

## Incident Summary #II-1043261-2020 (#18845) (FINAL)

SUPPORTING INFORMATION	Incident Date		July 21, 2020	
	Location		Coquitlam	
	Regulated industry sector		Electrical - Low voltage electrical system (30V to 750V)	
	Impact	Injury	Qty injuries	0
			Injury description	N/A
			Injury rating	None
		Damage	Damage description	Complete loss of equipment occurred to the metal service conduit and conductors located inside this conduit. . Fire and high heat damage occurred to the structure as well, including the framing timbers, drywall and exterior siding and sheathing
			Damage rating	Moderate
Incident rating		Moderate		
Incident overview		Service conductors within the metal service conduit appear to have failed. The failure of these conductors resulted in extreme thermal temperatures within the service conduit. As a result of the extremely high temperatures damage occurred to the adjacent portions of the structure.		
INVESTIGATION CONCLUSIONS	Site, system and components		Supply service conduit is installed into the top of the meter base. This service conduit passes through the roof and is run inside the stud space of the exterior wall. Inside the service conduit there are three conductors, Line 1 and Line 2 conductors and the Neutral or Identified conductor. The line and neutral conductors are connected to the supply authority conductors at the top of the service conduit where they exit the conduit. The conductors are terminated at the bottom inside the meter base. The service conduit is electrical metal tubing inside the wall and transitions to rigid metal tubing before exiting the roof line.	
	Failure scenario(s)		Renovations to the outside siding of the building were done at some point. The nails used to attach the siding were long enough to penetrate the service conduit inside the wall and the energized conductors within that conduit. A siding nail in contact with the service conductors as well as the metal service conduit would provide a path for fault currents. With these fault currents heat is created and over time the deterioration of the conductor insulation would create higher and higher heat until a failure occurs and in this case a fire with the combustible materials(siding, framing and sheathing timbers).	
	Facts and evidence		<p>The service conductors inside the service conduit displayed a portion of conductor that had burnt away, this would be an area where there was a conductor fault or short circuit.</p> <p>-The conductor insulation had melted in that general area indicating very high heat.</p> <p>-A small hole was identified in the service conduit where the burnt conductors where located.</p>	

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	<ul style="list-style-type: none"> <li>-Siding material both metal(exterior) and wood(beside the conduit) was burnt in this area as well. The nails used to attach the siding were made of metal and were approximately 2 inches long.</li> <li>-Siding nails installed with a pneumatic gun could potentially penetrate conduit walls and conductor insulation.</li> <li>-Siding nails that are in contact with energized conductors and metal conduits could create a path for fault currents and short circuits to develop over time.</li> <li>- Siding internal and external were burnt away</li> <li>-Conduit had a nail sized hole in it at the location of the fire</li> <li>-Conductors inside the conduit showed damage and melting.</li> <li>-Conductor insulation was melted away at the point of fire.</li> <li>-On site discussion with fire crew confirmed there were no other sources of ignition found by their crews.</li> </ul>
<p><b>Causes and contributing factors</b></p>	<p>It is very likely that a siding nail installed through the service conduit and into the service conductors would be the cause of the high heat fault that occurred. The overcurrent protection in this situation that would clear this fault is located on a utility pole further down the road. The amount of resistance in the line and the distance to the over current device would be a contributing factor in why the fault wasn't cleared. A fault that isn't able to be cleared by an overcurrent device would create arcing and high heat and over time a failure, which in this case created a fire and extensive heat damage.</p>

\*See Photos with description below\*



















