

Date: November 15, 2011

To: Pacific Gas and Electric Company

From: 

Michelle Cooke, Interim Director, Consumer Protection and Safety Division

Re: Consumer Protection and Safety Division Review of Pacific Gas and Electric Company Request to Increase Operating Pressure of Lines 101, 132A, 147, and Related Pipeline Facilities

On October 31, 2011, Pacific Gas and Electric Company (PG&E) filed documentation to support its request to increase Maximum Operating Pressure (MOP) of its Lines 101, 132A, 147 and related pipeline facilities, such as supply lines to distribution systems or large customers, blow down vents, etc, which are referred to as "Shorts" within its filing (hereafter referred to as Request). On November 4th and then again on November 10th PG&E filed supplemental information to the Request. PG&E provided this information to the Consumer Protection and Safety Division (CPSD) in advance of the filings.

PG&E seeks to increase operating pressure of all pipeline facilities included therein, to a maximum of 365 pounds per square inch gage (psig) in order to meet winter demand. An MOP of 365 psig is lower than the MOP of 375 psig in place prior to September 9, 2010, but higher than the 300 psig operating pressure since September 13, 2010. PG&E does not intend to alter its maximum allowable operating pressure (MAOP) of 400 psig for Line 101, up to mile-point (M.P.) 32.17, and its MAOP of 396 psig, between M.P. 32.17 and 33.68. CPSD's review is limited to PG&E's request to increase MOP to 365 psig and does not address the appropriate MAOP of these facilities.

Line 101 is approximately 34 miles in length up to the Lomita Park Station (Lomita) near San Francisco airport. The line supplies gas from PG&E's Milpitas Terminal to cities on the San Francisco Peninsula and terminates at PG&E's Potrero Gas Control, in San Francisco. Pressure in Line 101 is reduced at Lomita from an MAOP of 396 psig to 275 psig. There is no other pressure regulation on Line 101 between Milpitas and Lomita. Lines 132A and 147, which connect Line 101 to Lines 109 and 132, are connected to Line 101 at M.P. 9.78 and M.P. 21.54, respectively. Lines 132A and 147 have no pressure regulating equipment and, therefore, receive gas at pressures prevailing in Line 101.

PG&E reduced the MOP of Lines 101, 132A, and 147 to its current level on September 13, 2010. Following the rupture of Line 132 in San Bruno on September 9, 2010, the Executive Director of the CPUC ordered PG&E to reduce pressure on Line 132 by 20% of the operating on September 9, 2010. Because Lines 101, 109 and 132 are all supplied gas through a common header at Milpitas Terminal, the reduction in pressure of Line 132 forced a reduction of the MOP in Lines 101 and 109 to the same level established for Line 132.

Commission Decision D.11-09-006, issued on September 8, 2011, requires PG&E to provide as part of its filing, an indication of CPSD's concurrence with its requests to restore pressure in lines where pressure was ordered to be reduced by the CPUC. This provision did not apply to Line 101 because no CPUC order directed PG&E to reduce pressure in Line 101, nonetheless, CPSD provided guidance to PG&E that all lines where PG&E reduced pressures while MAOP validation occurs, voluntarily or at CPUC directive, should be subjected to a public review process, and have CPSD's concurrence with the intended pressure restoration, before pressures are restored.

In support of its Request, PG&E completed the following tasks:

- Hydro-statically or pressure tested gas transmission pipeline and associated components in accordance with 49 CFR 192 Subpart J in HCAs (all Class 3 and 4 and HCAs in Class 1 and 2) where a pressure test record could not be located. All hydro tests included a spike test.
- Verified that pressure test records exist for all other pipelines and associated components located in HCAs, including shorts operating greater than or equal to 20% of Specified Minimum Yield Strength (SMYS).
- Conducted excavations in 2010 and 2011, to perform direct inspection of pipeline facilities, in order to obtain missing information or validate questionable data.
- Verified that all leaks found on facilities, included in the Request, have been repaired.
- Verified that PG&E's hydro-tests meet current requirements of 49 CFR Part 192, Subpart J, or those in effect at the time when the pressure test was conducted (OP 4 of D.11-09-006).

CPSD's review, of PG&E's MAOP validation process, indicated that it began by identifying and compiling a pipeline features list (PFL) for each pipeline facility (pipe, valves, reducers, flanges, etc.) that is part of the Request. PG&E utilized engineering firms with pipeline experience to assist it in assembling the PFL using documents such as design plans, as-built drawings, purchase orders, pressure test records, coating information, and various other documents related to the pipeline facilities. The compilation of the PFL

went through a peer review process followed by a 100% review by PG&E's engineers. PG&E established written procedures to assemble the PFLs as well as the processes for quality assurance, quality control, of the PFL process. PG&E then reviewed coating and pressure test records in order to establish the maximum pressure at which each identified feature can be operated.

Where PFLs identified deficiencies which would prohibit the operation of the facility at a given pressure, or the absence of pressure test documentation, PG&E performed pressure tests or excavations to confirm pipe specifications. CPSD's review of these documents shows that PG&E's activities are consistent with its MAOP validation procedures. PG&E provided all parties with a very large volume of data in support of its Request. CPSD performed an overall review to determine if PG&E's data shows that the company properly followed its MAOP validation processes; however, the large volume of data did not permit CPSD to confirm each of the thousands of the pipeline features included in PFLs for each of the Lines 101, 132A, 147, and related Shorts on each of these lines. However, with the exception noted below, all of Line 101, 132A, 147, and related Shorts that, at 365 psig, would be transmission level facilities, have been subject to pressure testing.

CPSD's review of the Request noted the following:

1. The pipeline feature limiting MOP on Line 101 to 365 psig is Short 0215-01, installed in 1968 and located in a Class 3 location, which is connected to Line 101 at M.P. 22.79. The limiting feature is an 8.625-inch diameter, 0.188-inch wall, pipe on which 365 psig would result in operation at 19.93% of SMYS.
2. PG&E Standard A-37 requires that an electronic pressure recorder or dead weight tester (DWT) be used for testing any segment above 90% Specified Minimum Yield Strength (SMYS). The standard also requires that the date of calibration for the DWT be performed within one year prior to the date of the test on which the DWT is used. While performing reviews to confirm DWT calibrations, for a tester that had been used for four pressure tests performed on facilities subject to the Request, one of PG&E's vendors was unable to provide adequate calibration documents meeting PG&E's standards.

CPSD reviewed documents for the four tests (T-2, T-3, T-40, and T-41) including pressure charts, the pressure reports, correlation between the DWT and chart readings, and PG&E standards. CPSD's review found that none of the maximum test pressures exceeded 85% SMYS and a

pressure chart for each test provided test pressures and durations. Further, calibration of the DWT performed by an independent party, on September 27, 2011, confirmed that the DWT was accurate up to 1000 psig and exhibited a slight inaccuracy of 0.25% above the 1000 psig value. Based on these considerations, and the fact that PG&E's standard does not mandate the use of DWT for test pressures less than 90% SMYS, CPSD does not believe the DWT calibration issue should invalidate the four tests on which it was used. CPSD expects that PG&E will, going forward, obtain copies of proper calibration documents from all vendors, and for all test equipment, prior to the equipment being used to perform any tests.

3. PG&E's MAOP Validation approach meets the CPUC directive applicable to HCAs which, by definition, only apply to transmission facilities. Likewise, transmission facilities primarily include facilities operating at stresses greater than or equal to 20% of SMYS, but also include pipeline facilities which supply gas to large volume customers, and which are not downstream of a distribution center.
4. PG&E's approach to pressure test verification generally did not include distribution facilities (shorts) which receive gas at pressures prevailing in Line 101. PG&E's data indicated there were 36 such facilities which, at 365 psig, would operate at less than 20% of SMYS. CPSD noted these shorts generally comprised of smaller diameter facilities and, as a result, generally operate at much lower stresses than transmission facilities. PG&E's approach to records verification addresses the CPUC directive, with one exception, as described below.

CPSD expects PG&E to perform verification of records of distribution shorts as part of its forthcoming activities related to its distribution integrity management program. Among the 36 Shorts discussed above, CPSD's review found that Short GCUST7013, a 4.5-inch diameter, .148-inch wall, pipe which serves a large volume customer, as defined in PG&E's RMP-06, has not been pressure tested. CPSD's review further noted that at an MOP of 365 psig, this pipe would operate at 18.5% of SMYS. However, because it meets the definition of a transmission line, CPSD believes if GCUST7013 continues to operate and remains tied to Line 101 as it is currently operated, it must be pressure tested in order for it to meet the CPUC directive requiring pressure testing of all transmission facilities in a Class 3 location.

5. CPSD's review found that PG&E performed spike tests for all pressure testing recently performed for pipeline facilities subject to the Request. In addition, although PG&E's Request

refers only to “hydro-static” testing of all facilities, PG&E used nitrogen gas as a test medium, at a 49.43% SMYS in a Class 3 location, for a 10/29/2011 pressure test (T-122, DFM 0211, M.P. 0.02 to M.P. 0.68) on Line 101 Shorts. PG&E also used nitrogen gas as the test medium for a 06/24/1998 pressure test (Test #7004524) performed on Line 132 Shorts. At a test pressure of 1,080 psig, this constituted a 36.5% SMYS test in a Class 3 location. Neither test exceeded the 50% SMYS limit, specified by 49 CFR, Section 192.503, when using an inert gas as the test medium in a Class 3 location. (36.5% SMYS based on 2,663 psig at 90% SMYS for Grade B seamless 6.625, 0.28 wall). CPSD has no issues with either of these tests and found that they both comply with Subpart J.

6. PG&E documents show that for excavations where only confirmation of a feature (i.e., seam type) was needed, magnetic particle testing was not performed even though it was anticipated to be part of the scope of the test (i.e., Line 101, M.P. 33.13 and 33.30813). In addition, CPSD noted an instance in which the grid to check for internal corrosion was reduced in scope. PG&E’s Field Verifications Summary Table allows the field personnel to make these determinations based on other inspections of the seam.

Although, there can be instances in which such reductions in inspections may be warranted, CPSD suggests that since the highest cost component of any excavation to perform an inspection or verification is the cost of the excavation itself, all excavations where practicable, should attempt to gather all of the information included on PG&E’s H-Form. As PG&E knows, such information, especially for vintage pipes, can provide invaluable data related to pipeline conditions. Where any of the inspection activities, included on the H-Form, are not performed, the H-Form should sufficiently detail why such inspection activities were not performed, rather than simply stating the activity was not performed.

7. PG&E has stated that as part of its MAOP Validation projects, the manager for the project receives completed qualification reports from all contractors which specify their employees’ qualifications, for covered tasks, prior to the employees beginning work. PG&E qualifies its own employees through its own Operator Qualifications (OQ) Program, per 49 CFR, Part 192, Subpart N. CPSD reviewed the type of documentation provided to project managers and continues to review PG&E’s OQ records during the course of its inspection activities.

8. As noted earlier, PG&E did not pressure test facilities, mainly distribution shorts which, at an MOP of 365 psig, would operate at less 20% of SMYS. However, many of these facilities could easily exceed 20% of SMYS at pressures above 365 psig; therefore, CPSD believes that there is need for further MAOP validation review before Lines 101, 132A, and 147 could be operated at an MAOP of 396 psig, or an MOP exceeding 365 psig. In addition, as is routinely required during operations to uprate pressure on facilities, PG&E must perform leak surveys following the restoration of pressure on all facilities subject to the Request.

As described above, all of Line 101, 132A, 147, and related Shorts that, at 365 psig, would be transmission level facilities, were subject to pressure testing. The following dates for pressure tests were noted:

- Oldest pressure test for Line 147 facilities, which includes all facilities that would be operating at or greater than 20% SMYS at an MOP of 365 psig, was performed on 10/12/1987. All tests conducted in 2011 provided a spike test.
- Oldest pressure test for Line 147 Shorts, which includes all facilities that would be operating at or greater than 20% SMYS at an MOP of 365 psig, was performed on 10/15/1987. All tests conducted in 2011 provided a spike test.
- Oldest pressure test for Line 132A, which includes all facilities that would be operating at or greater than 20% SMYS at an MOP of 365 psig, was performed on 07/20/1998. All tests conducted in 2011 provided a spike test.
- Oldest pressure test for Line 132A Shorts, which includes all facilities that would be operating at or greater than 20% SMYS at an MOP of 365 psig, was performed on 06/24/1998. All tests conducted in 2011 provided a spike test.
- Oldest pressure test for Line 101, which includes all facilities that would be operating at or greater than 20% SMYS at an MOP of 365 psig, was performed on 10/21/1965. All tests conducted in 2011 provided a spike test.
- Oldest pressure test for Line 101 Shorts, which includes all facilities that would be operating at or greater than 20% SMYS at an MOP of 365 psig, was performed on 03/07/1968. All tests conducted in 2011 provided a spike test.

Based on the above review, CPSD recommends that the CPUC allow PG&E to increase pressure in Lines 101, 132A, 147, and all related Shorts, which at the increased pressure level would be

operating at or above 20% of SMYS, to a pressure level no higher than 365 psig. In addition, before restoring pressure to 365 psig, CPSD recommends that, if PG&E intends to continue to operate GCUST7013 as currently used to supply a large volume customer, and absent the installation of pressure regulating equipment or other actions which enable GCUST7013 to be operated at less than 20% of SMYS, GCUST7013 must be pressure tested in order for it to meet the CPUC directive requiring pressure testing of all transmission facilities in a Class 3 location.

This review was performed by Sunil Shori, Utilities Engineer, Utilities Safety and Reliability Branch, Consumer Protection and Safety Division.