

# UTC Incident Investigation Form

<b>Notification ID:</b>	3588	<b>Investigation ID:</b>	8112
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<b>Inspector Name:</b>	Lex Vinsel
<b>Date Report Submitted to Chief Engineer:</b>	03Oct20
<b>Date Report Reviewed &amp; Approved by Chief Engineer:</b>	Joe Subsits October 6, 2020

<b>Operator:</b>	Puget Sound Energy
<b>District/Unit:</b>	King Co. - West
<b>Location:</b>	10315 Midvale Ave N, Seattle Washington 98133
<b>Incident Date:</b>	11Oct19 -

**Description:**

11Oct19 (1146) Washington Utilities & Transportation Commission (UTC) Stand-By engineer received a report of broken and blowing gas with ignition at 10315 Midvale Ave N, Seattle from PSE staff. Stand-by engineer was dispatched.

Puget Sound Energy (PSE) Gas First Responders (GFRs) had responded to broken and blowing gas after a main dig in and while trying to squeeze the main in the excavation the gas ignited. Three (3) GFRs were burned and sent to the hospital. Two (2) were released on the 19th with the third being admitted.

An additional trench exposed the main approximately 60-feet on the north side and squeezed off the flow. A valve was closed on the south side of the excavation. After both were closed fuel to the fire was cut off resulting in the gas fire being extinguished.

Water in the hole was vacuumed out.

PSE crews were fusing in a pretested pipe section and after they will purge with natural gas.

PSE relit eighteen (18) impacted services on 11Oct19.

PSE-performed a walking leak survey for the main and all the services.

**Facts/Chronology of Events:**

10Oct19 - ELM Locating and Utility Services LLC (ELM)(PSE's locating Contractor) completed Locate Tickets 19445690 and 19445724 for 10317 Midvale Ave N and 10318 Midvale Ave N, respectively.

11Oct19 –  
(≈1000) - Seattle Public Utilities (SPU) starts working on a 12-inch storm water catch basin.

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(1038) Third party contractor severed gas line at 36-inches of cover. Incident (broken and blowing) main at 10315 Midvale Ave N reported to PSE.

(1055) – PSE GFR's responded to the call and arrives on site. They determined that they could not mitigate the static charge per procedure 2525.2000 Section 3.7 with soapy wet burlap bags. While working in and around the excavation PSE's GFR's did not recognize they were in a flammable atmosphere.

(1107) - Gas release caught fire resulting in 3 injured persons sent to Harbor View Burn Center (2-treated and released, 1 Hospitalization). Ignition was probably related to static charge build up at the ends of the blowing PE pipeline. The fire--resistant clothing protected the responders but exposed skin was burned because the responders were 'not required' to cover head, neck and hands.

(1146) – PSE reports uncontrolled gas main with fire to incident line to report gas ignition to stand by engineer.

(1210) – Incident under control after fourth PSE GFR squeezes mainline in additional excavation approximately 60-feet north of original site and closes valve on south of site. Eighteen (18) services were shut down.

- Vacuum truck arrives and removes the accumulated water from the original excavation.

(1439) - WUTC arrives and starts to take pictures of the site.

- Met with Incident Commander (Brandon Severson, PSE) and received contact information for third-party excavator. (see below)

-PSE had completed bar holes around the excavation to determine if there was any spread of gas through the soil. All readings were zero.

-PSE started to repair the break in the 2-inch main line by fusing in a section of pretested pipe.

-The main was then purged with Natural Gas.

-After the main was purged PSE began to pressure test meters and relight the eighteen (18) services that lost gas service when the main was squeezed off.

-After the relights were finished then PSE did a walking leak survey to insure no leaks over the main, and no leaks to the services.

Received Third-party Excavation Contact information from PSE Brandon Severson (Incident Commander).

Seattle Public Utilities,

Foreman was Lou Moli.

Excavator operator was Sam

## Causes/Contributing Factors:

On 10Oct19 the Locator hooked up the correct equipment to locate the tracer wire that is buried with each PE line. Locator got the highest tracer reading over the abandoned steel main at 11-feet west of centerline. Apparently, the tracer signal bled from tracer wire to abandoned steel main. The Locators map showed the main at 11-feet from centerline and the abandoned steel at 9-feet from centerline so he marked the steel abandoned line as the PE main(live).

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Shown CL distance from CL to mains	Shown(feet)	Was(feet)
New PE Main	11	14.3
Old steel Abandoned Main	9	11

PSE gas main and abandoned line were each found to be about 3 feet West from the Road Centerline (CL) than was shown on the map the locator was using.

Per procedure Locator should have also marked the abandoned line.

Second issue was the ignition of gas while GFRs were in the excavation.

### Regulatory Analysis/ Violations:

**WAC 480-93-180**

***Plans and procedures.***

*(1) Each gas pipeline company must have and follow a gas pipeline plan and procedure manual (manual) for operation, maintenance, inspection, and emergency response activities that is specific to the gas pipeline company's system. The manual must include plans and procedures for meeting all applicable requirements of 49 C.F.R. §§ 191, 192 and chapter 480-93 WAC, and any plans or procedures used by a gas pipeline company's associated contractors.*

PSE did not follow procedures to prevent Accidental Ignition per PSE 2575.2000 Section 3.7.

Not wetting down area with soapy water.

No wet and soapy burlap bag to reduce static charge.

Operating in a flammable atmosphere without the correct protective PPE.

### Follow up/ Recommendations:

Review of Locators procedures. Locator located the abandoned steel line instead of the live 2-inch PE main with tracer. Investigators were able to locate the 2-inch PE by using a lower frequency on the locator(signal). Locating procedures should be revised to use the lower frequency to avoid similar conditions. This condition where an abandoned gas line runs parallel to the live PE main occurs in many locations.

Maps for PSE (locator used) accurate? The map the locator used was off by 3-feet. PSE investigators reviewed mapping symbols for abandoned and live gas lines.

PSE has changed their procedures for GFR response to require supervisor approval to enter a flammable atmosphere or to have the proper protective clothing such as Fire-Resistant (FR) hood (balaclavas) and gloves. These were optional for gas pipelines smaller than 4-inch. PSE has changed the requirement for full FR gear for gas lines larger than 1.125-inch.

The individuals that were burned should not have been trying to squeeze off the pipeline by

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working in the trench without mitigating the ESD danger first and by working without proper PPE. None were wearing Flash Suits and SCBA as described in 0100 Emergency Response & Safety, 0100.2040 Using the Portable Supplied-Air Respirator Unit and the Emergency Truck.

## Photo Log

1-Picture of excavator by the truck tire showing the locate marks that were 3-feet east of the actual location of the live line.

2-Picture of excavation showing the location of the abandoned steel line with visible rust, down and to the left of the gray drainpipe.

3-Come around some more to the north and photo from north to south. Still showing the location of the incorrect locate marks.

4-Photo of site shooting north to south.

5-Photo of extra excavation used to squeeze off the flow of gas from the North.

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1-Picture of excavator by the truck tire showing the locate marks that were 3-feet east of the actual location of the live line at 14-feet.

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2-Picture of excavation showing the location of the abandoned steel line with visible rust, down and to the left of the gray drain pipe.

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3-Come around some more to the north and photo from north to south. Still showing the location of the incorrect locate marks.

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4-Photo of site shooting north to south.



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5-Photo of extra excavation used to squeeze off the flow of gas from the North.