

Objective

To establish a uniform procedure for preparing complete and accurate Operating Maps and Operating Diagrams.

Scope

This CGT Recommended Practice covers the procedure to prepare Operating Maps and Diagrams. This RP does not cover plat sheets, wall maps, or construction drawings.

Rescission

All previous instructions, oral or written, that may be contrary to this Standard.

Related Policy

CGT Interim Practice IP-410.1, "Gas Construction, Reporting Installation/Alteration for Engineering Records"

CGT Standard S-4460, "Operating Maps and Operating Diagrams"

Originator

CGT Standard Technical Committee 21 on Station Equipment

Business Risk

Inaccurate Operating Maps or Operating Diagrams can result in improper operation of CGT gas facilities thereby jeopardizing employee and/or public safety, and gas transmission reliability. In addition to damage to PG&E and/or public property, natural gas accidents may subject PG&E to fines and negative publicity.

References (Attached)

Drawing 182358, sheets 1-3, "Symbols-Requirements; Operating Maps and Diagrams"

Responsibility for Implementation

The Manager of Gas System Technical Support is responsible for ensuring compliance with this Standard.

Contact for Further Information

██████████ Senior Gas Engineer
System Standards Management, Gas System Technical Support
██

Approvals and Authorizations

██ Date

██ Date



Application And Policy

All symbols shall conform to the standards shown on PG&E Drawing No. 182358, three sheets, titled "Symbols-Requirements; Operating Maps and Diagrams" (attached), which is part of this Recommended Practice.

Valves smaller than 2-inches shall not generally be shown unless they have a special significance that requires them to be shown.

Numbering - Valves & Regulators

The Department designing new facilities or revising existing facilities shall number new valves in accordance with the procedures given below. The Mapping Section of GSTS will review requested changes for consistency.

Mainline Valves

All transmission line mainline valves shall be numbered by the milepost from the original beginning of the line. Numbers are to be expressed in decimals to the nearest hundredth of a mile, i.e., V-1.73. **Note:** No two valves shall have the exact same number. Two valves that are very close shall be distinguished by changing the last digit in the milepost number. Example: V-137.34 and V-137.35.

[Currently, mainline valves on DFMs do not have a consistent numbering or naming convention. Typically, each division has used its own numbering scheme for these valves. GSTS and GSM are reviewing the existing convention and will recommend an appropriate numbering scheme in the next revision.]

Station Valves

When a valve is removed from a piping configuration or if it is relocated within the station, its valve number shall not be reused. However, if a valve is replaced with another valve that performs the same function, the existing number shall apply to the new valve. New valves installed in an existing station shall be numbered according to this Recommended Practice, except in an existing compressor station where a unique valve numbering system has already been established.

All station valves, including check valves, and regulators shall be numbered in consecutive order, except for load valve-trimmer arrangements and valves within compressor stations (see below).

Blowdowns & Reliefs

All valves which discharge directly to atmosphere shall be designated by consecutive lettering from A through Z, AA through AZ, etc.

Load & Trimmer Valves

The load valve will be numbered and the trimmer will take the same number plus the letter "R". Example: Load Valve, V-8, and Trimmer, V-8R.

Compressor Valves

Compressor Stations (Numbering Exceptions)

- a. All natural gas compressors within a compressor station shall be consecutively numbered K-1, K-2, K-3, etc., starting with K-1.
- b. All station block valves will be given numbers from 1-19. A "station block" valve is the first valve on a branch connection from

the main line other than valves used for a blowdown function (Refer to **Blowdown & Reliefs** section above).

- c. All station unit valves for compressor K-1 shall have consecutive numbers starting with 101 through 199; K-2 shall have consecutive numbers starting with 201 through 299, etc. Unit valves are the valves which perform a function related only to the unit, such as unit suction, discharge, pressurizing, and bypass valves.

All station valves or regulators not described in Paragraphs a. or b. shall be numbered in consecutive order from 20-99 including the first tap valve, 2-inch and larger, leaving the main gas piping.

SCADA Points

Pressure SCADA points and flow SCADA points shall be indicated with inverted triangles and sequentially numbered (within the triangle). A stem attached to the triangle shall emanate directly from the piping if the value telemetered is a pressure, and from a meter if the value is the actual flow. (In the case of an orifice plate, the value can be either pressure, differential pressure, or actual flow.) The SCADA number, which is assigned by the SCADA/Controls Section of GSM, shall appear adjacent to the triangle.

MAOP & MOP

The Operating Diagrams shall include both MOP and MAOP for all transmission lines and DFMs connected within the facilities. The MOPs and MAOPs of DFMs and transmission lines operating at or over 20% SMYS can be obtained from PG&E drawing 086868.

The piping MAOPs and MAOP boundaries within the facility shall be shown on each Operating Diagram. The MAOP boundaries within a facility shall be shown across block valves or control valves. The valve shall be capable of operating at the pressure of the higher MAOP. When establishing MAOP within the station, the pipe and fittings shall be confirmed that they are qualified for the MAOP.

Closed Valves

Each Operating Diagram shall show "required closed valves" as closed. "Required closed valves" are those valves required to be closed: (1) by code, or (2) by station/system operation, or (3) to prevent gas being blown to atmosphere.

Examples of "required closed valves" are: station bypass valves that are also MAOP boundary valves (code), filter/separator bypass valve (station operation), BTU isolation valve (system operation), and manual blowdown valves (blowdown). These valves are required to be closed unless there is an extreme abnormal or emergency condition.

Valves that are normally closed, but seasonally may be open because of routing changes, should not be shown closed on the Operating Diagram. Operating departments may mark up their own copy of the Operating Diagrams to show the position of these valves.