

Incident Summary #II-1715960-2024 (#46877) (Final)

SUPPORTING INFORMATION	Incident Date	May 29, 2024		
	Location	Salmon Arm		
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 1000V)		
	Impact	Injury	Qty injuries	0
			Injury description	N/A
			Injury rating	None
	Damage	Damage description	Damage description	Interior branch wiring fire damage occurred for exterior neon signage within a commercial establishment damaging minor exterior wall structural, vapour barrier, and insulation.
			Damage rating	Minor
Incident rating	Minor			
Incident overview	<p>At approximately 2:30AM the fire department was called to the location with reports of exterior signage had caught fire. The location had a power outage at this time and is believed to have been related.</p> <p>At the time of the incident the electrical utility provider was dealing with a power outage in the general area that involved a utility pole fire.</p>			
INVESTIGATION CONCLUSIONS	Site, system, and components	The illuminated signage provides a visible means to the business, is typically installed on the store fronts and powered from the electrical panel within the business space. The signage is illuminated by means of photocell control.		
	Failure scenario(s)	<p>The business was closed for the evening with the signage operating throughout the night with control of photocell control (a device that measures light and switches power on when lighting is required). During that evening it was noted a power outage occurred and the utility was dealing with a fire outage in the area.</p> <p>Typical utility operates with an automatic disconnect reclosure, which allows the system to attempt re-energize on 3 occasions and if fault still exists then a power outage occurs. Approximately 1 hour after utility de-energized the circuit, it was noted the Fire Department was driving up the hill with lights/ sirens to incident location. Utility located the circuit disconnect switch near the area and opened/ isolated the power to the faulted utility power circuit. An Incident occurred on a high voltage 3-phase 25kv transformer pole. A power surge was witnessed by a firefighter at their own home prior to callout. The fire department was notified by RCMP at approximately 2:30AM while they were attending the neighbouring tenant space due to an intrusion alarm activated, when they spotted a fire within the next doors store ceiling area. The fire department entered the premise, de-energized the circuit and extinguished the fire.</p>		
	Facts and evidence	<p>Prior to Incident there was a 'separate' utility incident in area approximately 6 blocks away:</p> <ul style="list-style-type: none"> Salmon Arm fire chief noted there was a utility issue prior to or very near the same time as the reported fire. Fire Department personnel noted prior to the call to site and around the time utility was working on their issue, the lights in their house went 'very bright' 		

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for a short time which would support a voltage surge.

- Utility noted while the pole top fire was progressing, they were trying to locate the disconnect switch to de-energize the utility power when a short circuit occurred, automatically taking the power offline causing a power.

Incident Establishment Location

General:

- The fire spread to approx. 16 roof trusses above T-bar ceiling space along the north side of the store where the vapour barrier then caught fire, melted and discoloured/ burnt the ends of trusses.
- There were 3 main areas being noted having additional fire damage to structural wood: first most damage area is located at and above transformer ballast #4, the second at the corner wall between ballasts #2 and #3 and at last junction box #2 beside ballast #1 (as per drawing below).

Electrical:

- Incident noted at east entrance signs only, west end signage on same electrical circuit - not affected.
- The condition of the transformers and the secondary 12,000volt conductors did not appear to provide any supporting evidence of damage, burning marks, or blackening of enclosures. The interiors of the transformers not viewed (Electrical Contractor removed them).
- It was noted a 3 conductor #12awg non-metallic sheath cable was burnt with all exterior sheathing and conductor insulation consumed for approx. 6 to 8'+ in length from junction box #1 beside ballast #4 over a round corner towards transformer ballast #2 (as per drawing below).
- Junction box beside transformer ballast #4 was completely destroyed/ burnt with no evidence of the box or cover plate remaining and all conductors burnt away from the box.
- Additionally, junction box located beside ballast #1 on east wall that shows signs of burning and a missing junction box cover as wires/ wire connectors were noted sticking out of box in free air with heat damage.

**** no other damage/incident was noted or reported during this time with damaged equipment/wiring ****

Signage Circuitry Information:

- The signage circuit consisted of: 4x total exterior signs with 2x neon transformers each.
- The circuit is provided via a 20amp 2-pole breaker for exterior signs, 2 at front of store where incident occurred and 2 noted on backside of building.
- Neon Transformer information- typical: Allanson type 452FS, cat#12B30FTS, 120volt/ 360mA input, 12000volt/ 30mA output.
- The circuit is wired with #12awg cable rated for 25amps at 75degree temperature termination and connected to a 20amp overcurrent device per 14-104. The connected continuous load approved on this 20amp circuit is 20amps/ 1.25=16amps= 1920watts @ 120volt.
- The connected load of all 4 neon ballasts (at front end of store only) = 1440watts (360va x4 connected to a 3wire circuit).
- The incident is noted to have likely occurred on the junction box where the second ballast is terminated with extension to east end ballasts x2 of the first set of ballasts leaving 1080watts. This load is well within ratings of the conductor and the over-current device.

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Causes and contributing factors

It is possible the voltage surge from the utility may have created a fault condition at both junction boxes where the splicing was located above the ceiling space during operation causing arcing and shorting. The junction box beside ballast #4 is the first in the circuit in the area with most fire damage and ignited the wall with flames rising into the truss space and plywood roofing.

The melting of the cable jacket and insulation was likely due to the overheating of the cable during the fault, which helped spread the flames igniting the plastic vapour barrier.

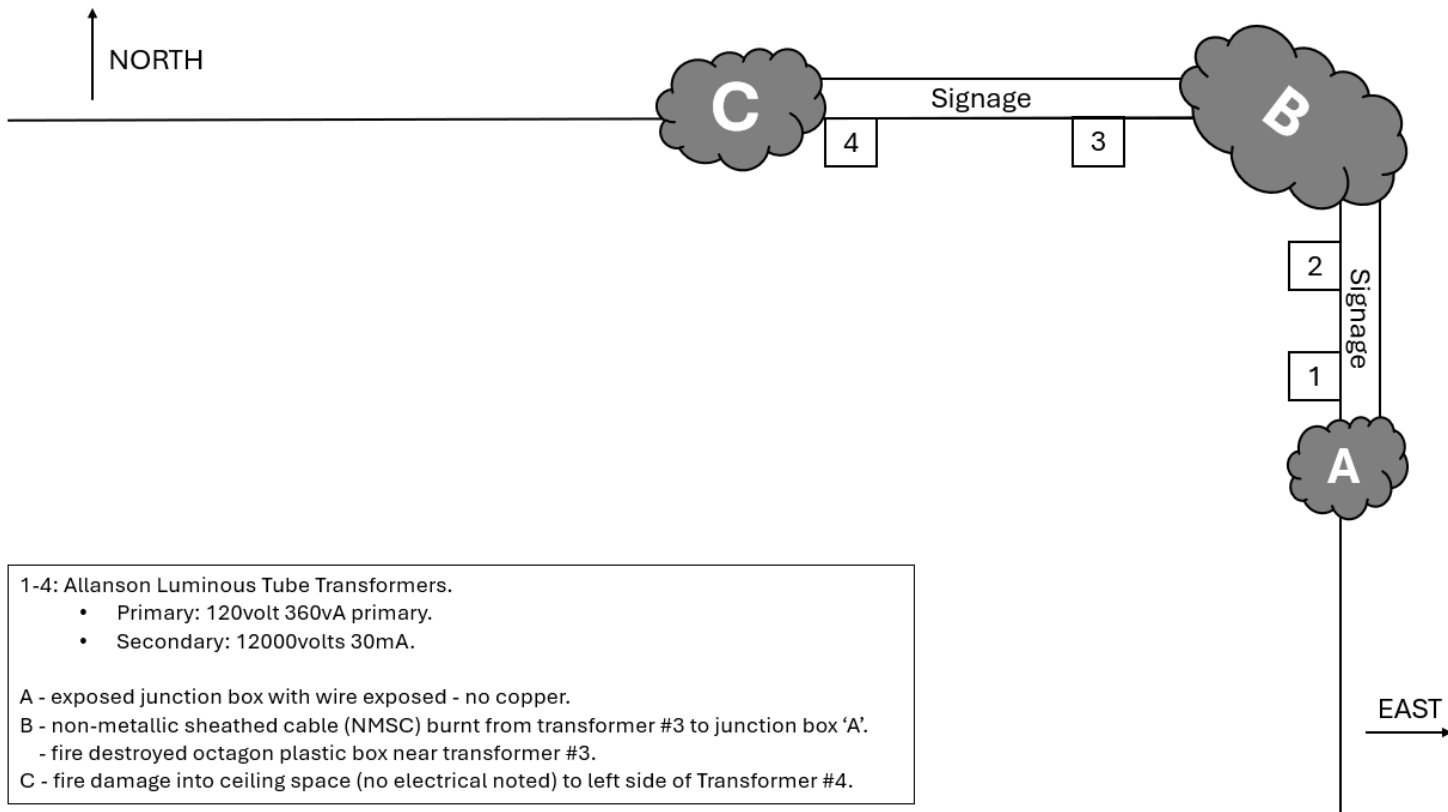


Image 1 – Identification of incident damage.



Image 2 - Damaged area.



Image 3 - East wall.



Image 4 – Damaged junction box.