Gas Operations Update
System Impact: One Class Out

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Executive Summary

Background

- PG&E has recently identified an inconsistent application of a ***repealed*** section of Federal regulation[1] that allows certain pipelines to operate at a higher stress level upon completion of successful strength tests
- Despite having a valid and safe strength test, this ***repealed*** section of the regulation prevents us from relying on the more recent tests to operate at a higher stress level due to certain timing issues in the 1970s when the Federal regulation was first enacted
- These new determinations **do not** reflect a public safety issue given that the pipelines typically have been strength tested to withstand significantly greater pressure levels than to which they are ever subjected to, while in service

Benchmarking

- Benchmarking discussions with a few of the operators have revealed that they typically presume they complied with the provisions of the Federal regulations at the time applicable and apply the current regulations to operate their pipelines
- PG&E is not only applying the current regulations but is also validating the compliance requirements associated with the interplay between the ***repealed*** section of the Federal regulations and the current regulations to operate its pipelines

1. 49 CFR 192.607

Executive Summary (Continued)

Implications

- As a result of refined pipeline asset knowledge, PG&E has identified 10.3 non-contiguous miles (~0.2%) in its pipeline network that do not meet the ***repealed*** Federal regulations, which translates to ~5% of the PG&E Gas Transmission system[1]
- Pressure reductions for the impacted pipelines significantly increase the probability of customer outages during extreme cold weather conditions including potential curtailments to Moss Landing, Calpine Metcalf, and Calpine Gilroy power plants as well as additional large noncore customers

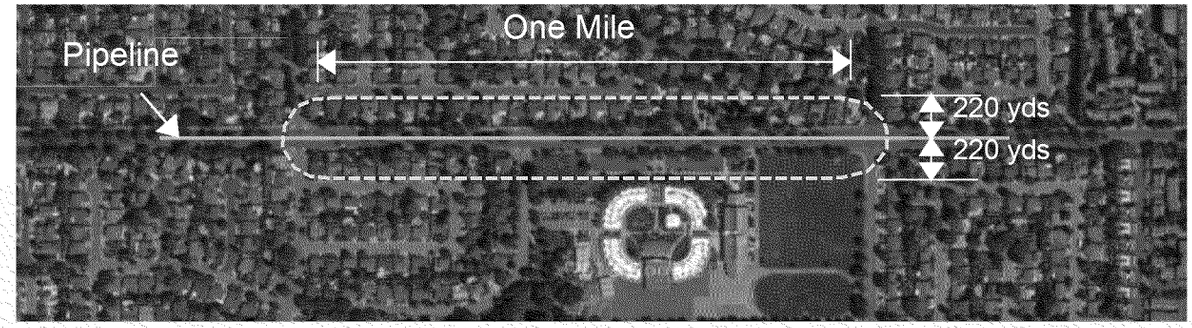
Path Forward

- From an engineering standpoint, a more recent strength test provides greater confidence than an older one
- As a result, PG&E is proposing to file a special permit application to the California Public Utilities Commission (CPUC) and Pipeline and Hazardous Materials Safety Administration (PHMSA) to continue to operate the impacted pipelines at the current pressures using the more recent strength tests

1. PG&E has 367 systems in the Gas Transmission network corresponding to 6,750 miles

Class Location Background

- Regulations for gas transmission pipelines establish pipe strength requirements based on population density near the pipeline
- Locations along gas pipelines are divided into classes from 1 (rural) to 4 (densely populated) and are based upon the number of buildings or dwellings for human occupancy in a one-mile stretch that is 440 yards wide, referenced as a Class Location Unit



- If a Class Location changes (more structures are built within the Class Location unit) operators must:
  - Reduce pressure to be commensurate with the allowable pipe stresses (measured as a % of SMYS[1]) **OR**
  - Replace the pipe to be commensurate with the allowable pipe stresses **OR**
  - Strength test the pipe to be able to operate at the allowable stresses of a lower class, referenced as a "One Class-Out" provision (in accordance with Federal Regulations 49 CFR, Section 192.611)

Class Location	Max % SMYS (General Design)	Max % SMYS ("One Class-Out")
1	72%	72%
2	60%	72%
3	50%	60%
4	40%	50%

1. % SYMS: indicates level of mechanical stress on steel pipe, e.g., 0% = no stress; 100% = maximum allowable stress.

Class Location "One Class-Out" Provision

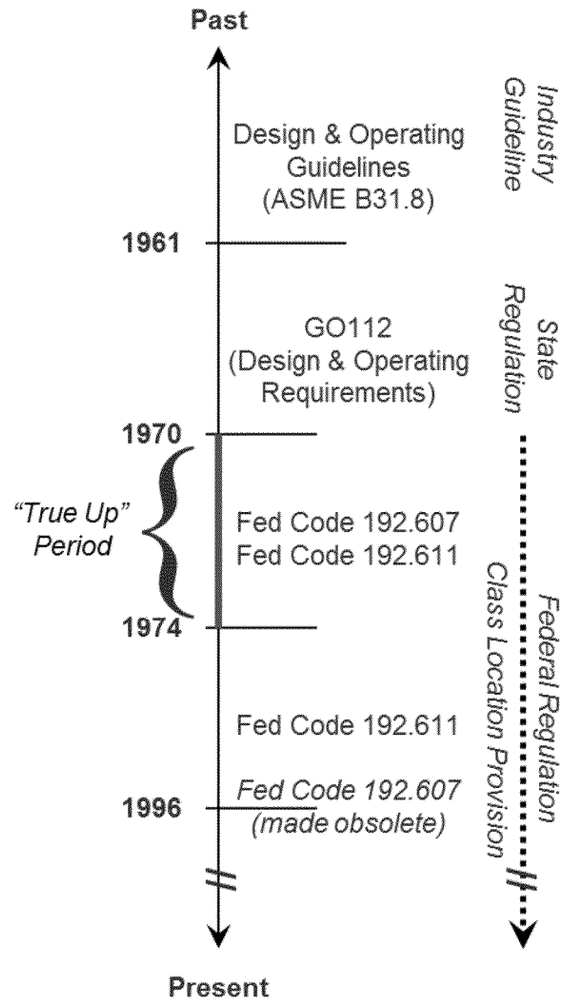
- 192.607 Provision: Provided operators with a window ("True Up" Period) to ensure pipelines operating greater than 40% SMYS were commensurate with the class location at that time and were confirmed or revised in accordance with 49 CFR 192.611
- 192.611 Provision: Pipelines can be operated 'one class out,' if:
  - Class location changes after the implementation of the federal regulations (1970) and appropriate strength test was/is performed, **OR**
  - Class location confirmed to be non-commensurate as a result of the 192.607 analysis during 1970 – 1974 and appropriate strength test performed in accordance with the provisions of 192.611 during that time-frame.
- **Current Situation:** As a result of refined asset knowledge of PG&E's pipelines, we are in the process of validating if the requirements of 192.607 were met by PG&E. Our current understanding of section 192.607 of the federal regulation is:
  - For class locations that have not changed since 1970, pipelines with strength tests beyond 1974 do not support the same higher maximum allowable operating stress level based on the respective class location as compared to similar pipelines with strength tests performed between 1970 – 1974.

What should be the appropriate consideration by operators regarding 192.607 given the recent increase of in-situ strength tests that typically include spike tests?

Class Location[1]	Maximum Allowable Operating Stress Level (% SMYS)	
	Strength Test per 192.611 (1970 – 1974)	Strength Test per 192.611 (1974 and beyond)
2	72%	60%
3	60%	50%
4	50%	40%

1. Applies to pipeline sections that experienced a class location change prior to 1971

Timeline of Regulatory Requirements:

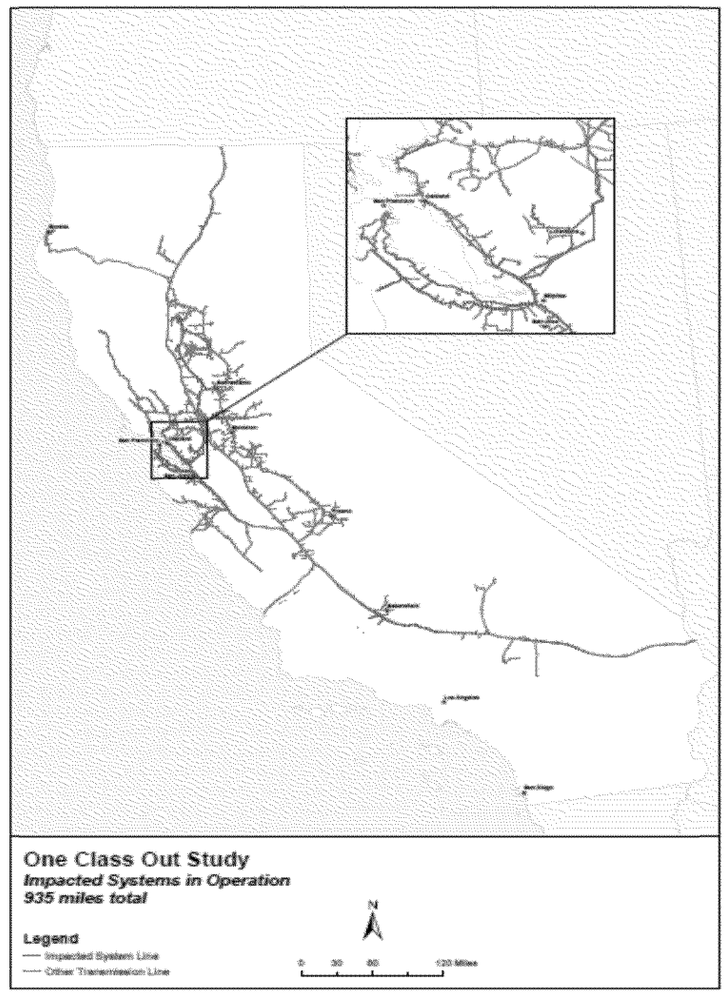


Results

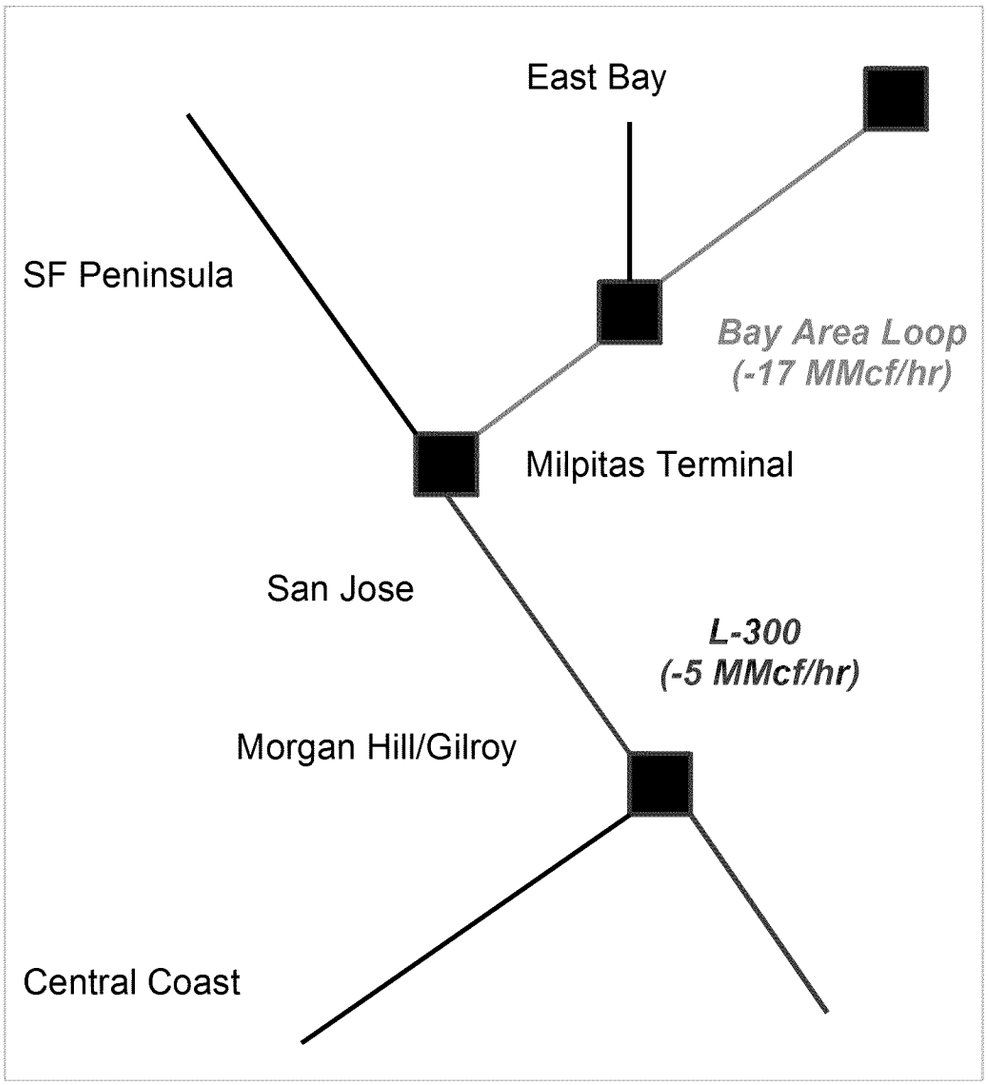
- Historically, PG&E had interpreted section 192.611 to allow a pipeline to operate "One Class-Out" as long as it had been subject to an appropriate strength test in a different year than when the pipe was installed
- As a result of the application of section 192.607 (***repealed*** in 1996) and 192.611, PG&E now concludes that it cannot rely upon a post-1974 strength test to operate a pipeline "One Class-Out" if that pipeline changed up in class before April 15, 1971
- System-wide impact associated with PG&E's current interpretation of the Federal regulation is:

Miles Impacted	10.3 mi.
Number of Systems Impacted	20 (~5%[1])
Total Impacted System Miles	843 mi.
Average System Pressure Reduction	12%

1. 367 Systems in Gas Transmission network



System Implications



- *Bay Area Loop Capacity Reduced by 17 MMcf/hr*
- ***L300 Capacity Reduced by 5 MMcf/hr***

- ***Insufficient Supply at Milpitas on APD[1] Peak Hour = 15 MMcf/hr***
- ***Reduce Noncore Demands in Area by 15 MMcf/hr (60%)***

1. Abnormal Peak Day

System Implications (Continued)
Forecast with All Pressure Reductions

System	Typical Winter Day (5 to 50 days/winter)	Cold Winter Day (1-in-2 year)	Extreme Cold Day to APD (1-in-10 to 1-in-90 year)
Peninsula	OK	OK	• 60% curtailment of 122 Peninsula noncore customers • ~ 140 MW reduction at Los Esteros, Cardinal Cogen, Agnews Cogen
San Jose / Morgan Hill / Gilroy	OK	OK	• 60% curtailment of 60 area noncore customers • ~ 500 MW reduction at Metcalf, Calpine Gilroy Cogen, Gilroy Energy Center
East Bay	OK	OK	• 60% curtailment of 85 East Bay noncore customers • ~ 300 MW reduction at Russell City PP
Central Coast	OK	OK	• 60% curtailment of 84 Central Coast noncore customers • ~ 520 MW reduction at Moss Landing, UC Santa Cruz

Note: Above is one curtailment option to illustrate magnitude of impact. Further review and input from the ISO and others is required to develop a curtailment plan.

Path Forward

1. Reduce pipeline pressure and revise associated Maximum Allowable Operating Pressure (MAOP), where feasible
2. File special permit application with CPUC and PHMSA, which includes the following requirements

   A Completed Modern[a] Strength Test **OR**

   B Completed Strength Test in Accordance with Federal Regulations (Subpart J)
   AND
   Performed In-Line Inspections and repaired all anomalies

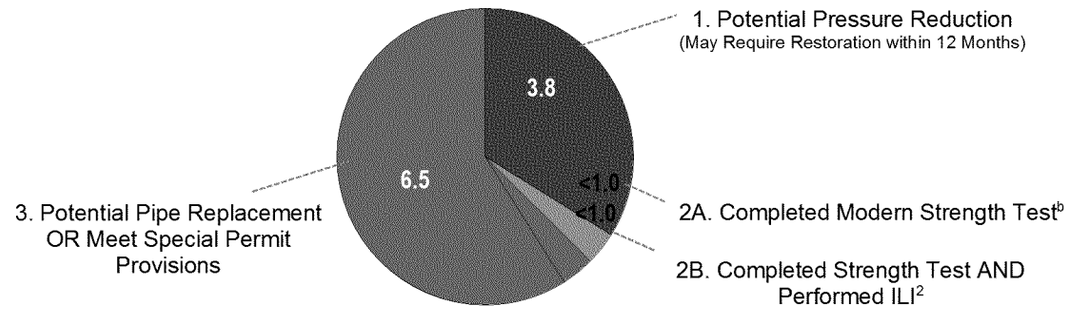
   AND

   C **Interim Safety Measures**
   - Perform Monthly Leak Survey
   - Perform Monthly Pipeline Patrols

3. Replace pipe **OR** Meet the provisions specified in the proposed special permit

a. Includes strength tests currently being performed as a part of the Pipeline Safety Enhancement Plan (e.g. 90% SMYS tests where feasible with spike test)

Total miles that were not "trued up" by 1974: 10.3 miles



b. Number of miles for 2A and 2B are being validated