FILED
04-21-11
04:59 PM

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	R.11-02-019 (Filed February 24, 2011)

PACIFIC GAS AND ELECTRIC COMPANY'S MOTION FOR ADOPTION OF A MAXIMUM ALLOWABLE OPERATING PRESSURE VALIDATION METHODOLOGY AND REQUEST FOR ORDER SHORTENING TIME TO RESPOND

STEPHEN L. GARBER
JONATHAN D. PENDLETON
Pacific Gas and Electric Company
Law Department
77 Beale Street, B30A
San Francisco, CA 94105
Telephone: (415) 973-2916
Facsimile: (415) 973-5520
E-Mail: J1PC@pge.com

JOSEPH M. MALKIN
Orrick, Herrington & Sutcliffe LLP
The Orrick Building
405 Howard Street
San Francisco, CA 94105
Telephone: (415) 773-5705
Facsimile: (415) 773-5759
Email: jmalkin@orrick.com

Attorneys for
PACIFIC GAS AND ELECTRIC COMPANY

April 21, 2011

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	R.11-02-019 (Filed February 24, 2011)

PACIFIC GAS AND ELECTRIC COMPANY'S MOTION FOR ADOPTION OF A MAXIMUM ALLOWABLE OPERATING PRESSURE VALIDATION METHODOLOGY AND REQUEST FOR ORDER SHORTENING TIME TO RESPOND

Pursuant to Rule 11.1 of the Commission's Rules of Practice and Procedure, Pacific Gas and Electric Company ("PG&E") moves for an order adopting a methodology for the validation of the maximum allowable operating pressure ("MAOP") of PG&E's Class 3 and 4, and Class 1 and 2 high consequence area natural gas transmission pipelines ("HCA Pipelines"). This motion is made on the grounds that PG&E has embarked on the MAOP validation of PG&E's HCA Pipelines without pressure tests and needs guidance as to whether the methodology PG&E is using for the MAOP validation is acceptable to the Commission. Without such guidance, PG&E may complete a time-consuming and difficult MAOP validation process that does not satisfy the Commission's directive.

Because a Commission decision is needed urgently, PG&E requests that the time to respond to this motion be shortened to five days.

I. BACKGROUND

On January 3, 2011, the National Transportation Safety Board ("NTSB") issued three urgent safety recommendations to PG&E, as follows:

1. Aggressively and diligently search for all as-built drawings, alignment sheets, and specifications, and all design. construction, inspection, testing, maintenance and

other related records, including those records in locations controlled by personnel or firms other than Pacific Gas and Electric Company, relating to pipeline system components such as pipe segments, valves, fittings, and weld seams for Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing. These records should be traceable, verifiable, and complete. (P-10-2) (Urgent)

2. Use the traceable, verifiable, and complete records located by implementation of Safety Recommendation P-I0-2 (Urgent) to determine the valid maximum allowable operating pressure, based on the weakest section of the pipeline or component to ensure safe operation, of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class I and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing. (P-l0-3) (Urgent)

3. If you are unable to comply with Safety Recommendations P-10-2 (Urgent) and P-10-3 (Urgent) to accurately determine the maximum allowable operating pressure of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing, determine the maximum allowable operating pressure with a spike test followed by a hydrostatic pressure test. (P-10-4)

That same day, Commission Executive Director Clanon sent PG&E a letter directing the company to comply with the first two NTSB recommendations. With respect to the NTSB's third recommendation, Mr. Clanon said PG&E "will receive further directives from the Commission." The Commission ratified the Executive Director's directive in Resolution L-410 (January 13, 2011).

Neither the NTSB nor the Commission defined what it meant by "traceable, verifiable, and complete records" to be used in the MAOP validation. Two days after receiving Executive Director Clanon's letter, PG&E met with the Commission staff to discuss the MAOP validation process. At that meeting, PG&E gave the staff a copy of a draft MAOP validation report for Lines 101 and 132-A, told the staff that was the methodology PG&E proposed to use in responding to the Commission's directives, and asked whether the staff concurred in the

methodology. PG&E did not receive a conclusive answer. PG&E attached another copy of this draft MAOP validation report to its March 21, 2011 supplement to the March 15th report on its records review and MAOP validation. For the Commission's convenience, a copy of this report is attached as Exhibit 1.

"PG&E's Compliance Plan for NTSB Safety Recommendations" ("Compliance Plan"), submitted to the Commission as part of the March 24, 2011 stipulation between PG&E and the Commission's Consumer Protection and Safety Division ("CPSD"), contains a definition of "traceable, verifiable and complete" records in the context of the proposed MAOP validation.[1] The Compliance Plan describes PG&E's planned MAOP validation methodology as follows (pp. 1-2):

> For purposes of the MAOP validation, we have defined "traceable, verifiable and complete" records as original records containing information about the material properties of the mainline pipe and all pipeline appurtenances and components. Such records must be tied to the specific segment of pipe under examination and must contain information that is consistent with PG&E's procurement practices at the relevant time.
>
> For many of our older pipelines, we do not believe we will find "traceable, verifiable and complete" records of every component. Therefore, we are making assumptions about certain components, such as fittings and elbows, based on the material specifications at the time those materials were procured, sound engineering judgment, and conducting excavation and field testing of pipeline systems as appropriate. We will determine what field testing to use on a case-by-case basis from such techniques as X-ray or camera inspection of welds and meauring yield strength using Advanced Technology Corporation's Automated Ball Indentation technique.
>
> . . .
>
> The information from PG&E's traceable, verifiable and complete documents is combined with engineering analysis and any necessary assumptions and field-testing, to create a Pipeline Features List (PFL). The PFL is a comprehensive reference of all necessary characteristics of the pipeline segment and appurtenances. The PFL will specify: (1) the weakest element of the segment of

[1] For the Commission's convenience, a copy of the Compliance Plan is attached as Exhibit 2.

the pipeline as defined by the 49 CFR § 192.619(a)(1): (2) the criteria by which PG&E made this determination; and (3) whether this determination is based on traceable, verifiable and complete documents relating to the specific pipeline segment, or based on PG&E's assumptions. If the determination is based on assumptions, each must be identified. The PFL also will identify all source documents for the data in the PFL, including but not limited to as-built drawings. All such documents will be available in our electronic databases. We will provide the CPUC staff with access to these databases at its request.

The PFL information is then used in the MAOP calculation. This calculation shall be based on the weakest element of the pipeline segment. Any MAOP calculation based on assumptions will be identified as such, along with all assumptions. In no case will a MAOP increase as a result of this calculation.

The draft report for Lines 101 and 132-A (Exhibit 1) illustrates PG&E's proposed MAOP validation methodology. The March 24, 2011 Compliance Plan called for the staff to "advise us within ten (10) days if they believe we should make any changes in our approach to the MAOP validation."

II. THE COMMISSION SHOULD ADOPT AN MAOP VALIDATION METHODOLOGY.

The MAOP validation required by the NTSB safety recommendation and the Commission's directive is unprecedented. For many of its older pipelines that have not previously been pressure tested, PG&E does not believe it will find specific records of every component, as pointed out in its March 21, 2011 supplement to its March 15th report (p. 14) and the Compliance Plan (p. 2). As noted by Sempra in its April 15, 2011 report to the Commission, 100% documentation is a "very difficult, if not infeasible, threshold to achieve." Consequently, PG&E's proposed MAOP analysis will require assumptions to be made about components, such as fittings and elbows, based on the material specifications at the time those materials were procured, sound engineering judgment, and conducting excavation and field testing of pipeline systems as appropriate. *See* Compliance Plan, p. 2; March 21, 2011 Supplement, pp. 14-15.

PG&E believes its proposed methodology is both valid and the only practical means of performing a records-based MAOP validation. PG&E has retained three third-party engineering firms to do the MAOP validation work. None of them was able to suggest any better way of doing a records-based MAOP validation.

PG&E stated at the Commission's hearings on March 28 and April 11, 2011 that this is the method it is currently using to comply with the NTSB's recommendation and the Commission's Resolution L-410 to validate the MAOP of the HCA Pipelines for which it does not have pressure test records. PG&E's Compliance Plan with the staff calls for this work to be done by August 31, 2011, with interim deadlines in June and July.

In recent discussions with the Commission's staff, however, it is not clear that the staff agrees with PG&E's proposed methodology or that they believe any records-based MAOP is an adequate substitute for hydrostatic testing.

The Commission should make clear what it means by "traceable, verifiable, and complete" records for an MAOP validation. Does it mean a 100% perfect document chain for every piece of pipe, and every component, such as valves, fittings, taps, bends, and other appurtenances of a pipeline system – most of which are several decades old? If that is the case, PG&E does not believe that it –or any pipeline operator – can validate older pipeline MAOPs through a records approach.

At the end of the day, if the Commission does not consider PG&E's methodology to result in a valid MAOP, PG&E's Compliance Plan must be revisited. A records-based MAOP validation approach that accepts only a 100% perfect document chain is not feasible. The only alternative to a records-based MAOP validation is a pressure test. If this is the Commission's

preference, PG&E must plan to pressure test or replace the 705 miles of HCA Pipelines that are presently the subject of the Compliance Plan.

As the Commission knows, PG&E already has plans to hydro test or replace 152 miles of HCA Pipelines without prior pressure tests this year. This is an extraordinarily ambitious and challenging undertaking, requiring testing about 220 miles of pipelines and representing about five to ten times the amount of hydro testing PG&E conducts in an average year.[2] If PG&E is required to pressure test all of the 705 miles of HCA Pipelines that are the subject of the MAOP validation in its Compliance Plan, and, if PG&E can sustain this level of activity year-after-year, it will take approximately five years to complete the pressure tests.[3]

III. CONCLUSION

PG&E agrees with the Commission and staff that validating the MAOP of its HCA Pipelines that have not previously been pressure tested will provide added assurance to the public, the Commission and PG&E itself that its pipelines are operating at safe MAOPs. That benefit will be lost if PG&E pursues a methodology for validating its MAOPs that the Commission does not endorse.

Accordingly, PG&E urges the Commission to issue a ruling adopting an MAOP validation methodology for HCA pipelines that have not previously been pressure tested, so that PG&E can proceed expeditiously with the necessary safety work.

//

---

[2] The average year hydro testing includes new pipe, which is much easier to test because it does not require taking a pipeline out of service.

[3] During the time it will take to do this much pressure testing, PG&E has very limited ability to reduce pressure on additional HCA Pipelines, as shown in PG&E's April 13, 2011 Comments on the OIR (Attachment 2) and PG&E's March 15, 2011 Report on its records and MAOP validation work.

Because of the urgency of this issue, the Commission should issue an order shortening the time to respond to this motion to five days.

Respectfully submitted,

/s/ Stephen L. Garber

STEPHEN L. GARBER
JONATHAN D. PENDLETON
Law Department
Pacific Gas and Electric Company
77 Beale Street
San Francisco, CA 94105
Telephone: (415) 973-2916
Facsimile: (415) 973-5520
E-Mail: J1PC@pge.com

/s/ Joseph M. Malkin

JOSEPH M. MALKIN
Orrick, Herrington & Sutcliffe LLP
The Orrick Building
405 Howard Street
San Francisco, CA 94105
Telephone: (415) 773-5505
Facsimile: (415) 773-5759
Email: jmalkin@orrick.com

Attorneys for
PACIFIC GAS AND ELECTRIC COMPANY

April 21, 2011

EXHIBIT 1

Line 101 and Line 132-A MAOP Validation Report

DRAFT

January ___, 2011

Draft subject to revision.

Executive Summary

The MAOP Validation Study reviewed all available design and test records for Lines 101 and 132A in the San Francisco Peninsula. The review enabled PG&E to create a database covering all pressurized mainline components, including pipe, valves, fittings, taps, tees and other appurtenances. Additionally, this database was used to confirm pipeline stress levels at established MAOPs (Maximum Allowable Operating Pressures) and ensure compliance with Class Location requirements in the Federal Code.

Where there are unknowns we have based recommendations on industry practice and sound engineering judgment. Thus, for example, there are a number of pipeline fittings in L-101 and L-132A for which PG&E has not been able to identify full specification. Consistent with the procedures described in ASME B31.8S and PG&E's regular practice, this analysis assumed conservative values where design standards were not fully known. Based upon these conservative assumed values, and PG&E design and construction standards, these fittings are all operating within their design limits, pressure rating and Class Location restrictions.

1. PURPOSE AND SCOPE

The purpose of this report is to document the Maximum Allowable Operating Pressure (MAOP) Validation Project for the San Francisco Peninsula Pipeline. This draft report covers L-101 and L-132A.

2. SYSTEM DESCRIPTION

L-101:
Line 101 runs from Milpitas Terminal to the San Francisco Gas Load Center. From Milpitas Terminal to San Francisco Airport Tap, the pipeline currently has an MAOP of 400 psig and from the San Francisco Airport Tap to Lomita Park Regulator Station it has an MAOP of 396 psig. The pressure is reduced at Lomita Park to 145 psig (the downstream MOP).

When evaluating L-101, we collected data for the portion of Line 101 that runs from Milpitas Terminal to Lomita Park Border Meter Station, which is 35.1 Miles (185,319 feet) in length. It consists of 20, 24, 30, 34, and 36-inch diameter pipe. Line 101 was originally installed as a 20 inch line in 1929 from Milpitas to San Francisco and operated at less than 275 psi. This is the oldest of the three main pipelines on the Peninsula. However, all portions of the original 1929 pipe have been replaced. The portion of the pipeline from Milpitas (MP 0.00) to Rengstorff Station (MP 9.78) was replaced with 34" and 36" pipe and upgraded to 400 MAOP in 1965. The remainder of the pipeline from Rengstroff Station (MP 9.78) to Lomita Park (MP 33.68) was uprated to the current MAOP of 396 psig in 1989. This line generally lies close to the San Francisco Bay in flat ground$_T$. The pipeline runs along a right-of-way that roughly follows State Highways 237 and 101.

L-132A:
Line 132A is a pipeline that cross ties Line 101 to Lines 109 and 132. It is 1.5 miles (7,739 ft) long. The MAOP of the pipeline is 400 psig. The pipeline was originally installed in the 1940s. It consists of 12, 16, and 24-inch diameter pipe and lies in flat ground generally along Rengstorff Avenue in Mountain View.

3. DEFINITIONS

Item	Definition
Maximum allowable operating pressure (MAOP)	The maximum pressure at which a pipeline, pipeline segment, or component is qualified to operate in accordance with the requirements of 49 CFR Part 192 based on the design pressure of the weakest element in a pipeline segment. (Ref 8)

Maximum operating pressure (MOP)	The maximum pressure a gas pipeline system may operate in accordance with the requirements of 49 CFR Part 192 definition of maximum allowable operating pressure for a ***system***. (Ref 8)
OD	Outside Diameter
Specified minimum yield strength (SMYS)	The minimum yield strength in pounds per square inch (psi) prescribed by the specification under which pipe is purchased from the manufacturer or as specified in 49 CFR Part 192. (Ref 8)
Transmission line	A pipeline other than a gathering line, that: 1. Transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center; or 2. Operates at a hoop stress of 20 percent or more of SMYS; or 3. Transports gas within storage field as defined in 49 CFR Part 192.3, "Definitions." Note: A large volume customer may receive similar volumes of gas as a distribution center, and includes factories, power plants, and institutional users of gas. (Ref 8)
Uprate	The process for increasing the MOP or MAOP (uprating) for pipelines according to the requirements of 49 CFR Part 192, Subpart K, "Uprating." (Ref 8)
WT	Wall Thickness of the pipe or fitting.

4. DATA GATHERING

The installed pipe properties and post installation hydrostatic testing data were gathered and reviewed by following a modified process for creating a Pipeline Feature Lists (PFL). PG&E modified that process to address the unique nature of this project and expedited time line. The original process is detailed in "Procedure for Completing Pipeline Features List (PFL) for In-line Inspection Projects", (Ref 1) which was developed for use during the Pre-assessment phase of In-Line-Inspection projects in order to document all known features and define the scope for future pipe changes prior to pigging.

Specifically the following additional items were collected and incorporated into the PFL spreadsheets, along with the items specified in the PFL procedure, in order to allow for a calculation of operating stress for all mainline components.

Sleeve – Wall thickness and grade
Bend – Grade
Tee – Grade
Reducer – Wall thickness and grade

The pipeline data available in the GIS (Graphical Information System) system was downloaded into a spreadsheet format to form the basis or starting point for the PFL

spreadsheets. It bears mention that the GIS system only contains information about the main line pipe segments themselves. In contrast, the PFL includes all elbows, reducers, tees, mainline valves, taps, valves, casings and any other individual components or "features" that make up the gas pipeline. Also, please note that in PG&E's GIS system, setting a value to a negative amount designates that it is an "assumed" value. For example, an assumed value of 0.281 wall thickness for the pipe would be displayed in GIS as "-.281". Assumed values are conservative values for pipe wall thickness, grade, yield strength or seam type that are based upon minimum pipe specifications purchased by PG&E in the year or era that any given pipe section was originally installed, but for which records do not exist or were not readily available when the GIS system was created in the late 1990s.

Original construction job files were gathered from the following locations:

San Jose Division
De Anza Division
Peninsula Division
Bayshore & Geneva Records Center
Walnut Creek GT&D Records Center

These job files were manually reviewed for relevant information. The records for a single construction project were then consolidated, reviewed by an independent two-person team, and entered into the PFL (Pipeline Features List) spreadsheet. The completed spreadsheet was then printed out and manually reviewed again by another two- person team. The corrections identified were made to the PFL and then reviewed a 3rd time. In some areas, the data was reviewed more than three times. This information was used to generate a "discrepancy list" of changes or differences between the PFL data and the original GIS data. Information consolidated onto the discrepancy list was input back to the GIS system. It is important to note that if pipe characteristics could not be verified in the PFL review, they were marked as "unknown", but if the value existed in GIS and the PFL indicated it was "unknown", the GIS value was not changed. While the value could not currently be validated, PG&E assumed that the value that existed in GIS originated from a source document that is not currently available.

During the creation of the PFLs, the Strength Test Pressure Reports (STPR) were gathered for all available construction jobs and matched up to the PFL and GIS data. This information was accumulated in a spreadsheet and compared using the job numbers, STPR drawings, pipe size, pipe grade, pipe wall thickness, seam type and approximate footage. The majority of the Strength Test Pressure reports were completed as part of the initial construction process, but some test reports were for later testing and uprating projects. This STPR information will also be incorporated into GIS as part of the GIS Validation portion of this project.

5. DATA INTERPRETATION AND EVALUATION

The resultant data was evaluated to confirm the pipeline components were operating within the percent of yield strength as required by 49 CFR Part 192 based on their Class Location. Thus, after completion and verification of the PFL and STPR data,

an additional evaluation was performed in order to assign Joint Factors to long seam types, and to calculate the percent stress at a given pressure level.

The STPR data from the most recent records review was added to the spreadsheets. The "STPR Status" column spreadsheet indicates the status of strength test documentation, based on reconciliation of available data with PFL and GIS pipe segments. The following three categories were identified, and each pipe segment was assigned to one of these three categories:

STPR Status	Definition
Tested	"Tested" indicates either of the following scenarios: 1) Completed strength test documentation was found and verified that matches segment, footage, and pipe specification (O.D., wall thickness, grade, long seam). 2) This category includes pipe installed prior to State or Federal Code implementation (pre-1961 pipe) that was not tested when originally installed, but was later tested on an uprate job, for which completed strength test documentation was located and verified.
Incomplete	"Incomplete" indicates any of the following scenarios: 1) Completed strength test documentation was found that matches other segments or pipe specifications for a given job number, but not for the given segment. (e.g. If a completed STPR is available for the 24" X-60 DSAW 0.312" wall pipe but not for the 24" X-52 DSAW 0.312" pipe on the same job, then the X-52 segments would be listed as "incomplete".) 2) GIS shows strength test data, but no completed strength test documentation was found. This is the case for some post-1961 jobs which likely were tested but no test records were found during this validation process. 3) This category includes incomplete reports with design criteria but no actual test data.
Untested	No strength test documentation has been located and there is no evidence that any strength testing was conducted. This is generally the case for pre-1961 jobs, prior to State or Federal requirements for strength testing that were not tested later as part of an uprate.

Figure 1 - STPR Status Definitions

The calculation of the pipeline and fitting stress level occasionally encountered "unknown" grades and wall thicknesses that required further review and evaluation. PG&E resolved all "unknown" pipe specifications either through additional records integration or through excavation/inspections. Joint factors as described in Gas Standard A-11 were utilized. For the purposes of fitting stress calculations the PG&E standards applicable to a given era were used. The results of this evaluation for each of the Peninsula Pipelines are described below.

5.1.1. Line 101

All pipeline and fittings in L-101 south of MP 32.17,Millbrae Ave, were confirmed to be operating at less than 50% of SMYS. This conforms with any Class Location up to Class 3. There are no Class 4 sections on this pipeline between Milpitas and Lomita Park Station.

The detailed review of L-101 documentation indicated that approximately 2,448 feet of re-conditioned pipe was installed at two locations between MP 32.17 Millbrae

Avenue and MP 33.6 Lomita Park Station. PG&E excavated and verified the pipe to be 20" outside diameter x 0.250" wall thickness. The pipe was manufactured by A.O. Smith at 33,000 psi~~.~~ minimum yield strength or greater.

PG&E confirmed the yield strength of this pipe using the following sources of information: 1) PG&E letter dated December 12, 1962 entitled "History of Pipe Purchases," documenting the purchase of pipe for several pipelines installed in 1929/1930 as having a minimum yield strength of 33,000 psi; 2) The establishment of a 396 psig MAOP following the 1989 uprate: The only possible value for yield strength in the design equation from 49 CFR 92.105 for 20" pipe with .0.250" WT and a 0.80 JT factor in a Class 3 area (operating one class out) is 33,000; 3) PG&E Gas Standard A-11 which indicates that all pipe purchased by PG&E between 1927 and 1930 in 20" or larger diameter had a minimum yield of 33,000; 4) Industry experience based on sample yield tests of 1930 era A.O. Smith pipe provided by Kiefer and Associates as-well-as DNV consultants; and 5) Field measures of yield strength values at two dig sites on the re-conditioned pipe using Advanced Technology Corporation's Automated Ball Indentation technique, confirming a yield of not less then 46,000 psi.

The longitudinal seam of this pipe corresponds to a joint factor of 0.8. Utilizing the data above results in a maximum pipeline pressure of 330 psi at 50% specified minimum yield strength (SMYS) and 396 psig at 60% SMYS. This pipeline was strength tested for eight hours on October 10, 1989 at 650 psig and thus qualified under 49 CFR 192.611 to operate up to 396 psig. In this situation the pipeline is operating~~,~~ "one class location out" based on the 1989 hydrostatic test as allowed under 49 CFR192.611.

PG&E performed five excavations at MP 2.45, MP 2.49, MP 2.54, MP 10.40 and MP 19.99 in order to validate the pipeline seam type. All of the pipeline segments were confirmed to be DSAW pipe using a combination of radiography, visual examination and ultrasonic examination. Additionally, at MP 10.40, the pipeline was taken out of service and camera inspected for approximately 400 feet to confirm that it was DSAW pipe.

Analysis of the fittings on the pipeline revealed 11 fittings (sleeves, bends or reducers) that were assigned unknown value to at least one of the fitting properties necessary for stress calculations. These 11 fittings were installed in 1963 and 1965. Available job documents do not contain enough information to verify the grade or wall thickness of the fitting. PG&E Gas Standards in place at the time of construction refer to B31.1 and API 5LX and state that the fittings should match the pressure rating of the pipe. Therefore, facilities built to the PG&E Standards would not be operating over 50% SMYS at 375 psig.

There are complete hydrostatic test records for approximately 34.47 miles (98.2%) of pipe in Line 101. Another 0.45 miles (1.3%) of pipe has "incomplete" hydrostatic test records, as test reports could not be definitively matched to the specific pipeline segments, (see definition of "incomplete" above), leaving approximately 0.18 miles (0.5 %) of the pipeline that was installed in 1957, prior to State or Federal Code mandating pressure testing. The minimum hydrostatic test pressure, for the segments with records, is 605 psig or 1.51 times the 400 psig MAOP. All of the pipe

footage that has not been post construction hydrostatically tested is 34 inch DSAW from Job Number 137560 installed in 1957 and located near Mile Point 2.5.

5.1.2. Line 132A

PG&E confirmed that all pipeline segments and fittings in L-132A were operating at less than 50% of SMYS and thus were commensurate with any class location up to Class 3. There are no Class 4 locations on this pipeline. Additionally, although the 1944 and 1947 segments in this pipeline were not hydro-tested due to its era of construction, this pipe is seamless, based on the original purchase documentation, and thus not subject to the manufacturing threats associated with welded seams in other pipelines of this time.

Analysis of the fittings revealed nine fittings (sleeves and bends) that were assigned unknown values to at least one of the fitting properties required to calculate stress. Two of these fittings are sleeves installed in 1981. PG&E Gas Standards in effect at this time required the wall thickness be a minimum of 0.375. This results in a stress level of 34% of SMYS. The remaining elbows were installed with the original pipe in 1944. The PG&E Gas Standards from 1945 (one year after installation of this pipe) indicate that elbows would be 0.375 wall thickness. However available documentation from the job indicates these are probably bell -end segments that are mostly likely the wall thickness of the pipe and made from similar material. Using the wall thickness of the pipe, 0.281 (the more conservative value), the stress level in these elbows would be 46% of SMYS at 375 psig.

There are complete hydrostatic test records for 0.55 miles (37%) of pipe in Line 132A. Another 0.039 miles (3%) have "incomplete" strength test pressure reports and 0.88 miles (60%) have no hydrostatic test data. All of the un-tested pipe is seamless. All of the pipe footage that has not been post construction hydrostatically tested is 24 and 16 inch seamless pipe from job number 73429 installed in 1944 and job number 85737 installed in 1947.

Appendix– Reference Sources

	Name of Document	Date / Revision	Description	Author / Approval
1	Procedure for Completing Pipeline Features List for In-line Inspection Projects	3 Dec 2009 Revision # 3	Document describes the process of downloading information from GIS and reviewing records to establish a list of features.	Frank Dauby Approved by Frank Dauby 4 Dec 2009
2	Historical Gas Pipe Minimums	17 Feb 2000	Written by 2 long time PG&E engineers to document historical pipe minimums. Note Gas Standard A-11 addresses Joint Factors.	Bill Harris Bob Becken
3	Gas Standard A-11 Drawing Number 085053	9 Jan 1970 Last Revision 5 Feb 1976	Describes how to identify different types of gas pipe. Includes joint factors for longitudinal seams on the last page.	Full names not clear. Approved using initials only.
4	Welding Sleeves for Steel Gas Mains Drawing Number 081439 MS-1102	4 Jan 1945	Document lists specifications for welding sleeves. Including Minimum thickness for various sizes up to 26 inch diameter pipe. Minimum tensile strength 60,000 psi.	Full names not clear. Approved using initials only.
5	Gas Standard A-60 Gas Main Welding Sleeves Drawing Number 283226	26 Mar 1968 Last Revision 18 May 1971	Lists specifications for welding sleeves. Grade must be equal or greater than carrier pipe. Wall thickness not less than .375 and equal or greater than carrier pipe.	R.E. Dyas on original issue. Later revisions initialed.
6	Gas Standard A-60 Gas Main Welding Sleeves Drawing Number 283226	26 Mar 1968 Last Revision 18 May 1976	Lists specifications for welding sleeves. Grade must be equal or greater than carrier pipe. Wall thickness not less than .375 and equal or greater than carrier pipe. Recommended 1.2 times carrier wall thickness.	R.E. Dyas on original issue. Later revisions initialed.
7	Gas Standard A-60 Page 8 Drawing Number 088312	Last Revision 15 Jun 1990	Lists specifications for welding sleeves. Grade must be equal or greater than carrier pipe. Wall thickness calculated by formula, generally 1.42 times carrier wall thickness.	Full names not clear, Revisions initialed.

8	Utility Standard WP 4125S Establishment of MAOP for gas pipelines	March 2010	Describes the standards defining the establishment and maintenance of MAOP and MOP information for gas pipelines	Todd Arnett.
9	Line Pipe Manufacturing in North America	CRTD- Vol 43	ASME research report prepared by Kiefner and Associates for the Gas Pipeline Safety Research Committee	J. F. Kiefner E.B. Clark
10	Integrity Characteristics of Vintage Pipelines	2005	Describes how the technical information on vintage pipelines may be used to comply with ASME B31.8S, created under contract to the Interstate Natural Gas Association of America.	Battelle Memorial Institute
11	Gas Standard Drawing 081465	8-8-1945	Gives standard sizes, dimensions and properties for 45 degree long radius elbows	Signed and approve with initials.
12	Gas Standard Drawing 281992	10-8-1952	Gives standard sizes, dimensions and properties for 90 degree long radius elbows	Signed and approve with initials.
13	Gas Standard Drawing 283158 MS 1051	9-20-1962	Gives standard sizes, dimensions and properties for 90, 45 degree elbows. Tees and reducers	Signed and approve with initials.
14	Gas Standard MS 1050	6-1-1964	Gives standard sizes, dimensions and properties for tees	Signed and approve with initials.
15	PG&E Letter "History of Pipe Purchases"	12-12-1962	Describes the PG&E pipe purchases from 1920s through 1962 in order to identify unknown pipe.	R.D. Smith, Manager of Gas System Design Dept.

EXHIBIT 2

PG&E's Compliance Plan for NTSB Safety Recommendations

On January 3, 2011, the Commission directed PG&E to comply with two urgent safety recommendations from the NTSB, as follows:[1]

1. **Aggressively and diligently search for all as-built drawings, alignment sheets, and specifications, and all design. construction, inspection, testing, maintenance and other related records**, including those records in locations controlled by personnel or firms other than Pacific Gas and Electric Company, relating to pipeline system components such as pipe segments, valves, fittings, and weld seams for Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing. **These records should be traceable, verifiable, and complete**. (P-10-2) (Urgent)

2. **Use the traceable, verifiable, and complete records** located by implementation of Safety Recommendation P-I0-2 (Urgent) **to determine the valid maximum allowable operating pressure, based on the weakest section of the pipeline or component to ensure safe operation,** of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class I and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing. (P-I03) (Urgent) *(emphasis added)*

Safety is our highest responsibility and we intend to fully comply with, and exceed the scope of, the Commission's directives. Where the Commission's directives cover the HCA pipelines without pressure tests, we are validating the MAOPs for all 1,805 miles of HCA pipelines. We are doing so to provide assurance to the public, the Commission and ourselves that our pipelines are operating at safe MAOPs, and that our records accurately reflect the features of these pipelines. As we have said before, any record discrepancy is unacceptable to us.

To date, we have verified those HCA pipelines, as defined in the directives, which have been pressure tested, and we have aggressively and diligently searched for and collected a substantial quantity, but not all, of the records necessary to determine the valid MAOP based on the weakest section or component. To complete PG&E's compliance with these directives, we will proceed with the MAOP validation on the attached schedule.

MAOP Validation Methodology: For purposes of the MAOP validation, we have defined "traceable, verifiable and complete" records as original records containing information about the material properties of the mainline pipe and all pipeline appurtenances and components. Such records must be tied to the specific segment of pipe under examination and must contain information that is consistent with PG&E's procurement practices at the relevant time.

[1] The Commission ratified these directives in Resolution L-410 (January 13, 2011).

For many of our older pipelines, we do not believe we will find "traceable, verifiable and complete" records of every component. Therefore, we are making assumptions about certain components, such as fittings and elbows, based on the material specifications at the time those materials were procured, sound engineering judgment, and conducting excavation and field testing of pipeline systems as appropriate. We will determine what field testing to use on a case-by-case basis from such techniques as X-ray or camera inspection of welds and meauring yield strength using Advanced Technology Corporation's Automated Ball Indentation technique.

We will consult with Commission staff about the assumptions we are making and the basis for those assumptions as well as any field testing we propose. We will consider any recommendations made by Commission staff. We will provide the Commission staff as much notice as practical of any field testing.

The information from PG&E's traceable, verifiable and complete documents is combined with engineering analysis and any necessary assumptions and field-testing, to create a Pipeline Features List (PFL). The PFL is a comprehensive reference of all necessary characteristics of the pipeline segment and appurtenances. The PFL will specify: (1) the weakest element of the segment of the pipeline as defined by the 49 CFR § 192.619(a)(1): (2) the criteria by which PG&E made this determination; and (3) whether this determination is based on traceable, verifiable and complete documents relating to the specific pipeline segment, or based on PG&E's assumptions. If the determination is based on assumptions, each must be identified. The PFL also will identify all source documents for the data in the PFL, including but not limited to as-built drawings. All such documents will be available in our electronic databases. We will provide the CPUC staff with access to these databases at its request.

The PFL information is then used in the MAOP calculation. This calculation shall be based on the weakest element of the pipeline segment. Any MAOP calculation based on assumptions will be identified as such, along with all assumptions. In no case will a MAOP increase as a result of this calculation.

We understand the Commission staff is reviewing both the draft MAOP validation report and the sample PFL we attached to our March 21st supplement, and will advise us within ten (10) days if they believe we should make any changes in our approach to the MAOP validation. If the staff recommends changes, implementation may require an adjustment to our work plan since we have already started the work with the approach outlined.

We understand that completion of this Compliance Plan does not preclude the Commission from adopting new or additional safety requirements in the future.

Reporting, Review and Authority to Reprioritize Work: Attachment A is PG&E's prioritization and work plan, identifying our priorities, and the schedule on which we plan to complete the MAOP validation. We will submit monthly reports to the Commission on our progress toward meeting the Commission's directives and completing Steps 1 and 2 in all Priorities 1 through 4, and will include, for the relevant priority pipeline segments and appurtenances, the following:

- Status of **"traceable, verifiable and complete"** documentation of **"all as-built drawings, alignment sheets, and specifications, and all design. construction, inspection, testing, maintenance and other related records"** (MAOP Validation Step 1)

- Status of compilation of the PFL (MAOP Validation Step 2)

  - Identification of all assumptions made in completing the PFL

  - Identification of all field work planned, underway and executed in order to complete the PFL, and the results of all field work

- Status of PG&E's progress in using **"the traceable, verifiable, and complete records ... to determine the valid maximum allowable operating pressure, based on the weakest section of the pipeline or component"** (MAOP Validation Step 3)

- Summary of Quality Assurance/Quality Control recommendations and resulting process changes

- Discussion of any change PG&E makes to the transmission pipeline system as a result of any of the MAOP validation work.

We will meet with the Commission staff to review each monthly report. In addition, the Commission staff is encouraged to visit our MAOP validation headquarters in Walnut Creek at any time to review our operations and progress.

The need for reprioritization may be raised and discussed at any time by either the CPUC and its staff or PG&E. If PG&E believes it needs to reprioritize any of the work in the work plan, we will meet with the Commission staff to review necessary changes and the factors behind the changes. In order to efficiently change or add to Priorities 1 though 4, the Executive Director should be delegated authority by the Commission to authorize any necessary reprioritization to the work plan contained in this Compliance Plan.

Safety Concerns: The fundamental goal of this exhaustive exercise is to provide the public, the Commission and ourselves with as much information as possible to be assured of our gas pipeline system safety. As part of the MAOP validation process, it is our engineers' responsibility to raise any safety concerns they identify for appropriate immediate action. We will not wait until the MAOP validation process is complete to take any necessary action to ensure the safety of our pipelines. We have empowered our engineers to raise any issues they become aware of with their immediate supervisor, with the officer in charge of the MAOP validation work (Kirk Johnson) or through the Company's hot line. We have a team of engineers available who are qualified to assess any situation where an employee raises a safety concern and have empowered them to take direct action as a result. Depending on the circumstances, these actions may include: reprioritization of work, pressure reduction, pressure test or other inspection, replacement or abandonment of pipe.

PG&E shall promptly reimburse the Commission for any fees, expenses or costs for consultants or experts retained by the Commission for implementing, monitoring and enforcement of this Compliance Plan.

We will promptly notify the Commission's Executive Director and the Director of Consumer Protection and Safety in writing of any safety concern that is raised and keep the Commission staff informed of the result of our assessment of it, including any action taken in response to the concern.

Pacific Gas and Electric Company

By /s/
Kirk Johnson
Vice President, Gas Engineering & Operations

Attachment A
MAOP Prioritization & Work Plan

PG&E Completion Date	Activity	Milestone/ Report[1]	Priority Focus	Total Miles
June 10	Complete:[2] **Search for all as-built drawings, alignment sheets, and specifications, and all design, construction, inspection, testing, maintenance and other related records**, including those records in locations controlled by personnel or firms other than Pacific Gas and Electric Company, relating to pipeline system components such as pipe segments, valves, fittings, and weld seams for Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing.		**1) 152 Miles:** DSAW pipe 24-36" outside diameter and installed prior to 1962; Seamless pipe >24" outside diameter and installed prior to 1974	152
June 30	Complete:[3] Determination of **the valid maximum allowable operating pressure, based on the weakest section of the pipeline or component to ensure safe operation,** of Pacific Gas and Electric	Completion of Priority 1 MAOP Validation File Status Report in R.11-02-019	**1) 152 Miles:** DSAW pipe 24-36" outside diameter and installed prior to 1962; Seamless pipe >24" outside diameter and installed prior to 1974	152

1 Monthly Reports, and meetings to Review Progress to Plan with Commission staff, will occur within 10 days of the end of each month

2 For the records search and collection, "complete" signifies that the vast majority of the records have been collected. As the process of completing the PFL proceeds, it is likely that the need for some additional records will be identified and those records will have to be located and collected.

3 Completion of the MAOP validation assumes limited field work. If more field work is needed, PG&E may ask the Executive Director to use his delegated authority to approve a modification of the schedule.

Attachment A
MAOP Prioritization & Work Plan

PG&E Completion Date	Activity	Milestone/ Report[1]	Priority Focus	Total Miles
	Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing.			
July 10	Complete: **Search for all as-built drawings, alignment sheets, and specifications, and all design, construction, inspection, testing, maintenance and other related records**, including those records in locations controlled by personnel or firms other than Pacific Gas and Electric Company, relating to pipeline system components such as pipe segments, valves, fittings, and weld seams for Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing.		**2) 295 Miles**: ERW, SSAW, Flash and Lap Welded and all pipe with Joint Efficiency < 1 and installed prior to 1970	295
July 31	Complete: Determination of **the valid maximum allowable operating pressure, based on the weakest section of the pipeline or component to**	Completion of Priority 2 MAOP Validation File Status	**2) 295 Miles**: ERW, SSAW, Flash and Lap Welded and all pipe with Joint Efficiency < 1 and installed prior to 1970	295

Attachment A
MAOP Prioritization & Work Plan

PG&E Completion Date	Activity	Milestone/ Report[1]	Priority Focus	Total Miles
	ensure safe operation, of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing.	Report in R.11-02-019		
August 10	Complete: **Search for all as-built drawings, alignment sheets, and specifications, and all design, construction, inspection, testing, maintenance and other related records**, including those records in locations controlled by personnel or firms other than Pacific Gas and Electric Company, relating to pipeline system components such as pipe segments, valves, fittings, and weld seams for Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class 1 and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing.		**3) 206 Miles:** All remaining 619(c) documented pipe and pipe installed prior to 7/1/1970 with records still under review **4) 52 Miles:** All pipe installed after 7/1/1970 with records still under review	258
August 31	Complete: Determination of **the valid maximum allowable operating pressure, based on the**	Completion of Priority 3-4 MAOP Validation	**3) 206 Miles:** All remaining 619(c) documented pipe and pipe installed prior to 7/1/1970 with records still under review **4) 52 Miles:** All pipe installed	258

PG&E Completion Date	Activity	Milestone/ Report[1]	Priority Focus	Total Miles
	weakest section of the pipeline or component to ensure safe operation, of Pacific Gas and Electric Company natural gas transmission lines in class 3 and class 4 locations and class I and class 2 high consequence areas that have not had a maximum allowable operating pressure established through prior hydrostatic testing.	File Status Report in R.11-02-019	after 7/1/1970 with records still under review	

PROOF OF SERVICE BY E-MAIL

I am more than eighteen years old and not a party to this action. My business address is Orrick, Herrington & Sutcliffe LLP, The Orrick Building, 405 Howard Street, San Francisco, California 94105-2669. On April 21, 2011, I served the following document:

PACIFIC GAS AND ELECTRIC COMPANY'S MOTION FOR ADOPTION OF A MAXIMUM ALLOWABLE OPERATING PRESSURE VALIDATION METHODOLOGY AND REQUEST FOR ORDER SHORTENING TIME TO RESPOND

on the interested parties in R.11-02-019 in this action by electronic mail to the following:

StephanieC@greenlining.org
carl.wood@verizon.net
wschmidt@buckeye.com
scittad@nicor.com
justin.brown@swgas.com
STomkins@semprautilities.com
npedersen@hanmor.com
bob.gorham@fire.ca.gov
douglas.porter@sce.com
Faith.Mabuhayalliance@gmail.com
cjackson@sanbruno.ca.gov
rkoss@adamsbroadwell.com
gxh@cpuc.ca.gov
map@cpuc.ca.gov
austin.yang@sfgov.org
marcel@turn.org
cpj@pge.com
j1pc@pge.com
jmalkin@orrick.com
wvm3@pge.com
bkc7@pge.com
smeyers@meyersnave.com
lencanty@BlackEconomicCouncil.org
pucservice@dralegal.org
michaelboyd@sbcglobal.net
bmcc@mccarthylaw.com
Mike@alpinenaturalgas.com

dcarroll@downeybrand.com
westgas@aol.com
wwester@smud.org
ajahns@jahnsatlaw.com
jason.dubchak@niskags.com
AGL9@pge.com
artfiras@uwua.net
cleo.zagrean@macquarie.com
enriqueg@greenlining.org
grant.kolling@cityofpaloalto.org
gclark@lodistorage.com
jheckler@levincap.com
jleslie@luce.com
karla.Dailey@CityofPaloAlto.org
unionnancy@gamil.com
ray.welch@navigantconsulting.com
rrussell@lodistorage.com
tcollier@buckeye.com
mrw@mrwassoc.com
regrelcpuccases@pge.com
PVillegas@SempraUtilities.com
andrewgay@arcassetltd.com
daniel.j.brink@exxonmobil.com
kmmj@pge.com
christy.berger@swgas.com
jim.mathews@swgas.com
priscila.castillo@ladwp.com
robert.pettinato@ladwp.com
GHealy@semprautilities.com
JLSalazar@SempraUtilities.com
Naftab@semprautilities.com
DNg@semprautilities.com
RPrince@SempraUtilities.com
jcorralejo@lbcgla.org
klatt@energyattorney.com
douglass@energyattorney.com
case.admin@sce.com
gloria.ing@sce.com
janet.combs@sce.com
Robert.F.Lemoine@sce.com
marcie.milner@shell.com
CentralFiles@SempraUtilities.com
jhunter@riversideca.gov

laura@messimer.com
kfabry@sanbruno.ca.gov
gcaldwell@sanbruno.ca.gov
mdjoseph@adamsbroadwell.com
joc@cpuc.ca.gov
theresa.mueller@sfgov.org
bfinkelstein@turn.org
d1ct@pge.com
filings@a-klaw.com
kck5@pge.com
sls@a-klaw.com
bcragg@goodinmacbride.com
jarmstrong@goodinmacbride.com
mmattes@nossaman.com
aaron.joseph.lewis@gmail.com
cem@newsdata.com
RobertGnaizda@gmail.com
a2mx@pge.com
J4LR@pge.com
Susan.Durbin@doj.ca.gov
Service@spurr.org
PstLarry@comcast.net
bstrottman@meyersnave.com
dmarcus2@sbcglobal.net
tomb@crossborderenergy.com
billjulian@sbcglobal.net
ttutt@smud.org
kelder@aspeneg.com
atrowbridge@daycartermurphy.com
dgenasci@DayCarterMurphy.com
wmc@a-klaw.com
aad@cpuc.ca.gov
ang@cpuc.ca.gov
emm@cpuc.ca.gov
cpe@cpuc.ca.gov
jzr@cpuc.ca.gov
alf@cpuc.ca.gov
jmh@cpuc.ca.gov
kcl@cpuc.ca.gov
mpo@cpuc.ca.gov
mab@cpuc.ca.gov
mwt@cpuc.ca.gov
pap@cpuc.ca.gov

pzs@cpuc.ca.gov
rmp@cpuc.ca.gov
srt@cpuc.ca.gov
janill.richards@doj.ca.gov
glesh@energy.state.ca.us
rkennedy@energy.state.ca.us
tas@cpuc.ca.gov
mfl@cpuc.ca.gov
cjs.cpuc.ca.gov
fer@cpuc.ca.gov

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 21, 2011, at San Francisco, California.

/s/ Erica S. Andrada
Erica S. Andrada