

UTC Incident Investigation Form

Notification ID:	3606	Investigation ID:	8117
-------------------------	------	--------------------------	------

Inspector Name:	Derek Norwood
Date Report Submitted to Chief Engineer:	May 7, 2020
Date Report Reviewed & Approved by Chief Engineer:	Joe Subsits May 8, 2020

Operator:	Cascade Natural Gas Corporation (CNGC)
District/Unit:	Mount Vernon
Location:	908 E Fulton St Mount Vernon, WA
Incident Date:	November 25, 2019

Description:

On November 25, 2019 at 8:25 AM, Cascade Natural Gas Corporation (CNGC) reported to pipeline safety staff a structure fire and injury at 908 E Fulton St in Mount Vernon, WA. Three staff members (Derek Norwood, Darren Tinnerstet and Dennis Ritter) deployed to the scene to conduct an investigation of the incident.

The structure fire was due to an explosion in Unit 2 of a duplex at 908 E Fulton St (**Figure 1**). The occupant from Unit 2 was taken to Skagit Valley Hospital and then Harborview Medical Center for treatment of burns. The occupant in Unit 1 was treated and released at the scene. No deaths and no other injuries were sustained from the explosion/fire.



Figure 1 – Aerial view of the duplex following the explosion. Image provided by MVFD

UTC Incident Investigation Form

Based on evidence from the scene, interviews with witnesses, CNGC records, and the Origin and Cause Report from Mount Vernon Fire Department (MVFD), the initial explosion does not appear to be caused by CNGC jurisdictional facilities. Although CNGC facilities did not cause the initial explosion, the riser to the gas meter did break which contributed to the amount of fire damage to the structure and other nearby buildings. The riser broke below the service valve (**Figure 2**) as a result of the explosion and fed the fire until MVFD contained the fire and CNGC shut off the gas supply. The damage caused by the release of gas exceeded \$50,000 and is therefore reportable under 49 CFR 191.5 (NRC Incident Report #1264834).



Figure 2 – View of the damaged two-meter manifold covered in debris

Facts/Chronology of Events:

- April 2015 – Gas service was shut off by CNGC due to customer non-payment.
- November 8, 2019 – Gas service to 908 E Fulton St Unit 2 was restored. The tenant refused entry to CNGC personnel to re-light gas appliances.
- November 25, 2019
 - 4:30 AM – Neighbor (Wesley Arch) was outside and smelled an odor which he described as “something dead”
 - 5 AM – Neighbor’s brother (Dion Arch) left for work and smelled “something rotten all the way to the main street” (E Division St)

UTC Incident Investigation Form

- 5:40 AM to 6 AM – Neighbor (Scott Gassaway) went for a run and smelled natural gas
- 6:12 AM (Approximate) – Explosion occurred according to witness interviews and fire department alarm time (**Figure 3**)



Figure 3 – Fire being fed by the gas meter shortly after the explosion. Picture taken by neighbor, Corban Gassaway

- 7:30 AM – CNGC began bar hole testing over the service line and main in the surrounding neighborhood (**Figure 4**). During initial bar hole testing, CNGC found a gas reading of 4.2% gas-in-air over the service line feeding the duplex.

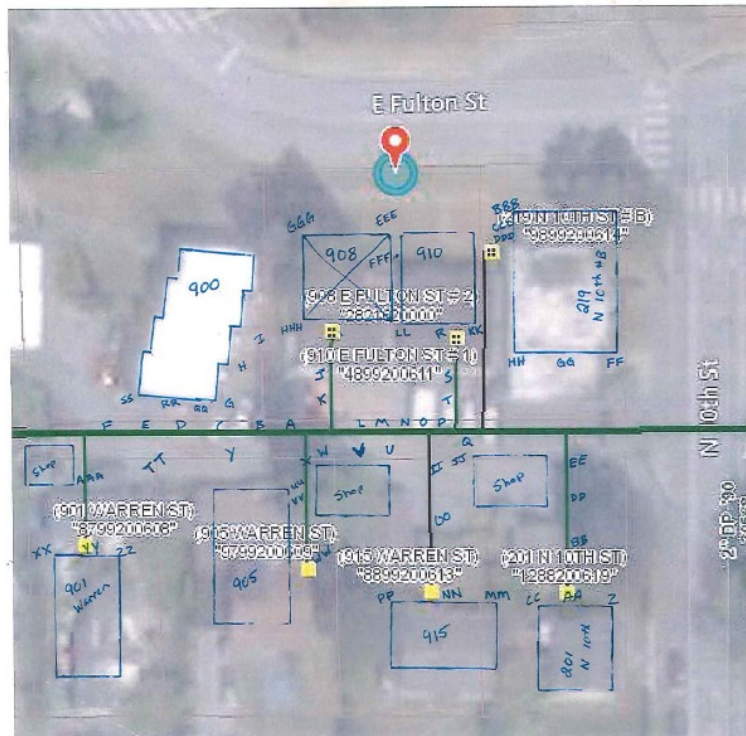


Figure 4. Map of the locations CNGC performed bar hole testing

UTC Incident Investigation Form

- 8:25 AM – CNGC reported the incident to UTC staff via the incident notification line
- 8:30 AM – CNGC submitted NRC Report # 1264834
- 11 AM – UTC Staff arrived on site to conduct interviews and an investigation. Staff interviewed Wesley Arch (neighbor), Freedom Gassaway (neighbor), Scott Gassaway (neighbor), Lisa Holmgren (Friend of Unit 2 tenant), Steven Riggs (Mount Vernon Fire Chief), Addam Sad (CNGC) and Travis Alvord (CNGC).
- November 26, 2019
 - 12:15 PM – CNGC began leak test on the service line. Leak test was conducted for 1 hour 5 minutes at 58 psig.
 - 1:30 PM (Approximate) – Staff reviewed CNGC maintenance records at their district office. These records included leak survey, odorant testing, service records for the meter and service, AMR data, cathodic protection, construction records and operator qualifications
 - CNGC and MVFD attempted to air test house piping but the test failed. CNGC soaped the line and saw bubbles forming at the gas valve to the gas furnace. **(Figure 5)**



Figure 5 – Soap test on house piping showing bubbles forming near valve. Image provided by MVFD.

- In addition to leak testing the gas service, CNGC also conducted a leak test on the gas main for 1 hour at 58 psig. No leaks were found in the gas main.
- CNGC repeated bar hole testing in same locations as shown in **Figure 4**.
- CNGC submitted a 48-hour update to the NRC (Report #1264973)
- November 27, 2019
 - CNGC repeated bar hole testing in same locations as shown in **Figure 4**.
- November 28, 2019
 - CNGC repeated bar hole testing in same locations as shown in **Figure 4**.

UTC Incident Investigation Form

- December 2, 2019
 - CNGC repeated bar hole testing in same locations as shown in **Figure 4**.
- December 9, 2019
 - CNGC repeated bar hole testing in same locations as shown in **Figure 4**. Gas readings were 0% gas-in-air after CNGC aspirated.
- December 18, 2019
 - CNGC submitted the 30-day report to commission staff.

Causes/Contributing Factors:

The initial explosion does not appear to be caused by regulated CNGC facilities nor does it appear to be the result of CNGC operations. CNGC air tested the main and service line serving the duplex, both pipelines held pressure for 1 hour at operating pressure. CNGC conducted leak surveys in the area and was unable to identify any leaks in the system. Commission staff reviewed CNGC maintenance records and saw nothing that would indicate CNGC facilities and operations caused the explosion.

The only system that failed an air test following the explosion was the internal house piping. The house piping was unable to hold air and could be seen leaking at the gas valve to the gas furnace when CNGC soap tested the line. On November 8, 2019, the occupant of Unit 2 had the gas turned back on. At this time the occupant refused access to CNGC personnel to perform a re-light on gas equipment and there do not appear to be any records indicating the occupant had the house piping or furnace inspected by a qualified person prior to gas turn on.

One other potential cause identified by MVFD was an accumulation of sewer gas. According to the MVFD Origin and Cause Report, the water to Unit 2 had been shut off on July 30, 2019. During the investigation, MVFD discovered the toilet bowl and main line to the sewer pipe was compacted with human waste. These two facts lead to the possibility of an accumulation of sewer gas which could have reached explosive limits. UTC staff did not further investigate this possibility as the scope of our investigation was focused on CNGC facilities and operations.

Although CNGC facilities and operations did not cause the explosion, their facilities did contribute to the fire following the explosion. The meter and riser were damaged during the explosion and fed the fire. This caused additional property damage to the duplex, other buildings and vehicles. This damage exceeded the \$50,000 reporting threshold.

Regulatory Analysis/Violations:

WAC 480-93-185 Gas leak investigation

(2) In the event of an explosion, fire, death, or injury, the gas pipeline company must not remove any suspected gas facility until the commission or the lead investigative authority has designated the release of the gas facility. Once the situation is made safe, the gas pipeline company must keep the facility intact until directed by the lead investigative authority.

During emergency response activities, CNGC first responders disconnected the service line from the main and cut the gas riser to ground level. Disconnecting the service at the main was conducted in order to control the emergency but it is unclear whether cutting the service riser was immediately necessary.

Although not a clear violation in this instance, staff have identified this as an area of concern and ask that CNGC respond to show how they will comply with this code in the future.

UTC Incident Investigation Form

Follow up/Recommendations:

Issue a letter noting staff's concern and requesting CNGC response. Staff should also place an emphasis on inspecting CNGC response actions in future incidents to ensure compliance with this code.