Docket No. SA-534

Exhibit No. 2-C

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

49CFR 192.619(A)(3)
AND
PG&E DOCUMENTATION
NTSB_011-001

(4 Pages)

[Part 192 - Org., Aug. 19, 1970]

§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 a maximum allowable operating pressure determined under paragraph (c) or (d) of this section, or the lowest of the following:

(1) The design pressure of the weakest element in the segment, determined in accordance with Subparts C and D of this part. However, for steel pipe in pipelines being converted under §192.14 or uprated under subpart K of this part, if any variable necessary to determine the design pressure under the design formula (§192.105) is unknown, one of the following pressures is to be used as design pressure:

(i) Eighty percent of the first test pressure that produces yield under section N5 of Appendix N of ASME B31.8 (incorporated by reference, *see* § 192.7), reduced by the appropriate factor in paragraph (a)(2)(ii) of this section; or

(ii) If the pipe is 12¾ inches (324 mm) or less in outside diameter and is not tested to yield under this paragraph, 200 p.s.i. (1379 kPa) gage.

(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, the test pressure is divided by a factor of 1.5.

(ii) For steel pipe operated at 100 p.s.i. (689 kPa) gage or more, the test pressure is divided by a factor determined in accordance with the following table:

	Factors[1], segment		
Class location	Installed before Nov. 12, 1970	Installed after Nov. 11, 1970	Covered 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

[1] For offshore segments installed, uprated or converted after July 31, 1977, that are not located on an offshore platform, the factor is 1.25. For segments installed, uprated or converted after July 31, 1977, that are located on an offshore platform or on a platform in inland navigable waters, including a pipe riser, the factor is 1.5.

(3) The highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column. This pressure restriction applies unless the segment was tested according to the requirements in paragraph (a)(2) of this section after the applicable date in the third column or the segment was uprated according to the requirements in subpart K of this part:

Pipeline segment	Pressure date	Test date
—Onshore gathering line that first became subject to this part (other than §192.612) after April 13, 2006. —Onshore transmission line that was a gathering line not subject to this part before March 15, 2006.	March 15, 2006, or date line becomes subject to this part, whichever is later.	5 years preceding applicable date in second column.
Offshore gathering lines.	July 1, 1976.	July 1, 1971.
All other pipelines.	July 1, 1970.	July 1, 1965.

(4) The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressure.

(b) No person may operate a segment to which paragraph (a)(4) of this section is applicable, unless overpressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with §192.195.

(c) The requirements on pressure restrictions in this section do not apply in the following instance. An operator may operate a segment of pipeline found to be in satisfactory condition, considering its operating and maintenance history, at the highest actual operating pressure to which the segment was subjected during the 5 years preceding the applicable date in the second column of the table in paragraph (a)(3) of this section. An operator must still comply with §192.611.

(d) The operator of a pipeline segment of steel pipeline meeting the conditions prescribed in §192.620(b) may elect to operate the segment at a maximum allowable operating pressure determined under §192.620(a).

[Part 192 - Org., Aug. 19, 1970 as amended by Amdt. 192-3, 35 FR 17559, Nov. 17, 1970; Amdt. 192-27, 41 FR 34598, Aug. 16, 1976; Amdt. 192-27A, 41 FR 47252, Oct. 28, 1976; Amdt. 192-30, 42 FR 60146, Nov. 25, 1977; Amdt. 192-78, 61 FR 28770, June 6, 1996; Amdt 192-85, 63 FR 37500, July 13, 1998, Amdt. 192-102, 71 FR 13289, Mar. 15, 2006; Amdt. 192-103, 71 FR 33402, June 8, 2006; Amdt. 192-[107], 73 FR 62147, October 17, 2008]

§192.620 Alternative maximum allowable operating pressure for certain steel pipelines.

(a) *How does an operator calculate the alternative maximum allowable operating pressure?* An operator calculates the alternative maximum allowable operating pressure by using different factors in the same formulas used for calculating maximum allowable operating pressure under §192.619(a) as follows:

(1) In determining the alternative design pressure under §192.105, use a design factor determined in accordance with §192.111(b), (c), or (d) or, if none of these paragraphs apply, in accordance with the following table:

Class Location	Alternative design factor (F)
1	0.80
2	0.67
3	0.56

(i) For facilities installed prior to December 22November 17, 2008, for which §192.111(b), (c), or (d) apply, use the following design factors as alternatives for the factors specified in those paragraphs: §192.111(b)–0.67 or less; 192.111(c) and (d)–0.56 or less.

(ii) [Reserved]

(2) The alternative maximum allowable operating pressure is the lower of the following:

(i) The design pressure of the weakest element in the pipeline segment, determined under subparts C and D of this part.

(ii) The pressure obtained by dividing the pressure to which the pipeline segment was tested after construction by a factor determined in the following table:

Class Location	Alternative test factor
1	1.25
2	[1]1.50
3	1.50

[1]For Class 2 alternative maximum allowable operating pressure segments installed prior to December 22November 17, 2008, the alternative test factor is 1.25.

(b) *When may an operator use the alternative maximum allowable operating pressure calculated under paragraph (a) of this section?* An operator may use an alternative maximum allowable operating pressure calculated under paragraph (a) of this section if the following conditions are met:

(1) The pipeline segment is in a Class 1, 2, or 3 location;

PACIFIC GAS AND ELECTRIC COMPANY
San Bruno Gas Transmission Line Incident
Data Response

PG&E Data Request No.:	NTSB_011-001		
PG&E File Name:	San Bruno GT Line Incident_DR_NTSB_011-001		
Request Date:	September 14, 2010	Requesting Party:	NTSB
Date Sent:	September 15, 2010	Requestor:	NTSB (Sunil Shori)

QUESTION 1

Documentation detailing MOP/MAOP establishment on Line 132.

ANSWER 1

The L132 MAOP was established based on 49 CFR Part 192.a.3, highest operating pressure during the 5 year period preceding July 1, 1970. The specific record is an Operator's log at Milpitas terminal.

MAXIMUM OPERATING PRESSURE

TRANSMISSION MAINS - LINES 101, 109 & 132

401 2979

TUBE 4	TUBE 5	TOTAL IN	TOTAL OUT	DIFF.	ANTIOCH-BRENTWOOD PRESSURES			ANTIOCH-BRENTWOOD VOLUMES			ATMOS TEMP.	MILPITAS PRESSURES 109	MILPITAS PRESSURES 101	MILPITAS PRESSURES 132	SAN JOSE
81	82											34	33	34	
8.2	4.5	13.7	16.0	+3	463		430	6.7		7.5	53	350	350	350	165
5.6	5.0	14.5	15.0	+5	470		434	6.0		7.6	58	350	350	350	165
4.0	5.0	12.0	12.4	+1	460		422	5.9		7.7	64	330	330	330	165
7.0	5.0	11.0	10.6	-4	461		424	7.7		7.7	63	330	330	330	165
3.4	2.0	9.4	9.4	-0	453		430	9.2		7.8	65	320	320	320	165
9.7	7.0	17	19	+2	418		412	9.2		7.5	70	360	360	360	165
9.4	7.1	8.5	8.3	-2	445		430	4.3		7.7	74	370	370	370	165
9.4	2.7	12.3	8.4	+7	450		424	4.7		6.5	76	340	350	350	165
2.0	3.0	8.2	8.2	+0	455		435	4.4		6.8	78	342	342	342	
2.8	1.5	7.3	7.4	+1	458		442	2.5		6.8	76	395	395	395	
4.6	"	7.6	7.4	-2	460		443	4.4		6.7	72	400	400	401	
4.3	"	7.8	7.5	-3	"		440	4.3		6.8	69	392	395	394	
4.8	"	7.9	7.6	-2	"		436	4.1		7.0	64	390	390	390	
4.7	"	7.7	7.3	-4	"		430	4.1		7.2	61	380	380	380	
4.7	"	7.7	7.5	-2	462		430	4.3		7.4	59	376	376	376	
4.6	"	7.6	7.1	-5	460		428			7.4	195	390	390	390	
3.7	"	6.7	6.8	+1	460	out	438	2.9		7.1	58	395	395	395	165
2.3	"	6.3	6.3	"	464	out	440	2.3		7.1	57	395	395	394	165
3.3	"	6.3	6.2	-1	464	out	440	3.2		7.3	55	392	392	392	165
3.5	"	6.5	6.5	"	464	out	438	2.2		7.4	58	387	387	387	165
3.8	"	6.8	6.7	-1	462	out	435	2.5		7.3	52	390	390	390	165
4.8	"	7.5	7.7	+1	456	out	440	3.1		7.1	52	393	393	393	165
7.5	3.2	9.0	8.7	-3	455	out	435			7.2	52	385	385	385	165
4.7	5.0	12.7	12.3	-4	460	out	426	2.4		7.5	53	350	350	350	165
4.0	1.8												376		

911 432

TCHERS AND OPERATORS ON DUTY

MILPITAS SENIOR TERMINAL		ANTIOCH SENIOR TERMINAL		KETTLEMAN	BRENTWOOD	SAN JOSE

Verified By:
OCTOBER 16 1968
(DATE) October 16 1968

PACIFIC GAS AND ELECTRIC COMPANY
MILPITAS TERMINAL OPERATI