

From: Doll, Laura  
Sent: 10/8/2013 5:38:09 PM  
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Cc: Ramaiya, Shilpa R (SRRd@pge.com)  
(/o=PG&E/ou=Corporate/cn=Recipients/cn=SRRd)  
Bcc:  
Subject: Fw: Line 147 information

Richard

Below is the email we sent to SED earlier today. The answer to your first question is yes, Line 147 has been reduced to 125 psig and shut in.

We'll provide additional information about potential impacts as it is available, and certainly within 7 days, for the analysis we have conducted.

Thanks

Laura

Elizaveta Malashenko

Deputy Director

Safety and Enforcement Division

CA Public Utilities Commission

Liza,

In response to concerns raised by the City of San Carlos on October 4, 2013, you asked PG&E to provide information about the impact of shutting down Line 147 in San Carlos and a list of

actions PG&E has taken to ensure the integrity and safety of Line 147.

We are providing initial answers by this email, and also will be providing a CD with additional background materials that are too large to send via email.

First, we want SED to know that Line 147 is safe, and that PG&E would not operate the pipeline in an unsafe condition.

We also want to summarize the actions we initiated over the past weekend to safely and effectively cease the active operation of Line 147: we have isolated this line from supply sources and have reduced pressure to 125 psig in the isolated section of the pipeline. This low-level pressure represents 20 percent of the pressure that the pipeline withstood during strength testing in 2011. The net effect of these actions is that the line is not in active service. We have been in continuous communication with city leaders.

Maintaining low-level pressure is required to maintain emergency re-start capability if conditions require it to avoid the loss of service to thousands of customers in San Carlos and Redwood City. In the event of an unrelated gas service interruption on our Peninsula transmission pipelines, including any emergency conditions, we will operate Line 147, as well as the rest of the system, in whatever manner is required to maintain the safety of the public and of the gas system.

#### **Question 1: Analysis of impact of shutting down Line 147**

As mentioned above, PG&E has isolated Line 147. On October 6, PG&E closed the valves to isolate the line from the gas supply source. The pressure in the pipeline was drafted down to 125 psig through PG&E's distribution system taps and was completed on October 7.

With Line 147 not in service, PG&E has limited operating flexibility on the Peninsula pipeline system and that necessarily increases the reliability risk profile of the system. PG&E's proposed plan includes that, when the demand on the system increases, PG&E will leverage the 125 psig pressure in the pipeline to maintain supply to the residents and subsequently use a manual procedure to "refill" the gas in this pipeline section to 125 psig, if required.

In addition, PG&E continues to evaluate the impact of the operational reliability of the system and the resulting delays in planned safety work in the Peninsula.

- Line 147 is a 20-inch and 24-inch diameter natural gas transmission pipeline that runs for approximately 3.8 miles in an east-west direction between Highways 101 and 280 along [Redacted] in San Carlos. Line 147 serves a critical function of connecting Line 101, a local transmission line that runs from Milpitas Terminal in Santa Clara County, to PG&E's San Francisco Gas Load Center, to Lines 109 and 132, the other two local

transmission lines that serve the Peninsula.

- Approximately 650,000 customers on the Peninsula are supplied by Lines 109, 132, and 101.

## **Question 2: Actions taken to insure the integrity and safety of Line 147**

- In September 2010, following the San Bruno accident, PG&E lowered the operating pressure on many of its pipelines as an interim safety measure. The operating pressure of Line 147 was lowered to 300 psig.
- The National Transportation Safety Board (NTSB), post-San Bruno, recommended hydrostatic testing for pipelines that were previously not subjected to a pressure test for all gas utilities. (The NTSB report is included on the CD.)
- In October 2011 most sections of Line 147 were hydrostatically tested to more than 600 psig, with a spike test above that, and it passed. (All sections of Line 147 have been tested to more than 600 psig as several of these sections were tested in accordance with a Subpart J test in 1987 and 1990.) These test pressures would support an MAOP above 400 psig in a class 3 location. On the basis of this successful pressure test, PG&E asked the CPUC to allow it to restore the line's operating pressure. This request included a large volume of documentation and evidence supporting the restoration of pressure. The CPUC granted approval, and PG&E increased the operating pressure on Line 147 as necessary to meet winter load, always keeping the operating pressure below the MAOP of 365 psig. Following the winter months, on May 24, 2012, PG&E reduced the operating pressure to 300 psig and it has remained there ever since.
- Hydrostatic pressure testing, including a "spike test," is widely considered the leading industry standard to ensure the integrity and safe operation of a gas transmission pipeline.
- For decades, pipeline industry standards and state and federal pipeline regulations have recognized hydrostatic testing as a means of demonstrating pipeline fitness for service, and have mandated hydrostatic testing in various circumstances. Additional background materials about hydrostatic pressure testing are provided by CD with this response, including:
  - NTSB recommendations following the San Bruno accident
  - June 16, 2011 CPUC order eliminating the grandfather clause
  - Paper by M. J. Rosenfeld, "Hydrostatic Pressure Spike Testing of Pipelines – Why and When?"
  - Presentation by M. J. Rosenfeld to the American Gas Association, May 2013
  - Paper by John Kiefner and Willard Maxey, "The Benefits and limitations of Hydrostatic Testing"
  - Paper by M. J. Rosenfeld and Rick Gailing, "Pressure Testing and Recordkeeping: reconciling historic pipeline practices with new requirements"
- In October and November 2012, while performing ongoing work relating to a leak repair, PG&E engineers identified discrepancies in the company's records relating to Line 147.

- After discovering these issues, the MAOP for Line 147 was reduced to 330 psig.
- Since May 2012 PG&E has operated Line 147 at or below 300 psig, well below the MAOP of 330 psig and less than half of the pressure the line was subjected to during the pressure test (and much lower than the spike test levels).
  - As part of PG&E's due diligence into the leak, an employee raised questions about line 147 in an email. All of the issues raised by the employee were seriously evaluated.
  - In August 2013, PG&E removed the Line 147 pipe on which the October 2012 leak was discovered to confirm pipe mechanical and metallurgical properties through independent laboratory testing, including a root cause analysis for the leak.
  - The report, by Anamet Materials Engineering and Laboratory Testing Inc., concluded the leak was on base metal, not on a girth weld or the long seam weld and, importantly that "[n]o evidence of crack growth during service or hydrotesting was detected." A copy of that report is also provided on the CD which accompanies this response.
  - PG&E repaired the leak and assessed whether Line 147 was fit for service at the intended operating pressures and thus safe to operate, including asking the relevant and necessary safety questions.
  - Based on several factors, including the margin between the planned operating pressure and the pressure at which the hydrostatic test was conducted, PG&E determined that Line 147 was and remains safe to operate.
  - Since the leak repair, PG&E has also continued to perform leak surveys (using leak detection equipment) on Line 147 on a regular basis. PG&E also conducted ground patrols to check for surface conditions on and adjacent to the transmission line right-of-way for indications of leaks, construction activity and other factors affecting safety and operations on Line 147.
  - PG&E has also aerially patrolled Line 147 on a regular basis from late 2012 through 2013. PG&E continues to patrol and monitor this line for any potential threats to its integrity.
  - Line 147 is equipped with cathodic protection, a system to safeguard against pipeline corrosion. PG&E inspects its cathodic protection systems using pipe-to-soil reads, and annual rectifier inspections. PG&E performs cathodic protection pipe-to-soil inspections on Line 147 every other month.