

## Incident Summary #II-1047453-2020 (#18954) (FINAL)

SUPPORTING INFORMATION	Incident Date	August 2, 2020	
	Location	Dawson Creek	
	Regulated industry sector	Gas - Natural gas system	
	Impact	Qty injuries	0
		Injury description	None
	Damage	Injury rating	None
		Damage description	A hole in a gas line inside the house allowed gas to escape and caught fire. There was minor damage from the fire to wood framing and to a plastic water line in close proximity. There was water damage to the ceiling, walls, and flooring of the basement.
		Damage rating	Moderate
Incident rating	Moderate		
Incident overview	A lightning strike to a house occurred, and immediately after a gas leak from corrugated stainless steel tubing (CSST) ensued and caused a minor fire.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>Corrugated stainless steel tubing (CSST) is flexible gas tubing that conveys natural gas or propane to gas appliances.</p> <p>Black iron gas piping is steel pipe also used to convey natural gas or propane to gas appliances. The house contained both black iron and CSST as part of its gas piping system.</p> <p>Metal gas piping can offer a path for electrical current to flow to all parts of the building if they are connected to equipment that has an electrical fault or is exposed to stray electrical current. Metallic piping systems can create fire and shock hazards throughout the building if they are not electrically bonded to ground.</p>	
	Failure scenario(s)	The CSST was incorrectly run alongside, and in direct contact with the beam. The gas system was bonded to black iron pipe. When the home was struck by lightning, an electrical path to ground for the lightning arced between the steel beam and CSST gas tubing, which created the hole in the gas line, and simultaneously ignited the escaping gas.	
	Facts and evidence	<p>Homeowner statement</p> <p>The homeowner witnessed a flash from their porch while watching the approaching lightning storm, and simultaneously heard a loud bang, and then the house lost power for approximately 30 seconds. The owner stated the gas alarm in basement sounded shortly after lightning strike and upon his investigation, he could smell a gas odor. The owner immediately shut the gas off at the gas meter outside and went back to the basement. The owner heard water running and then witnessed ceiling collapse from water leak</p>	

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### Contractor statement

A plumbing and gas contractor was hired to find and repair the water leak. The contractor discovered fire damage while removing the remaining damaged ceiling to expose the water line. Once the ceiling was removed, the contractor noticed the CSST running directly beside where the fire damage occurred, and then noticed the CSST outer plastic jacket had melted. The contractor found the leak in the plastic water line directly above the location of the fire, and damaged CSST. The contractor confirmed the gas system was electrically bonded.

### CCST installation manual

The manufacturers installation manual states CSST is not to be run in parallel with metal structure or other metal building components.

### CSST tubing physical examination

A small hole was found in the CSST at location where fire occurred, and the CSST plastic jacket melted at the location of the hole.

### Photo documentation

- Damage to roof/facia from the lightning strike.
- Damage to CSST.

### Causes and contributing factors

It is probable that the incorrectly installed CSST that was run along the steel beam allowed the lightning to arc across and created the hole which allowed the gas to escape and be ignited, causing the fire.



Image 1 - CSST run along structural steel beam.



Image 2 - Damaged section of CSST





Image 3 - Fire damage to wood framing next to hole in CSST



Image 4 - Roof peak where lightning hit the house



Image 5 - Hole in CSST