GAS SCADA SYSTEM

Alarm Limits

Policy and Procedures

Policy

Hi-Hi and Lo-Lo alarms will be set for all gas quality points, all transmission pipeline pressure points, and all transmission station inlet and outlet pressure points Hi-Hi alarms will be set for all transmission flow points and Lo-Lo alarms are set on selected single feed transmission lines (Lo-Lo alarm flow limits will be set on regulated systems which do not normally shut in) Hi-Hi and Lo-Lo distribution pressure and flow alarms will be set as requested by the responsible O&M group

The OP&C Director, Transmission Supervisor, Senior Transmission Coordinator, or Operations Supervisors must approve all new or revised Hi-Hi and Lo-Lo limits

Transmission system Hi-Hi and Lo-Lo alarm limits will be consistent among the SCADA computers Hi-Hi and Lo-Lo distribution alarm limits will reside in the SCADA computer which monitors the division's distribution system

As data points are added or deleted to either the transmission or distribution systems, the SCADA Engineer will follow established procedures (Appendix A)

All revisions to the Hi-Hi and Lo-Lo settings must follow the Gas SCADA Alarm Change Procedure (Appendix B)

Hi and Lo alarms will be set at the discretion of the Transmission Coordinators and/or Gas System Operators as system conditions dictate

Procedures

Gas Quality Hi-Hi and Lo-Lo Alarm Limits

Gas quality limits will be set as recommended by the Gas Quality Emergency Response Team Refer to gas quality policy (Appendix C)

Transmission Systems - Hi-Hi and Lo-Lo Alarm Limits

Transmission line pressure limits will not be set above the lower of Maximum Allowable Operating Pressure (MAOP) or Maximum Operating Pressure (MOP) plus 3 pounds per square inch (psi) The Lo-Lo alarm limits will be set at the Minimum Required Pressure (MRP) less 3 psi [1]

Backbone transmission line flow setpoints will be defined by design criteria All other transmission line Hi-Hi alarm flow limits will be based on system peak day sendout [2] Lo-Lo alarm flow limits will be set on regulated lines which can, but do not normally shut in

DFM transmission line pressure and flow alarms will be set at the responsible O&M groups request, resulting from discussion and agreement between the responsible operating supervisor and the responsible TSP engineer

Distribution System Hi-Hi and Lo-Lo Alarm Limits

Pressure and flow alarms will be set at the responsible O&M group's request

Review

Transmission System - Hi-Hi and Lo-Lo Alarm Limits

Alarm limits will be reviewed in October and March of each year Upon completion of the review, Operations Planning & Control (OP&C) will implement the requested winter alarm limits in mid-November and summer limits in mid-April of each year

OP&C will request Gas Quality Response Team to review of the gas quality alarm limits Gas Quality Response Team will provide alarm limit changes as required

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(1) Transmission systems frequently run at the MOP or MRP Hi-Hi alarms are set 3 psi above MOP and Lo-Lo alarms are set 3 psi below MRP

(2) System Peak Day Sendout was on December 23, 1998

OP&C will request that the responsible O&M group's review their transmission pressure and flow limits The responsible operating groups will review the current winter (or summer settings) and concur or request changes to the limits The responsible O&M groups will base the winter limits on a critical design day (Cold Winter Day, CWD or Abnormal Peak Day, APD) The summer limits will be based on an Average Summer Day, ASD

OP&C will review the transmission line Hi-Hi and Lo-Lo pressure and flow limits and make changes to the limits as required after discussion with the responsible parties

Distribution System - Hi-Hi and Lo-Lo Alarm Limits

Alarm limits will be reviewed in October and March of each year OP&C will provide the responsible O&M group with the current winter and summer alarm limits The responsible O&M group will review the limits and concur or request to change the limits OP&C will implement the requests in mid-November and in mid-April of each year

Alarm Response

Policy

All alarms will be acknowledged and in the case of Hi-Hi and Lo-Lo alarms the acknowledgment of the alarm and notification procedure below will be followed

Procedure:

(Required actions during first 10-minute period after alarm acknowledgment)

Transmission Coordinators (TCs), and Gas System Operators (GSOs) will acknowledge, analyze and respond to all alarms

- System Gas Control will be notified
- Analyze and determine system condition
- Determine corrective action and/or notify responsible supervisor

Once a Hi-Hi or Lo-Lo alarm is breached, the TC and GSO will analyze the upstream and downstream point to help determine the cause and extent of the problem Upon completion of the analysis, a corrective action will be taken which may include a compressor or valving operation, or contacting the responsible operating personnel

(Second 10-minute period)

- Coordinate next steps between the GSO and TC
- Implement next steps
- Abnormal Incident Report if required by the Senior TC

If the TC, GSO, and the responsible operating personnel cannot agree on a course of action, the TC or GSO will contact their operations on-call representative The on-call representative will agree on course of action and contact the responsible operating personnel to reach agreement Once resolved, the on-call representative will notify the TC or GSO regarding the course of action

Definitions

Distribution systems are gas mains operating at a pressure of 60 psig or less

Transmission systems are gas pipelines operating at a pressure greater than 60 psig

SCADA is an acronym for *Supervisory Control and Data Acquisition* and is a means of remotely monitoring and controlling PG&E's gas transmission and distribution systems

SCADA alarms identify data from field devices which are unusually high or low or when device reports an error condition Flashing messages, flashing buttons and/or a beeping sound notify the personnel monitoring the SCADA screens Alarms can be set for analog points having a continuous range of values such as pressures and flows

Operations Planning & Control (OP&C) currently consists of 3 gas system monitoring facilities Its headquarters is located in San Francisco and its satellite offices are located in Brentwood and San Jose

Responsible Operating Groups are the Area O&M Departments, and Northern and Southern Gas System Maintenance

Responsible O&M Personnel include Area Transmission and Regulation or Measurement and Control Supervisors and their on-call representatives, Senior Gas Distribution Engineers, Northern and Southern Gas System Maintenance Supervisors, and their on-call representatives, and OP&C Senior Transmission Coordinators, Operation Supervisors and the OP&C on-call representative

[redacted]

Director, Operations Planning & Control
Gas System Operations Department

GSO SCADA Alarm Change Procedure

To make an alarm database change, the person initiating the change is responsible for the steps listed below Any Transmission Coordinator or Gas Supply Operator can institute a change

Step	Purpose
1. One of the following must approve the change: Senior TC, Appropriate Operations Supervisor, Transmission Supervisor, or the Director.	*Ensures that GSO supervision has reviewed & authorized alarm change.*
2 All effected Gas Control Centers must be notified via a Gas Logging System message, that should include the PV name or ID, PV description & the name of the approver. *Remember, not every PVID is the same in SGC as in the field.*	*...so that each field site maintains an up-to-date SCADA alarm database on its VAX.*
3. Change the alarm setting on the local & System Gas Control SCADA VAX. Please use the Policy, Procedures and Responsibilities Letter in the SCADA Alarm Policy Binder* as a guide when making changes.	*Updates the actual SCADA setpoint with alarm setting agreed upon in step 1.*
4. The information is to be noted in the "alarm setting exception list" page of the SCADA Alarm Policy Binder.	*A quick guide to changes during the seasonal period (winter or summer).*
5. Make certain that a printout of the G.L.S. message text, is filed behind the "exceptions" list - section of Binder 8.	*Provides more detailed information about a given change. Enables Excel database custodians to research changes.*
6. The PVID is located in the printed alarm database, and the change is noted with the date, time and initials of the person approving the change.	*A cross-check of changes - the first place checked for permanent changes to the Excel database.*
7. *SGC only:* E-mail has been sent to: either San Jose GCC, Brentwood GCC, TCAllist, SCADA Support, effected Operations Supervisor and the Transmission Supervisor, Director, OP&C, TSP - describing the change.	*...so that everyone is informed of changes*

* The SCADA Alarm Policy Binder is Binder No 8 at all GSO Locations Among other information, it includes the printed alarm database, alarm setting exception list, and the official GSO alarm policy

As you can see, each step in the procedure has a purpose Please follow the procedure carefully

Updates to the Excel database are compiled and implemented prior to a season change SCADA alarms are automatically updated for summer and winter season with data from the SGC Excel database

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Binder Reference 8