

**REBUTTAL TESTIMONY OF RICHARD KUPREWICZ
EVALUATING PG&E'S PIPELINE SAFETY ENHANCEMENT
PLAN**

**CALIFORNIA PUBLIC UTILITIES COMMISSION
PIPELINE SAFETY RULEMAKING
R. 11-02-019**

**Submitted on behalf of
THE UTILITY REFORM NETWORK (TURN)**

By

Richard Kuprewicz

Accufacts, Inc.
4643 192nd Dr. NE
Redmond, WA 98074
Ph (425) 836-4041
Fax (425) 836-1982
kuprewicz@comcast.net

February 28, 2012
Revised March 2012

1 **Rebuttal Testimony of Richard Kuprewicz**

2

3 **1) Response to DRA regarding Manufacturing Threats Decision Tree**

4 The testimony of DRA witness Rondine concerning manufacturing threats recommends that for
5 any pipe with a post -1955 strength test, the operator conduct a fatigue analysis prior to any
6 decision to replace. (DRA-04, p. 2 and 11).

7

8 While I am in general agreement with the thrust of Mr. Rondine's recommendation that
9 additional testing or fatigue analysis should be performed prior to any decision to replace, I
10 cannot concur that the existence of any post-1955 strength test is sufficient to support reliance on
11 fatigue analysis for manufacturing threats. There should be additional information showing that
12 the test was conducted at sufficiently high pressures to support fatigue analysis.

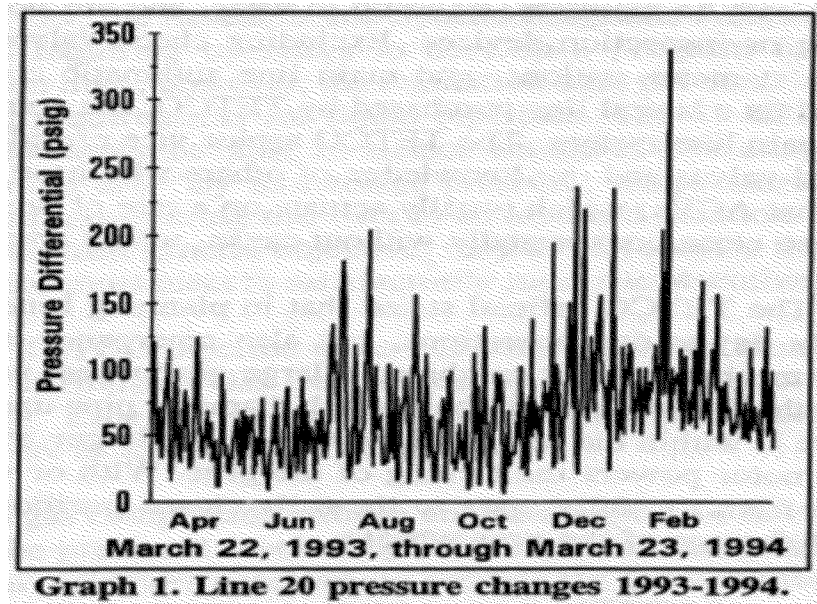
13

14 Low-pressure, low % SMYS, hydrotesting can leave very large imperfections in the
15 manufactured pipe seam welds that are much more susceptible to further growth to rupture
16 failure in a relatively short time from pressure cycling than the much smaller imperfections left
17 in high-pressure hydrotesting. This is especially true on many gas transmission pipelines that
18 undergo considerable variations in their operating pressure, which occurs on most gas
19 transmission pipelines. It is a myth that gas transmission pipelines do not pressure cycle. Figure
20 1 below is an example of a gas transmission pipeline pressure cycle spectrum (MAOP of 975

1 psig) in the public domain whose pipe ruptured from time -delayed damage many years after the
2 damage occurred.¹

3
4

5 Figure 1: Pressure Cycling, MAOP = 975 psig



6
7

8 The NTSB Report on San Bruno cited an important pressure cycle industry study,²

9 “the risk of pressure -cycle-induced fatigue can be dismissed if and only if the pipeline has
10 been subjected to a reasonably high -pressure hydrostatic test. Therefore, it would seem that
11 eliminating the risk of failure from pressure -cycle-induced fatigue crack growth of defects
12 that can survive an initial hydrostatic test of a pipeline requires that the test pressure level
13 must be at least 1.25 times the maximum operating pressure.”

14

¹ NTSB, “Texas Eastern Transmission Corporation Natural Gas Pipeline Explosion and Fire, Edison, New Jersey March 23, 1994 Addendum stamped May 18, 2001, p. 11.

² NTSB San Bruno Report p. 38; citing to John F. Kiefner and Michael Rosenfeld, “Effects of Pressure Cycles on Gas Pipelines,” prepared for: Process Performance Improvement Consultants, LLC and Gas Research Institute, September 17, 2004.

1 This NTSB citation did not mention that the cited study fatigue or pressure cycling analysis
2 supporting the 1.25 times the maximum operating pressure was based on a hydrotest performed
3 at a minimum test pressure of 100% SMYS.
4
5 Accufacts concurs with fatigue or pressure cycling analysis for manufacturing threats on gas
6 transmission pipelines only if a proper high-pressure hydrotest, usually performed at a minimum
7 pressure of 90% SMYS, a requirement not defined in Subpart J or other federal minimum
8 regulatory requirements related to hydrotesting of at-risk seam pipe, has been performed prior to
9 the fatigue analysis. The minimum and maximum % SMYS for the hydrotest as well as the pipe
10 grade, minimum toughness, diameter, thickness, as well as pressure cycle spectrum play an
11 important role in any such fatigue analysis. Given many uncertainties associated with
12 transmission pipelines, such fatigue analysis should incorporate very large safety margins.
13