



The San Bruno Catastrophe and Its Aftermath

How Should Regulators Respond to Utility-Caused Disasters?



California Public Utilities Commission

May 2012





What Happened and Why?

- At 6:11 p.m. PDT, on September 9, 2010 a 30-inch natural gas transmission line exploded in San Bruno, California. The resulting fire and damage from the explosion killed eight people (including one Commission employee and her 9 year old daughter)
- 38 homes were destroyed, 58 individuals were injured (some with severe burns), 17 homes suffered moderate to severe damage and 53 homes suffered minor damage.
- An entire section of a neighborhood was leveled and remnants of the segment of the pipe that exploded were found 100 feet from the ignition point.





PG&E's and First Responders' Emergency Response

- Police and fire responded to the emergency within a minute.
- PG&E's response was far more dilatory
- The first PG&E employee on the scene arrived at 6:23 p.m. at the company's local dispatch center. He was sent to the accident site from the dispatch center.
- A second PG&E employee arrived at a nearby staging yard at 6:35 p.m.
- PG&E thought the source of the explosion may have been a jet plane crash until 7:22
- All of the surrounding distribution lines were not closed off until 11:32 p.m. or 5 hours and 21 minutes after the initial explosion.





What Led Up to the Explosion?

- The nearest pumping station to San Bruno experienced a power failure approximately an hour before the explosion, the back-up power system failed as well.
- The pumping station was designed so that the valves would default into the full open position in the event of a power failure
- Gas pressure began to surge in the aftermath of the power failure, at one point reaching 386 pounds per square inch.
- The pipe that actually exploded was a “pup” a shortened piece of pipe that was installed by PG&E in 1956 because a residential neighborhood was being planned in an area that was formerly a ravine. The original pipeline that was installed in 1946 ran above ground. The pup sections were buried. The origin of the pup that exploded is unclear. PG&E’s records showed that the pipe was seamless even though no 30 inch seamless pipe has ever been available in the U.S.
- In 1988 PG&E had a leak on another section of horizontally welded pipe near San Bruno. It did not follow up to see if other pipes were subject to the same problem in the San Bruno vicinity.
- PG&E’s emergency response to the accident was dilatory and inadequate and contributed to the scope of the devastation.
- PMSA rules require that if an operator does not know (or have recent information about the Maximum Allowable Operating Pressure, it must assume and operate the facility at approximately $\frac{3}{4}$ what it believes to be the Maximum Allowable Operating Pressure.





Impact of Pipeline Failure

- 8 Deaths
- 58 Injuries
- 37 Homes destroyed or demolished
- 48 Homes damaged



View of ruptured section of pipeline with NTSB investigator cleaning a fracture surface



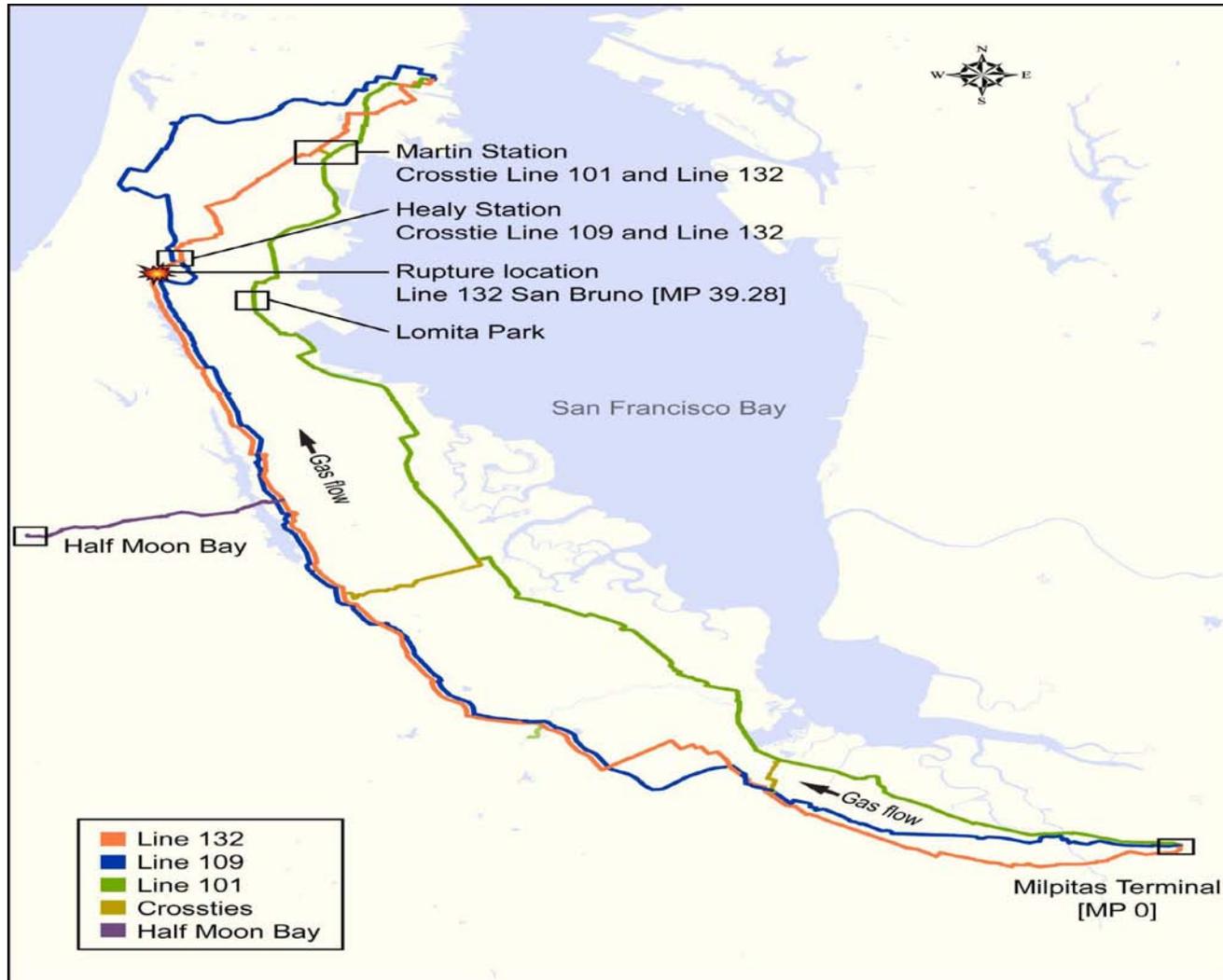


Figure 14. Map showing PG&E peninsula gas transmission lines.



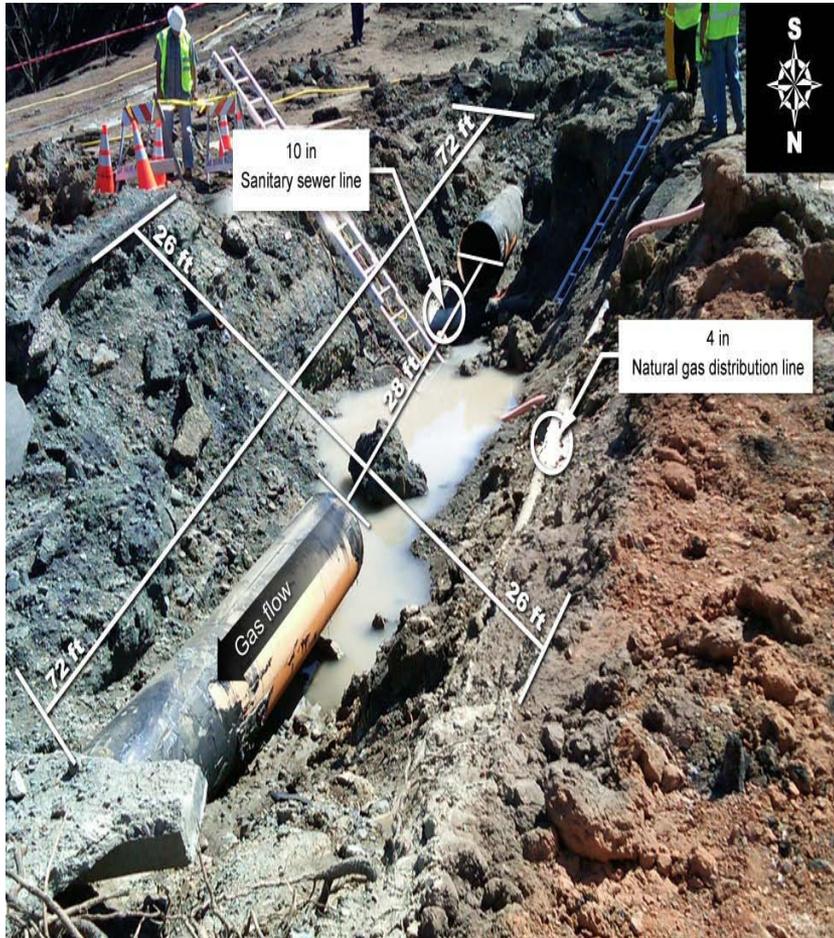


Figure 1. Picture of crater and ruptured pipeline.

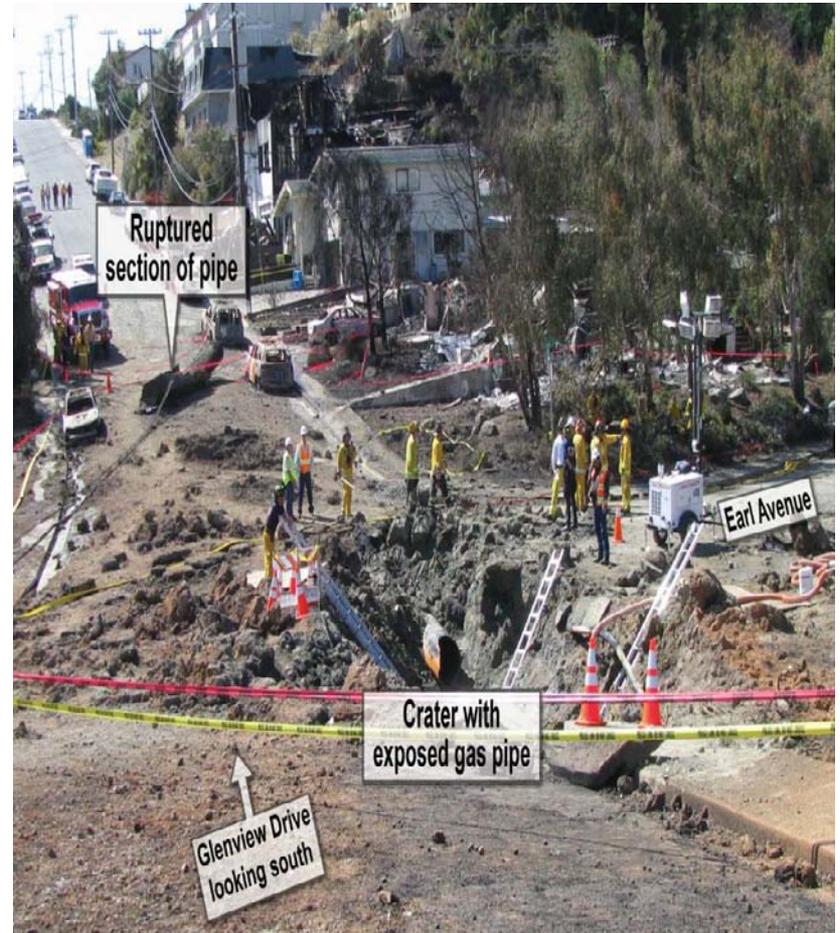


Figure 2. Picture of ejected pipe section.





Figure 12. Picture of destroyed houses.

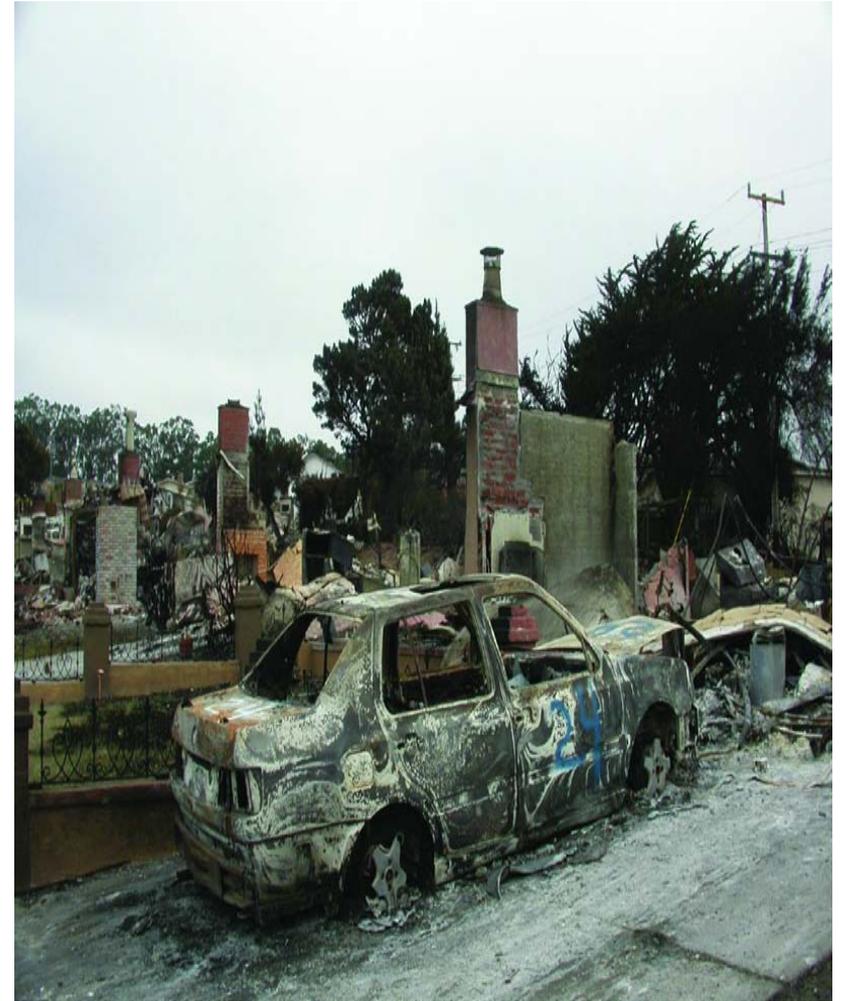


Figure 13. Picture of a burned car in front of several destroyed houses.





Figure 3. Aerial view of fire.





NTSB Findings: PG&E

- Failed to consider the presence of previously identified welded seam cracks as part of its risk assessment.
- Resulted in the selection of an examination method that could not detect welded seam defects.
- The PG&E gas transmission integrity management program was deficient and ineffective.
- PG&E's public awareness program self-evaluation was ineffective at identifying and correcting deficiencies.
- ***The deficiencies identified during this investigation are indicative of an organizational accident.***
- The multiple and recurring deficiencies in PG&E operational practices indicate a systemic problem.





CPUC ACTIONS

- Opened Investigation Into PG&E's Record Keeping Practices – Produced major report
- Opened Investigation in the Cause of the Accident: Major Report Released
- Opened Investigation into PG&E's Failure to Adhere to the High Consequence Areas Increased Pipeline Surveillance Requirements
- Opened Rulemaking into the Commission's Existing Pipeline General Order and the Assumptions that Can be Made About Pipelines that have not been Recently inspected
- Issued a \$16.25 million citation against PG&E for self-reported violations of Commission pipeline inspection requirements.
- Created new citation program for violations of the Commission's general orders regarding gas pipelines -- \$50,000 per incident per day. ALJ Resolution 274





Statutory Provisions

- Public Utilities Code Section 2107 “Any public utility which violates or fails to comply with any part or provision of any order, decision, decree, rule, direction, demand, or requirement of the commission, in a case which a penalty has not otherwise been provided, is subject to a penalty or not less than five hundred dollars (\$500), nor more than fifty thousands dollars (\$50,000) for each offense. (note maximum penalty was increased to \$50,000 from \$20,000 on 1/1/12)
- Section 2108 Every violationby and corporation or person is a separate and distinct offense, and in the case of a continuing violation each day’s continuance thereof shall be a separate and distinct offense.
- Section 451 Every public shall furnish and maintain such adequate, efficient, just, and reasonable service, instrumentalities, equipment, and facilities,, as are necessary to promote the safety, health, comfort, and convenience of its patrons, employees and the public.





Financial Consequences

- Wrongful death/property damage/pain and suffering claims: estimated possible settlement \$300-\$400 million
- Potential Exposure for Penalties in Record Keeping Investigation: \$1 billion +
- Potential Exposure for Penalties in Cause Investigation \$1 billion +
- Potential Exposure for Penalties in the High Consequence Areas Investigation \$1 billion +
- Cost (according to PG&E) for bringing the existing pipeline network up to date and removing hazards \$2.2 billion – Who Should Pay?
- Cost for Upgrading Record Keeping Capabilities and Data Base Integration: unclear if this is a ratepayer or shareholder obligation.





FACTS ABOUT PG&E

- 2011 \$14.9 billion operating revenues in 2011
- 5.1 million electric customers, 4.2 million gas customers
- Net Rate Base \$33 billion
- Authorized ROE 11.35%
- 422 million shares of common stock
- \$716 million dividend payments in 2011
- \$2.10 earnings per share in 2011





What PG&E Has Done

- Replaced Former CEO (who walked away with \$38 million in stock options and other earnings)
- Replaced Former Chief Operating Officer
- Replaced Former Head of Gas Operations
- Instituted a Program of Hydrostatic Testing of Major Transmission Lines
- Is Considering Installing Additional Automatic Shutoff Valves
- Agreed to pay for the Commission's Safety Consultants





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Huge paper chase on for PG&E data

Company initiates frantic search of its records, to try to prove lines are safe ahead of deadline

SFGate By Kevin Fagan
CHRONICLE STAFF WRITER

Coverage:
All the news on the San Bruno fire since the Sept 9 blast. www.sfgate.com/san-bruno-fire

Facing a deadline that could mean the difference between doing business as usual or cutting pressure on hundreds of miles of natural-gas pipeline, Pacific Gas and Electric Co. has recruited employees to the Cow Palace grounds for a round-the-clock search through tens of thousands of boxes of paperwork.

Their job: Find proof in documents, some of them crumbling and dating back decades, that PG&E's gas lines are as safe as the utility says they are.

For the past couple of days, forklifts have been carting pallets loaded with 30 boxes each into three warehouses outside the 70-year-old arena in Daly City. Friday afternoon, there were still more than 100 pallets stacked outside the

warehouses waiting to go in. "There are 100,000 boxes in there, and you can't believe the papers spread everywhere," one PG&E employee said as she took a break. "There are records in there going back to the 1920s.

"Boy, what happens if there was a fire at the Cow Palace right now? You'd lose an awful lot of history."

Officially, the paper hunt at the Cow Palace is a secret. PG&E managers would not confirm it was going on there, although they did say the

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Tens of thousands of boxes with PG&E paperwork are being moved to the Cow Palace so workers can sift through the documents.





Pallets with PG&E records, some dating to the 1920s, sit outside the Cow Palace in Daly City. PG&E hopes to validate pipeline data before a March 15 deadline.

PG&E scrambles to find pipeline data in paper trail

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utility was enlisting employees around the state to sift through records.

"This is a private party," is all a tight-lipped security guard would say at Cow Palace Gate 5 on Geneva Avenue, as PG&E employees in company uniforms streamed in and out. Some said they had been told PG&E would need them there for one to three weeks.

The cause of all the commotion is that the utility is under

orders from the state Public Utilities Commission to produce, by March 15, records detailing intricate characteristics of gas-transmission pipelines all over Northern and Central California.

The agency issued the order after PG&E's records about the transmission pipeline that exploded Sept. 9 in San Bruno, killing eight people and destroying 30 homes, were found to be inaccurate.

The records in PG&E's computers described the pipe

as seamless. But when investigators sifted through the rubble after the blast, they found a badly welded seam that they believe was the origin point of the blast. PG&E had never conducted the type of inspection on the line that could find a bad weld.

PG&E's conversion of old paper records to computer files has been troubled for years, and company President Chris Johns said last month that the utility had been unable to find documents for 30

percent of its 1,000-plus miles of pipeline running under urban areas.

If those records don't turn up, the state could force PG&E to cut gas pressure by 20 percent on hundreds of miles of pipeline. It could also order testing that would take lines out of service for days.

PG&E spokesman Joe Molica said the utility is working in many locations to compile records related specifically to the commission's demand, and more.

"We're looking at all kinds of parameters, and our data validation efforts are going on throughout the service area, meaning Northern and Central California," he said.

"We're doing a 24-7 records search involving at least 300 employees and contractors, and we're working to confirm the quality of our data through collecting and validating our gas transmission pipeline records."

One PG&E worker at the Cow Palace on Friday said management had asked for 1,000 company employees to help with the project.

Molica said the utility hopes the frantic hunt will ultimately "enhance the safety of our system."

E-mail Kevin Fagan at kfagan@sfgchronicle.com.





Some Thoughts for Regulators

- Given the Findings of the NTSB and the Commission's own investigators, that the explosion was the result of an "organizational accident" should PG&E lose its CPCN as a gas utility?
- How can the Commission be confident that PG&E will be a safe operator in the future?
- How can the Commission effectively police PG&E safety related expenditures in the gas area? Is this micromanagement? What degree of oversight is appropriate?
- Given the chaotic status of PG&E's records and the major information gaps within them, how can the Commission be confident about how the company will respond to the next accident?
- PG&E is seeking \$2.2 billion in gas plant upgrades as a result of the San Bruno explosion. How can the Commission be assured that the money will be spent wisely if the expenditures are approved? Who should pay for these upgrades?





Thank you.

For Additional Information:

www.cpuc.ca.gov/PUC/events/sanbruno.htm

