

Incident Summary #II-1056017-2020 (#19079) (FINAL)

SUPPORTING INFORMATION	Incident Date	April 26, 2020	
	Location	Courtenay	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 750V)	
	Impact	Qty injuries	0
		Injury description	NA
		Injury rating	None
	Damage	Damage description	Electrical service panel fire
		Damage rating	Minor
	Incident rating	Minor	
Incident overview	On April 26, 2020 the owner of a dwelling went into his detached shop and found the main electrical panel on fire, as well as the plywood wall above the panel. The owner turned the main breaker off and used a fire extinguisher to put the fire out.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>Components:</p> <ul style="list-style-type: none"> • Main 240V 200A combination panel • 30A 2-pole breaker • Construction heater – 4800W 240V • #10/2 NMD-90 wire <p>Normal Operation:</p> <p>An approved electrical panel uses breakers that are approved by the manufacturer to be used within it. The breakers are designed to trip under a fault or overload condition. The 4800W heater would draw 20A on a 30A breaker</p>	
	Failure scenario(s)	The 4800W construction heater in the dwellings detached shop was turned on for approximately 1hr. The heaters load, although within normal circuit ampacities, was very likely too much for a poor electrical connection where the 30A breaker contacts the panel buss bar. It is very likely that good contact between the breaker and the panels buss bar wasn't achieved because the brand of breaker installed wasn't approved for use in this brand of panel.	
	Facts and evidence	<p>Homeowner Interview:</p> <ul style="list-style-type: none"> • The owner said he turned the shop heater on and then went to the house for breakfast. He promptly returned to the shop and found his electrical panel on fire. He turned the panels main breaker off, put out the fire with an extinguisher, and called an electrical contractor. • The owner said that the 1st electrical contractor installed the service panel and later a 2nd electrical contractor was obtained and installed the shop wiring including the heater and its breaker. • The owner said that over the 6 years since this electrical system was completed, that the heater has only been used a few times. 	

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	<p>1st Electrical contractor, interview:</p> <ul style="list-style-type: none"> This contractor originally installed the 200A service panel and was called to perform the repair after the fire. He found the 30A breaker for the heater in the tripped position. He found both the buss and breaker melted where they make contact; and observed that it was a Siemens brand breaker installed in a Homeline brand panel. <p>2nd Electrical Contractor, Interview:</p> <ul style="list-style-type: none"> This contractor installed the shop wiring and breakers to the existing panel. He said he did install the 30A Siemens breaker for the heating circuit to the Homeline panel. <p>Safety Officer Remote Observation:</p> <ul style="list-style-type: none"> 200A panel destroyed inside 30A breaker melted where it contacts the panels buss Panel buss melted where it contacts the 30A breaker. Siemens label on breakers installed in Homeline panel. Documentation from the panel manufacturer (Schneider Electric) stating Siemens breakers are not approved for use in Homeline panels.
<p>Causes and contributing factors</p>	<p>The cause of this incident was very likely due to the overheating of the 4800W construction heater circuit, where the 30A breaker makes contact with the panels buss.</p> <p>It is very likely that because the 30A breaker installed was not approved for use in this panel, that the proper mechanical and electrical contact wasn't achieved. Although the heater had been installed for 6 years it was only used a few times; and therefore, probable that each time this substantial load was used, the electrical connection became worse until failure.</p>



Image 1 - Burnt panel and wood above. The 30A 2-pole breaker is top left



Image 2 - Burnt Panel with 30A breaker removed. Note melted buss top left.



Image 3 - Construction Heater – 4800W



Image 4 -Siemens label on breaker installed to Homeline panel