

**CALIFORNIA PUBLIC UTILITIES COMMISSION**  
**Safety and Enforcement Division**  
**Gas Safety and Reliability Branch**  
**Gas Engineering and Compliance Section**

**Incident Investigation Report**

**Report Date:** 08/16/2019

**Incident Number:** G 20180310-2506

**Utility:** Pacific Gas and Electric PG&E

**Date and Time of the Incident:** 3/10/2018, 11:05:00 AM

**Location of the Incident:** [REDACTED]

San Jose ,CA

County: Santa Clara

**Summary of Incident:**

On March 10, 2018, a gas leak on a copper service line caused gas to migrate into a house and ignite when the resident lit a match in the bathroom. Internal corrosion was determined to be the cause of the leak. There was one reported injury resulting in in-patient hospitalization. There were no fatalities, and damages to PG&E's facilities are less than \$50,000.

PG&E's Gas Service Representative arrived on site at 1122 hours and shut the flow of gas by 2051 hours. 4 customers were out of service for a total of 66 customer-hours. PG&E restored service on 3/11/2018 at 1330 hours.

This incident became reportable due to an injury necessitating in-patient hospitalization.

**Casualties:** *Fatalities:* 0 *Injuries:* 1

**Property Damage:** \$638,472.00

**Utility Facilities involved:**

Pipe Material = Copper, Pipe Size = 0.5 (inches), MAOP = 60 (psi), Operating Pressure = 57 (psi)

**Witnesses:**

<i>Name</i>	<i>Title</i>	<i>Phone</i>
1 Joel Tran	CPUC Investigator	N/A
2 Enza Barbato	Regulatory Compliance	(925) 357-7889

**Evidence:**

<i>Source</i>	<i>Description</i>
1 PG&E	Initial Report
2 PG&E	Final Report
3 PG&E	Photos
4 San Jose Fire Department	Fire Investigation Report
5 PG&E	Data Request responses
6 PG&E	Follow up data request

**Observations and Findings:**

On March 10, 2018 at approximately 1653 hours, a gas leak on a copper service line caused gas to migrate into a house and ignited when a resident lit a match in a bathroom. There was one reported in-patient hospitalization and no fatalities. PG&E retained Exponent to conduct an analysis of the incident. The leak originated from the steel to copper transition fitting for [REDACTED] and internal corrosion was determined to be the cause of the leak. PG&E replaced the entire service line at [REDACTED]

PG&E took a total of 19 pipe and fitting samples to determine the extent of the internal corrosion. 6 of the 19 samples displayed signs of mild to severe internal corrosion. After completing the examination of these samples, Exponent noted that copper pipes located on the main side appeared to have greater internal corrosion than pipes on the house side. As a result of this examination, PG&E has identified and replaced all copper service lines in the area. This meets the requirements of 192.475(b)(1), 192,475(b)(2), and 192.475(b)(3).

192.605 requires an operator to prepare a follow written procedures. Such procedures should include 192.605(b)(3) which states in part, "Making construction records, maps, and operating history available to appropriate operating personnel." By incorrectly identifying the failed section of pipe as steel instead of copper, PG&E

missed the opportunity to include it into its Copper Service Replacement Program and take mitigating measures such as pipeline replacement.

PG&E removed the incident pipe section and observed internal corrosion, but no external corrosion. On 3/10/2018, PG&E took a pipe-to-soil reading at [REDACTED] with a reading of -1209mV. PG&E had installed and maintained cathodic protection prior to the incident as required by 192.465, maintaining a pipe-to-soil reading of -850mV or more negative with reference to a copper-copper sulfate electrode.

Odorization records from Fort Mason in San Francisco (the nearest odorant sampling location to this incident) indicate that PG&E's gas was properly odorized to be readily detectable to between 0.1% and 0.6% gas in air. 192.625 requires gas to be detectable at one-fifth the lower explosive limit. The lower explosive limit of natural gas is approximately 5% gas in air, meaning one-fifth lower explosive limit would be 1% gas in air. PG&E's odorant levels meet the requirement of 192.625.

PG&E's 2017 gas monitoring of Transmission Lines L400, L401, L300A, and L300B (these lines are upstream of [REDACTED]) resulted in quarterly averages of hydrogen sulfide of 0.16 to 0.23 grains per 100 cubic feet which is less than the 0.3 grains per 100 cubic feet limit of 192.125(d). PG&E's hydrogen sulfide levels meet the requirement of 192.125(d).

The area was previously leak surveyed on 2/4/2014 with no underground leaks detected. Upon completion of repairs, PG&E conducted a follow up leak survey on 3/11/2018, resulting in no underground leaks in the area.

SED did not conduct a site investigation for this incident. This incident occurred on a Saturday, with repairs being completed on Sunday. The SED assigned engineer had inspections scheduled and was unable to conduct a site investigation.

The service line at [REDACTED] was installed in 1951 as per PG&E's Gas Service Order #6798 LW. This Gas Service Order indicates copper tubing and steel pipe used to construct the service line.

In 2006, PG&E initiated the Copper Service Replacement Program to identify and replace all copper service lines. PG&E's distribution plat sheet 3412-D6 labeled the service at [REDACTED] as steel instead of partial steel/copper. PG&E's Copper Service Replacement Program did not identify this as a copper service, as its initial review identified this service as being steel. This allowed the copper service line to remain in place where internal corrosion developed over time. As a result, natural gas migrated into [REDACTED] and subsequently ignited.

## **Preliminary Statement of Pertinent General Order, Public Utilities Code**

**Requirements, and/or Federal Requirements:**

<i>General Order</i>	<i>GO Rule</i>
1	
2 GO112E	192.605(b)(3)

**Conclusion:**

Based on its investigation, SED found that PG&E incorrectly identified the failed section of pipe as steel instead of copper, missing the opportunity to include it into its Copper Service Replacement Program and take mitigating measures such as pipeline replacement. PG&E's failure to make accurate construction records available to the appropriate operating personnel is in violation of GO 112-F, Title 49 CFR Part 192, §192.605(b)(3).