressure), if knowledgeable personnel can certify that the pressure at the time of the survey was the same as the pressure of record. MAOP's established in this manner must be verified during the next leak survey.

11. If any distribution system requires a higher MAOP than that which can be established by Paragraphs 9 or 10, it must be uprated in accordance with the requirements of Subpart K, General Order 112-C. To the extent feasible, any required uprating should be scheduled to coincide with the next scheduled leak survey.

MAOP RECORDS:

12. The written record which documents each distribution system MAOP shall be retained for the life of the system and shall include documentation of the current MAOP.

IMPLEMENTATION:

13. Each division must comply with the requirements of this Standard Practice within 12 months of its effective date.

ESTABLISHING MAOP

Permanent File GM#/WO# \_\_\_\_\_  
 Division \_\_\_\_\_ District \_\_\_\_\_  
 Map Reference \_\_\_\_\_  
 Date \_\_\_\_\_

I. SYSTEM IDENTIFICATION

1. Description of system or segment \_\_\_\_\_
2. Location \_\_\_\_\_ Location Class \_\_\_\_\_

II. SYSTEM REVIEW

3. Review the design, operating, and maintenance history. Are all system components of adequate design for the proposed MAOP? \_\_\_\_\_
4. If any deficiencies exist, list them, together with the type of corrective action and completion date \_\_\_\_\_

III. STATEMENT OF HIGHEST PRESSURE FOR 5-YEAR PERIOD ENDING JULY 1, 1970

5. The MAOP of this system is \_\_\_\_\_ PSIG. It was established by an operating pressure of \_\_\_\_\_ on \_\_\_\_\_ (Date between 7/1/65 and 6/30/70.)  
 Type of Record \_\_\_\_\_

IV. STATEMENT OF TEST PRESSURE AFTER JULY 1, 1965

6. The MAOP of this system is \_\_\_\_\_ PSIG because it was tested to \_\_\_\_\_ PSIG in accordance with Gas Standard A-34.

V. MAOP DOCUMENTATION

7. Current operating pressure \_\_\_\_\_ PSIG.
8. Operating pressure at the time of the most recent leak survey \_\_\_\_\_ PSIG.
9. Type of leak survey \_\_\_\_\_ Date \_\_\_\_\_  
 (Attach a record of the leaks found during and since the survey. Include corrective action taken. If no leaks, so state.)
10. The maximum safe pressure is \_\_\_\_\_ PSIG which is therefore established as the system MAOP.

VI. SIGNATURES

11. Certified by \_\_\_\_\_ Date \_\_\_\_\_  
 Approved by \_\_\_\_\_ Div/Dist Gas Supt. Date \_\_\_\_\_

VII. RECORDS

12. Enter documented MAOP onto appropriate records:
  - a. GM/WO permanent file \_\_\_\_\_
  - b. District regulator data sheets and district regulator maintenance records \_\_\_\_\_
  - c. System MAOP listing \_\_\_\_\_