

Incident Summary #II-845396-2019 (#12047) (FINAL)

SUPPORTING INFORMATION	Incident Date	April 29, 2019	
	Location	Summerland, BC	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 750V)	
	Impact	Qty injuries	0
		Injury description	None
		Injury rating	None
	Damage	Damage description	A main breaker in a residential panel burnt out requiring refurbishment of the panel buss work and replacement of the main breaker
		Damage rating	Minor
	Incident rating	Minor	
Incident overview	A 100 amp main breaker in a residential panelboard overheated and burnt out requiring replacement of the breaker and panel buss.		
INVESTIGATION CONCLUSIONS	Site, system and components	The breakers are manufactured using a common design type where the breaker contacts slip over protruding ends of the panel's buss assembly to facilitate a mechanical and electrical connection. This design helps secure the breaker in place and provides the flexibility required to use one panel with different rated breakers. The contact surfaces are small and susceptible to overheating if the contacts are misaligned while fully loaded to their rating.	
	Failure scenario(s)	A high electrical load was placed on the main breaker and arcing occurred at the contact points between the main breaker and the panel buss.	
	Facts and evidence	<ul style="list-style-type: none"> - The panel was a 125 amp maximum, 120/240 volt 1 phase combination panel. The main breaker was rated for 100 amperes (amp) - The panel supplies a regular house load as well as an AC unit, pool heater and crawlspace heater. This load would be close to the maximum breaker rating of 100 amp. - The 100 amp main breaker and panel buss showed signs of overheating, pitting and arcing. - The breaker contact surface and the panel buss mating surface overheated and burned out the breaker which cut (interrupted) the power supply to the residence. - The main breaker and panel buss were misaligned and did not provide full contact between the two points. This produced gaps between the two contact points. 	
	Causes and contributing factors	<p>The breaker and panel buss interconnection was unable to safely conduct the high current load placed on this breaker due to the condition of the breaker connection at the time of the incident.</p> <p>A contributing factor may be that the small contact surfaces of the breaker may be subject to overheating if misaligned.</p>	

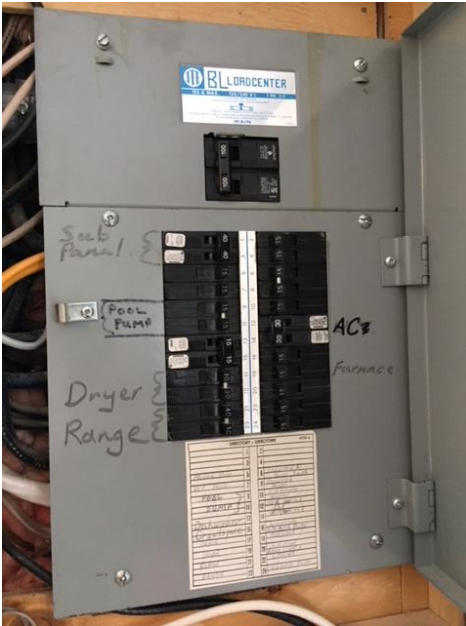


Photo 1: Subject panel board



Photo 2: Burnt out breaker



Photo 3: New breaker installed on refurbished buss work. Note slightly different colored buss material of lower component

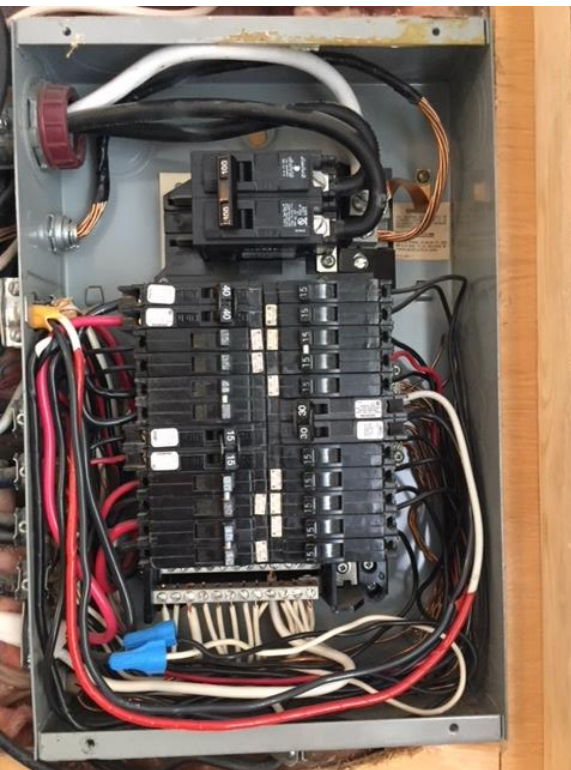


Photo 4: Repaired installation