BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on the Commission's Own Motion to Adopt New Safety and Reliability Regulations for Natural Gas Transmission and Distribution Pipelines and Related Ratemaking Mechanisms.	Rulemaking 11-02-019 (Filed February 24, 2011)

NOTICE OF *EX PARTE* COMMUNICATION

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NOTICE OF *EX PARTE* COMMUNICATION

Pursuant to Rule 8.4 of the Commission's Rules of Practice and Procedure, the City of San Carlos (San Carlos) gives notice of the following *ex parte* communication.

On December 18, 2013, City of San Carlos Mayor Mark Olbert, City of San Carlos City Manager Jeff Maltbie, and Greg Conlon met with Commissioner Michel Florio. The meeting took place at the Commissioner's office in San Francisco from approximately 3:35 p.m. – 4:15 p.m. The communication consisted of an oral presentation.

In the meeting, Mayor Olbert and Mr. Maltbie summarized the City of San Carlos' concerns regarding the proposed decision (PD) on Pacific Gas & Electric Company's (PG&E) Line 147 as presented in San Carlos' Opening Comments. San Carlos provided Commissioner Florio with the attached handout, see Exhibit A.

Respectfully submitted,

/s/ Steven R. Meyers

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EXHIBIT A

The City of San Carlos

Recommendations
For
Pipeline L-147

SB_GT&S_0117259

Pipeline L-147 Recommendations

- **MAOP ≤ 240 psi** based on 49 CFR 192 requirements for pipelines with unknown material properties and a safety factor based engineering analysis

- **Hydrotested every 10 years** per the ASME Code B31.8S and calculations based on worst case weld properties with porosity and inclusions consistent with pre-1950 piping

- Both recommendations are based on two independent assessments methodologies giving similar results

- Both recommendations are required by CFR regulations

MAOP per 49 CFR 192

§ 192.619 Maximum allowable operating pressure: Steel or plastic pipelines.

(a) No person may operate a segment of steel or plastic pipeline at a pressure that exceeds . . . the lowest of the following:

(1) The **design pressure** of the weakest element in the segment . . .

(2) The pressure obtained by **dividing the pressure to which the segment was tested after construction** as follows:

(i) For plastic pipe in all locations . . .

(ii) For steel pipe operated at 100 psi gage or more, the test pressure is divided **by a factor determined in accordance with the following table:**

Class location	Installed before (Nov. 12, 1970)	Installed after (Nov. 11, 1970)	Converted under § 192.14
1	1.1	1.1	1.25
2	1.25	1.25	1.25
3	1.4	1.5	1.5
4	1.4	1.5	1.5

MAOP per 49 CFR 192.619 Simplified

The MAOP is the lowest of:

1) the design pressure of the weakest segment

2) the hydrotest pressure divided by 1.5 (Class 3)

Design Pressure per 49 CFR 192.105

$t = 0.25\ in$	Pipe Wall Thickness
$D = 20\ in$	Pipe Diameter
$F = 0.5$	Design Factor (49 CFR 192.111)
$E = 0.8$	Longitudinal Joint Factor (498 CFR 192.113)
$T = 1$	Temperature Factor (49 CFR 192.115)
$S = 24\ ksi$	Yield Strength if unknown (49 CFR 192.107)

$$MAOP = \frac{2 \cdot S \cdot t}{D} \cdot F \cdot E \cdot T \qquad MAOP = 240\ psi$$

Design Pressure per Engineering Standard of Care

$P = 667\ psi$ Peak Hydrotest Pressure

$SF = 3.0$ Safety Factor for "fairly representative material test data are available"

$MAOP = \dfrac{P}{SF}$ $\underline{MAOP = 222\ psi}$

* Similar to the CFR design pressure for unknown material properties.

SB_GT&S_0117264

Safety Factor Basis
(Standard of Care in Engineering)

Table 1-3 Factors Used to Determine a Safety Factor for Ductile Materials

Information	Quality of Information	Factor
		$F1$
Material-property data available from tests	The actual material used was tested	1.3
	Representative material test data are available	2
	Fairly representative material test data are available	3
	Poorly representative material test data are available	5+
		$F2$
Environmental conditions in which it will be used	Are identical to material test conditions	1.3
	Essentially room-ambient environment	2
	Moderately challenging environment	3
	Extremely challenging environment	5+
		$F3$
Analytical models for loading and stress	Models have been tested against experiments	1.3
	Models accurately represent system	2
	Models approximately represent system	3
	Models are crude approximations	5+

$$\text{Safety Factor} \cong MAX(F1, F2, F3)$$

SB_GT&S_0117265

Safety Factor Basis

(Standard of Care in Engineering)

Machine Design, 5th Edition, by R.L. Norton, Prentice Hall, 2014

The same safety factor recommendation can be found in numerous Mechanical Engineering Design and Machine Design textbooks and codes. The cited reference provides one of the clearest representations.

MAOP by Test Pressure

The minimum *sustained (8 hour hold)* hydrotest pressure for line 147 was 607 psi

607 psi divided by 1.5 = <u>404 psi</u> MAOP

Hydrotest pressure does not govern the MAOP

MAOP is governed by the <u>design pressure</u> which required knowledge of the material properties

Minimum Design Pressure per PG&E

$t := 0.25\ in$	Pipe Wall Thickness
$D := 20\ in$	Pipe Diameter
$F := 0.5$	Design Factor (49 CFR 192.111)
$E := 0.8$	Longitudinal Joint Factor (498 CFR 192.113)
$T := 1$	Temperature Factor (49 CFR 192.115)
$\underline{S := 33\ ksi}$	Yield Stress Assumed by PG&E (actually unknown)

$$MAOP := \frac{2 \cdot S \cdot t}{D} \cdot F \cdot E \cdot T \qquad \underline{MAOP = 330\ psi}$$

SB_GT&S_0117268

Design Pressure per 49 CFR 192.105

$t = 0.25\ in$ Pipe Wall Thickness

$D = 20\ in$ Pipe Diameter

$F = 0.5$ Design Factor (49 CFR 192.111)

$E = 0.8$ Longitudinal Joint Factor (498 CFR 192.113)

$T = 1$ Temperature Factor (49 CFR 192.115)

$S = 24\ ksi$ Yield Strength if unknown (49 CFR 192.107)

$MAOP = \frac{2 \cdot S \cdot t}{D} \cdot F \cdot E \cdot T$ $\quad MAOP = 240\ psi$

If the Pipe Yield Stress is Unknown

§ 192.107 Yield strength (S) for steel pipe.

(b) **<u>For pipe that is manufactured in accordance with a specification not listed</u> . . . <u>or whose specification or tensile properties are unknown, the yield strength to be used in the design formula in § 192.105 is one of the following:</u>**

(1) If the pipe is tensile tested in accordance with section II-D . . .

(2) **<u>If the pipe is not tensile tested as provided in paragraph (b)(1) of this section, 24,000 psi</u>**

SB_GT&S_0117270

Design Pressure per 49 CFR 192.105

$t := 0.25\ in$	Pipe Wall Thickness
$D := 20\ in$	Pipe Diameter
$F := 0.5$	Design Factor (49 CFR 192.111)
$E := 0.8$	Longitudinal Joint Factor (498 CFR 192.113)
$T := 1$	Temperature Factor (49 CFR 192.115)
$S := 24\ ksi$	Yield Strength if unknown (49 CFR 192.107)

$$MAOP := \frac{2 \cdot S \cdot t}{D} \cdot F \cdot E \cdot T \qquad MAOP = 240\ psi$$

Alternative MAOP is Inappropriate

49 CFR 192.619 (c) does allow an alternative determination of the MAOP:

Highest actual operating pressure to which the segment was subjected during the 5 years prior to a date specified by the CFR (typically 1970) per table 192.619 (a)(3))

An example of **Regulatory Capture**, *NOT* based upon valid engineering analysis, *NOT* allowed by the CPUC, *NOT* used by PG&E, <u>but stated as justification for high assumed yield stress</u>

Equivalent of stating "*since we drove our car with two wheels off the cliff before without crashing, it is ok to do it again*"

49 CFR 192 Reassessment Interval

Section 192.7 Lists documents incorporated by reference. Included is ASME International (ASME) B31.8S-2004

Section 192.939 requires reassessment and intervals defined by:

(a): Pipelines operating at or above 30% SMYS. An operator must establish a reassessment interval for each covered segment . . . **The table that follows this section sets forth the maximum allowed reassessment intervals.**

(1) Pressure test or internal inspection or other equivalent technology. An operator that uses pressure testing or internal inspection as an assessment method **must establish the reassessment interval** for a covered pipeline segment by—

(i) Basing the interval on the identified threats for the covered segment (see §192.917) and on the analysis of the results from the last integrity assessment and from the data integration and risk assessment required by §192.917 **[Pipe specific properties required]** ; or

(ii) **Using the intervals specified for different stress levels of pipeline (operating at or above 30% SMYS) listed in <u>ASME/ANSI B31.8S, section 5, Table 3</u>.**

Hydrotest Intervals
American Society of Mechanical Engineers Code B31S
"Managing System Integrity of Gas Pipelines"

**Table 3 Integrity Assessment Intervals:
Time-Dependent Threats, Prescriptive Integrity Management Plan**

Inspection Technique	Interval (Years) [Note (1)]	Criteria: At or Above 50% SMYS	Criteria: At or Above 30% up to 50% SMYS
Hydrostatic testing	5	TP to 1.25 times MAOP [Note (2)]	TP to 1.4 times MAOP [Note (2)]
	10	TP to 1.39 times MAOP [Note (2)]	TP to 1.7 times MAOP [Note (2)]
	15	Not allowed	TP to 2.0 times MAOP [Note (2)]
	20	Not allowed	Not allowed

- The ASME Code B31S is written by engineers. If followed, the San Bruno incident would have been prevented. Not subject to Regulatory Capture.
- 10 year hydrotest interval corresponds to crack growth life (with an end of life safety factor) calculated by BEAR using San Bruno weld quality assumptions. Checking two independent ways again (Code and calculation with safety factors).

Conclusions:

An operating pressure of 240 psi is necessary because of PG&E's poor record keeping and failure to test and record pipeline material properties.

Line 147 should be hydrotested every 10 years per the ASME Code B31.8S and calculations based on worst case weld properties with porosity and inclusions.

If the ASME Code B31.8 (1950 version) were followed on all lines, the San Bruno incident would have not have happened. Not subject to Regulatory Capture.

It may be more economic to replace L-147 (in whole or in part) if the above conditions are deemed burdensome.

Regulatory Capture[t]

Form of government failure that occurs when a regulatory agency created to act in the public interest, instead advances the interest of a group that dominates the industry it is charged with regulating.

*The agency (*PHMSA*) was "captured"*

Examples: old gas pipelines and deepwater oil drilling platforms requiring less testing and safety than new

Results: San Bruno and BP Gulf Oil Spill (2010)

[t]Generally associated with Nobel laureate economist George Stigler

49 CFR 192 Reassessment

Section **192.917** identifies potential threats and requires that sufficient data be collected:

Data gathering and integration. To identify and evaluate the potential threats to a covered pipeline segment, an operator must gather and integrate existing data and information on the entire pipeline that could be relevant to the covered segment. In performing this data gathering and integration, an operator must follow the requirements in ASME/ANSI B31.8S, section 4. At a minimum, an operator must gather and evaluate the set of data specified in Appendix A to ASME/ANSI B31.8S, and consider both on the covered segment and similar non-covered segments, past incident history, corrosion control records, continuing surveillance records, patrolling records, maintenance history, internal inspection records and all **other conditions specific to each pipeline.**

This evaluation requires the use of SMYS, and ASME B31.8S Appendix A specifically states: **"Where the operator is missing data, conservative assumptions shall be used when performing the risk assessment or, alternatively, the segment shall be prioritized higher."**

Confirmatory Direct Assessment is defined in 49CFR192.903 - C*onfirmatory direct assessment* is an integrity assessment method using more focused application of the principles and techniques of direct assessment to identify internal and external corrosion in a covered transmission pipeline segment.

More specifically two types of CDAs, external and internal are defined in 49CFR192.925 and 49CFR192.927 respectively:

ECDA is a four-step process that combines preassessment, indirect inspection, direct examination, and post assessment to evaluate the threat of external corrosion to the integrity of a pipeline.

(ICDA) is a process an operator uses to identify areas along the pipeline where fluid or other electrolyte introduced during normal operation or by an upset condition may reside, and then focuses direct examination on the locations in covered segments where internal corrosion is most likely to exist. The process identifies the potential for internal corrosion caused by microorganisms, or fluid with CO_2, O_2, hydrogen sulfide or other contaminants present in the gas.