

From: Cauguiran, Aimee
 Sent: 4/12/2011 6:11:04 PM
 To: Stock, William (/O=PG&E/OU=CORPORATE/CN=RECIPIENTS/CN=WCS3)
 Cc: Lee, Dennis M. (dennis.lee@cpuc.ca.gov)
 Bcc:
 Subject: FW: San Francisco Chronicle E-Edition Article

Bill:

I'm not sure if you're the person to ask but I figured you can point me to where I can get a quick answer to this question.

The SF Chronicle reported that there's a 5-mile section of L-109 where there are no records of previous pressure-testing. I went through PG&E's March 15th filing and on disc 2, I found the following segments where it shows that there are no STPR available. The mileage sums up to a little over 5 miles.

Line Number	Job Number	Footage Per GIS (3-4 HCA)	MAOP Documented	Footage Per Test (3-4, HCA)	Year Installed (GIS)	Historic Beginning Mile Point (GIS)	Historic Ending Mile Point (GIS)
109	137960	67	NOT AVAILABLE		01957	4.07	4.08
109	139002	1,917	NOT AVAILABLE		01957	8.36	8.72
109	142593	1,678	NOT AVAILABLE		01958	6.72	7.04

109	145334	2,529NOT AVAILABLE	01959	17.40	18.53
109	146370	5,231NOT AVAILABLE	01960	7.57	8.36
109	150509	975NOT AVAILABLE	01961	0.49	0.67
109	162010	2,951NOT AVAILABLE	01965	4.45	5.03
109	163384	1,007NOT AVAILABLE	01965	43.14	43.29
109	172327	119NOT AVAILABLE	1171969	9.98	10.01
109	178346	0NOT AVAILABLE	0NOT AVAILABLE	0.00	0.00
109	1961136	5NOT AVAILABLE	01994	45.77	45.77
109	1997975	3NOT AVAILABLE	01994	46.23	46.23
109	4010674	2,049NOT AVAILABLE	01992	40.77	41.17
109	4240248	243NOT AVAILABLE	01980	11.93	11.97
109	426412	204NOT AVAILABLE	01965	5.16	5.20

109	43933	9,781NOT AVAILABLE	01932	46.02	48.18
109	62447	514NOT AVAILABLE	01940	30.01	30.11
109	NOT AVAILABLE	23NOT AVAILABLE	0NOT AVAILABLE	10.01	45.16

Are these the correct segments referred to in the article that are missing/lacking any pressure-testing records?

Aimee Cauguiran

Utilities Engineer

USRB/CPSD

Phone: (415) 703-2055

Fax: (415) 703-1891

Print-only edition.

SAN BRUNO BLAST

2nd PG&E line seen as posing safety risks

Missing records, vulnerable welds for pipe from South Bay to S.F.

By Jaxon Van Derbeken

CHRONICLE STAFF WRITER

The other pipeline that Pacific Gas and Electric Co. has long relied on to deliver natural gas up the Peninsula has problems similar to the ruptured line in San Bruno — flawed or missing records and at-risk welds, including 80-year-old technology recognized as prone to earthquake failures, The Chronicle has learned.

Like PG&E transmission Line 132 — the pipe that ruptured and exploded in San Bruno on Sept. 9 — Line 109 runs from Milpitas through the South Bay and Peninsula and up to San Francisco, where it terminates in the Dogpatch neighborhood.

Since the blast that killed eight people and destroyed 38 homes, PG&E has avoided service disruptions in the upper Peninsula by using a part of Line 109 to route gas around the blast site, thus keeping most of Line 132 in service.

Federal investigators have keyed into PG&E's inaccurate records on Line 132 in San Bruno — records that showed the 1956-vintage pipe

Pipeline continues on A12



Article Continued Below

See PIPELINE on Page A12

Dangers seen in 2nd PG&E line

Pipeline from page A1

had no seam when, in fact, it had a flawed seam weld since tied to the rupture. The company vouched for the line's safety using a method in 2009 that was incapable of finding bad welds.

Line 109 may be equally problematic for the company, documents show. Like all the lines running into San Francisco, PG&E has cut the pressure on Line 109 by 20 percent in the wake of the San Bruno disaster, but experts say that given its questionable state, the cut affords little assurance of safety.

"You don't know the right level of safety to begin with, so you don't know if you are cutting pressure by enough," said Richard Kuprewicz, a pipeline safety expert in Redmond, Wash.

Missing records

Perhaps the most damaging revelation about Line 109 came last month when the utility acknowledged that it lacks any records for a 5-mile segment in San Bruno that was installed by 1995. The undocumented segment starts south of the rupture site on Skyline Boulevard at San Bruno Avenue, and heads inland to Junipero Serra Boulevard and hooks up to the old route on Skyline at Hickey Boulevard.

The 5-mile part of the line is among 140 miles of transmission pipe for which PG&E has said it has so far found no documents to prove it is operating safely. PG&E has until the end of August to look for the records as part of a \$3 million fine

settlement still pending and slated to be argued Monday before the California Public Utilities Commission.

The undocumented part of the line apparently was installed to route around three active earthquake faults in the area on Skyline Boulevard, PG&E records show. The replacement route is now reflected on PG&E's current maps, but the utility lacks records of construction documents and has no proof that it did legally mandated high-pressure water tests.

UC engineering Professor Bob Bea said the lack of records for a 1995-era project is "astounding."

"To have that long a section of an important pipeline without records on its condition" that would be alarming," he said. "I think we have a problem, Houston."

PG&E has acknowledged that the line has other identified risks, but says it inspected the line in 2009 and found no leaks over the past decade.

Brittle welds

PG&E has noted that a 2-mile portion of Line 109 along Alemany Boulevard in San Francisco dates from 1932 and was constructed using oxyacetylene welds, notoriously brittle and susceptible to failure in earthquakes. The at-risk part of the line runs under the street roughly from Sickles Avenue to Rousseau Street.

Oxyacetylene technology "which dates to the early part of the 20th century" is problematic because the hot gases used in the welding process generate bubbles in the welding bond, Bea said.

"It's difficult to get a weld with high integrity," he said. "You end up with a lot of gas and bubbles trapped in the metal."

Kuprewicz added, "Oxyacetylene welds are like glass. They don't bend, they snap. They are very brittle."

Dozens of those welds failed in the 1971 quake in Sylmar (Los Angeles County), according to a 2008 seismic report done for the U.S. Geological Survey on the vulnerability of that kind of weld.

< SPAN class=abody>The report also found that in the 1989 Loma Prieta quake, PG&E had three transmission line failures involving such welds, and in the 1994 quake in Northridge (Los Angeles County), more than two dozen such welds failed or were damaged.

The 2008 report recommended replacement with upgraded pipes, or at least using automatic shutoff valves, pointing out that oxyacetylene welds were almost 100 times more likely to fail in a quake than more modern technology.

PG&E has long downplayed the usefulness of automatic valves, citing industry data showing most blast damage is done in the first 30 seconds of an explosion, but since the San Bruno blast has said it will install them in many high-risk areas.

Rehab versus replace

PG&E had been replacing dozens of miles a year of old pipes since 1985 including the 5-mile reroute near San Bruno but told regulators in 1995 that it now intended to begin finding ways to rehab old lines rather than replace them. One of its first efforts in that vein was to install, that year, a plastic liner in Line 109 under Alemany Boulevard that had 1932-vintage oxyacetylene welds. The purpose of the liner was to create an internal membrane to contain any gas release if vulnerable girth welds failed in an earthquake.

PG&E bought the liner from Paltem Systems Inc. of Missouri, and it was touted as being able to withstand pressures up to 900 pounds per square inch. Paltem is not currently in business in the United States.

“The purpose of this project was to install a safe composite lining, in order to provide additional support and protection,” PG&E spokesman Joe Molica said about the liner.

Before installing the liner, he said, PG&E had tested that part of the line using high-pressure water. At the time, the company said it would track any leaks and inspect the line a year after installation. PG&E recently told San Francisco City Attorney Dennis Herrera, who asked for details about the project, that it did an initial camera inspection but did not do a follow-up inspection.

PG&E says the inspection could have damaged the liner and there had been no leaks in the past decade.

Inspection aside, experts question the value of the liner in a major quake. Glen Stevick, a Berkeley engineer and pipeline safety expert, said such an interior liner “does provide a lot of flexibility and it can take a certain amount of leakage without rupture.”

But, he said, substantial ground movement during a quake could have a “guillotine” action in severing a circumferential weld, slicing the liner

in the process.

Doug Honegger, an Arroyo Grande (San Luis Obispo County) consultant on pipeline seismic safety, agreed the liner's value is limited.

"The question is why they put the liner in. If the threat was from large ground movement, I'm not sure the (liner) would be what they needed," he said. "The preferred option would be to replace that section."

Vulnerable welds

Still other parts of Line 109 were constructed with low-frequency electric resistance welds, considered vulnerable during normal operations and tied to more than 100 failures nationwide.

PG&E inspected Line 109 in 2009 using a method that was incapable of finding flawed seam welds. Yet two stretches of the line have such welds, according to PG&E records. PG&E officials have said they had been intentionally boosting the pressure on lines with such welds every five years or so since 2003, but stopped the practice after the San Bruno explosion. The company says it had been elevating the pressure because federal regulations "based on peak pressure levels" would otherwise kick in and limit its ability to meet peak demand.

Federal officials say they don't understand why PG&E was boosting pressure on vulnerable lines.

PG&E last spiked the pressure on the San Francisco part of Line 109 on April 12 of last year to 147 pounds per square inch; the line's maximum capacity is 150 psi. It first spiked the pressure on the line in December 2003 to 150 psi. Experts have questioned the safety of the spiking practice on such vulnerable welds, saying they could make them more prone to failure.

Portion above ground

Outside San Francisco, at the higher-pressure segment of the line, experts point to another potential problem spot: an above-ground, 50-foot span where Line 109 crosses a dry creek bed.

PG&E inspected the line in 2009 and said any safety concerns were addressed.

But UC Berkeley's Bea said erosion on the creek banks during recent storms could potentially weaken support on either side spanning the creekbed. He worries the line has no underpinnings to support the crossing.

Experts point to the totality of Line 109 problems

as warning signs that the older, untested lines in PG&E's system are fraught with potential risks. PG&E had largely stopped replacing old lines by 2000, when it cut back on miles replaced in favor of inspection efforts to assure safety, documents show. "With the age and the risk factors they have, why aren't they judiciously replacing these pipes?" pipeline safety expert Kuprewicz said.

"You are playing Russian roulette with a six-shooter, and you have five bullets in the gun."

"I frankly don't feel very comfortable with their whole system," said Robert Eiber, another pipeline integrity expert.

"It's a mess. You need to find out what you have in the ground."

Herrera said he wants to know more about the line before he is satisfied it is safe.

"It's quite clear that we haven't received all the records that would give us that complete confidence," he said. He added that he intends to make every effort to make sure "we are getting the records we need."

E-mail Jaxon Van Derbeken at jvanderbeken@sfchronicle.com.



