Incident Summary #II-1377385-2022 (#27952) (FINAL)

SUPPORTING INFORMATION	Incident Date		May 17, 2022
	Location		Armstrong
	Regulated industry sector		Electrical - Low voltage electrical system (30V to 750V)
	Impact – Injury	Qty injuries	0
		Injury description	N/A
		Injury rating	None
	Impact – Damage	Damage description	An electrical fault occurred within the main breaker section of a 100-amp 120/240-volt dwelling service that de-energized power to the dwelling. The power outage created additional issues with loss of appliances and freezer/ fridges contents.
		Damage rating	Moderate
	Incident rating		Moderate
	Incident overview		A fault occurred within the Westinghouse 24-cct. main breaker section of the dwelling panel where overheated conductors were noted with insulation burnt away and the connections to the main breaker were melted/ destroyed.
INVESTIGATION CONCLUSIONS	Site, system and components		A 100-amp 120/240-volt main panel board in a dwelling provides power to the dwelling electrical system for lighting, heating, cooking, appliances, and general power usage through lower rated individual breakers installed to protect each circuit individually.
	Failure scenario(s)		• During the typical normal operation of the dwelling electrical it was not noted if there was any burning odour prior to the incident • All loads connected were existing and operational • Owner stated there were no electrical alterations in the time frame they purchased the home • Main breaker termination points.
	Facts and evidence		• Overheated copper consumer service conductors were found that had melted insulation burnt back approx. 4” + from the original point of connection, the lower conductor connection provided evidence of extensive overheating • the main breaker has the consumer service connection lugs melted away and no longer existed • the breaker connection to the panel busses were not noted to have overheating damage • there was no evidence of shorting or fire within the branch circuit portion of the panel with exception of what the slag created • there was melted slag found inside the bottom of the panel and some outside the panel located below the panel • there was heat/ smoke damage noted on the interior of the wooden hinged door covering the panel board • the conductors entering the top of the panel do not show signs of overheating • the meter base although enclosed in drywall making it difficult to access showed no signs of electrical damage • there is no evidence the panel is overloaded by viewing the branch circuit section • there was no evidence of condensation entering the panel from the installation to the consumer service conduit entering the top of the panel

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Causes and contributing factors	It is very likely the lower phase connection of the main breaker was loose (or faulty within the breaker itself) to the point where over time the overheating melted the conductor insulation to the point of failure. The breaker conductor terminations burnt/ blew off from the unfused consumer service conductors and melted and vaporized at the breaker termination.

Photo 1 - Existing utility connection point overhead

Photo 2 - Meter base in garage and close up of meter enclosed in drywall

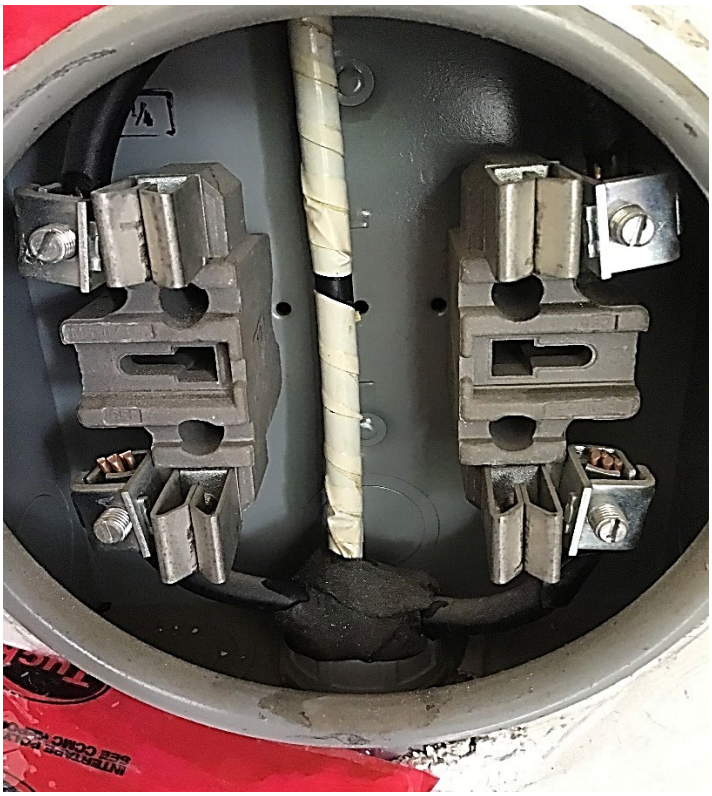

Photo 3 - Meter base interior

Photo 4 - Inside of wood framed door that covers panel, visible smoke located on door.

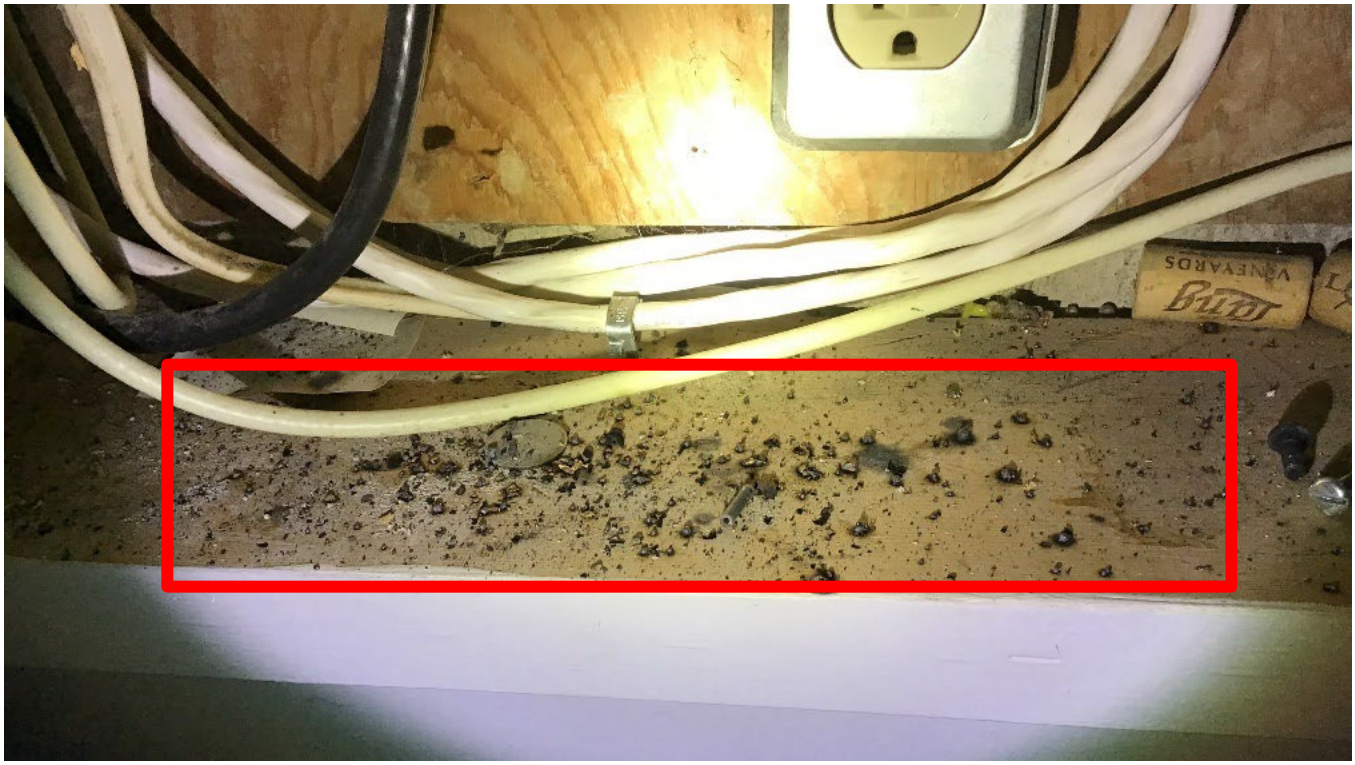

Photo 5 - Slag found below panel board.

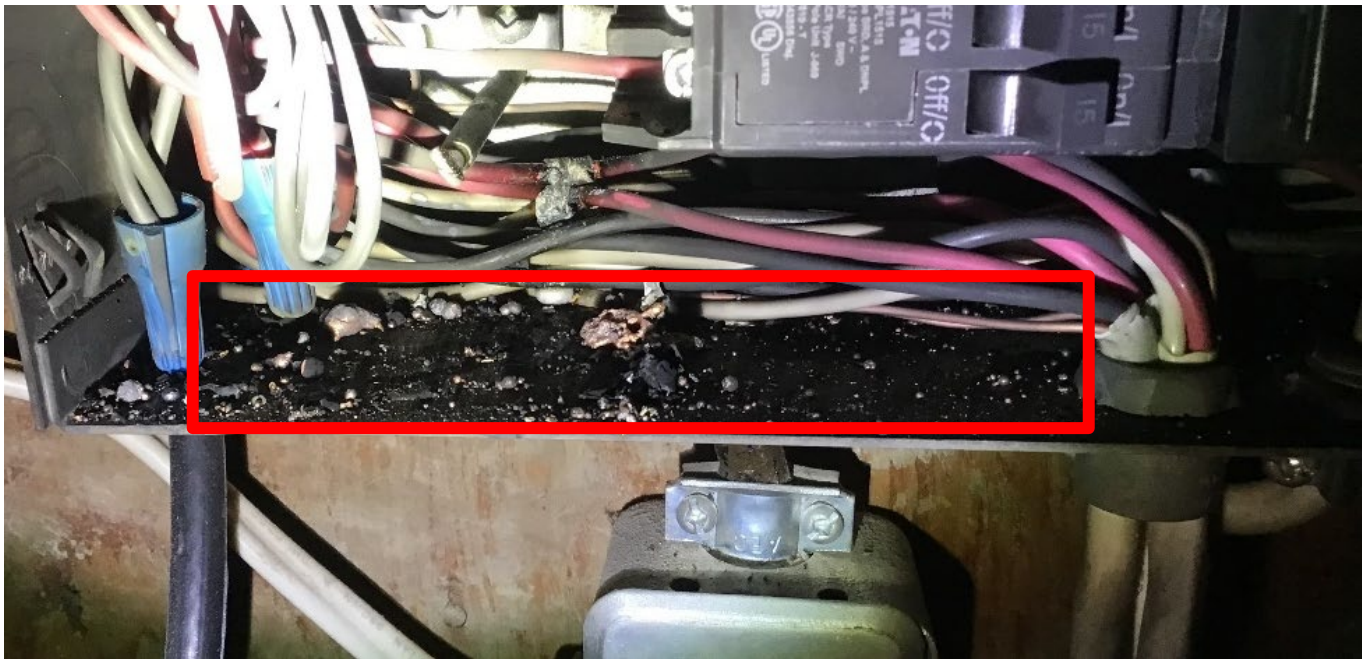

Photo 6 - Slag located inside bottom of panel board

Photo 7 - Smoke damaged can be seen on the outside of the main breaker section cover.

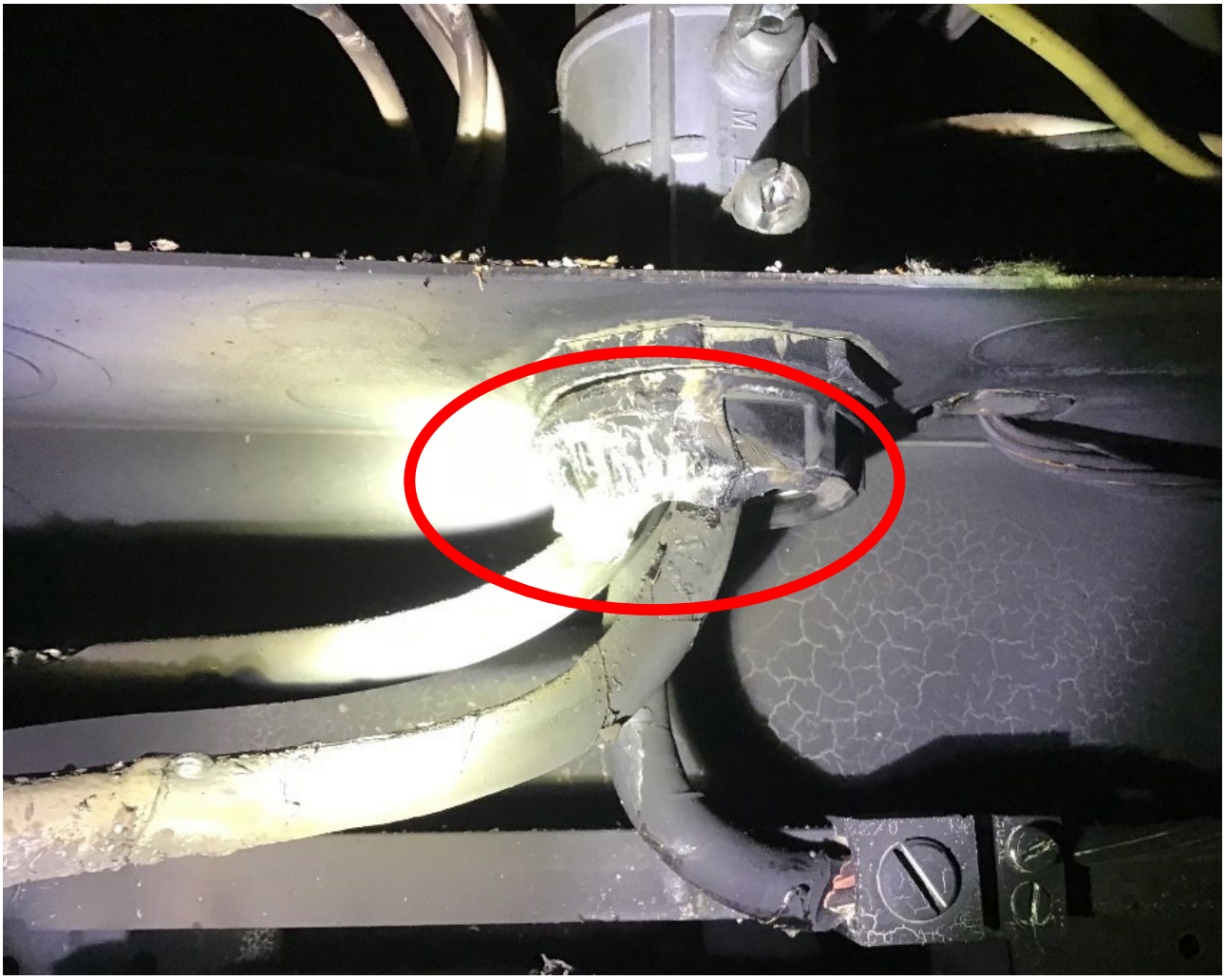

Photo 8 - Consumer service conductors entering top of panel. Visible melting of plastic bushing and smoke damage.

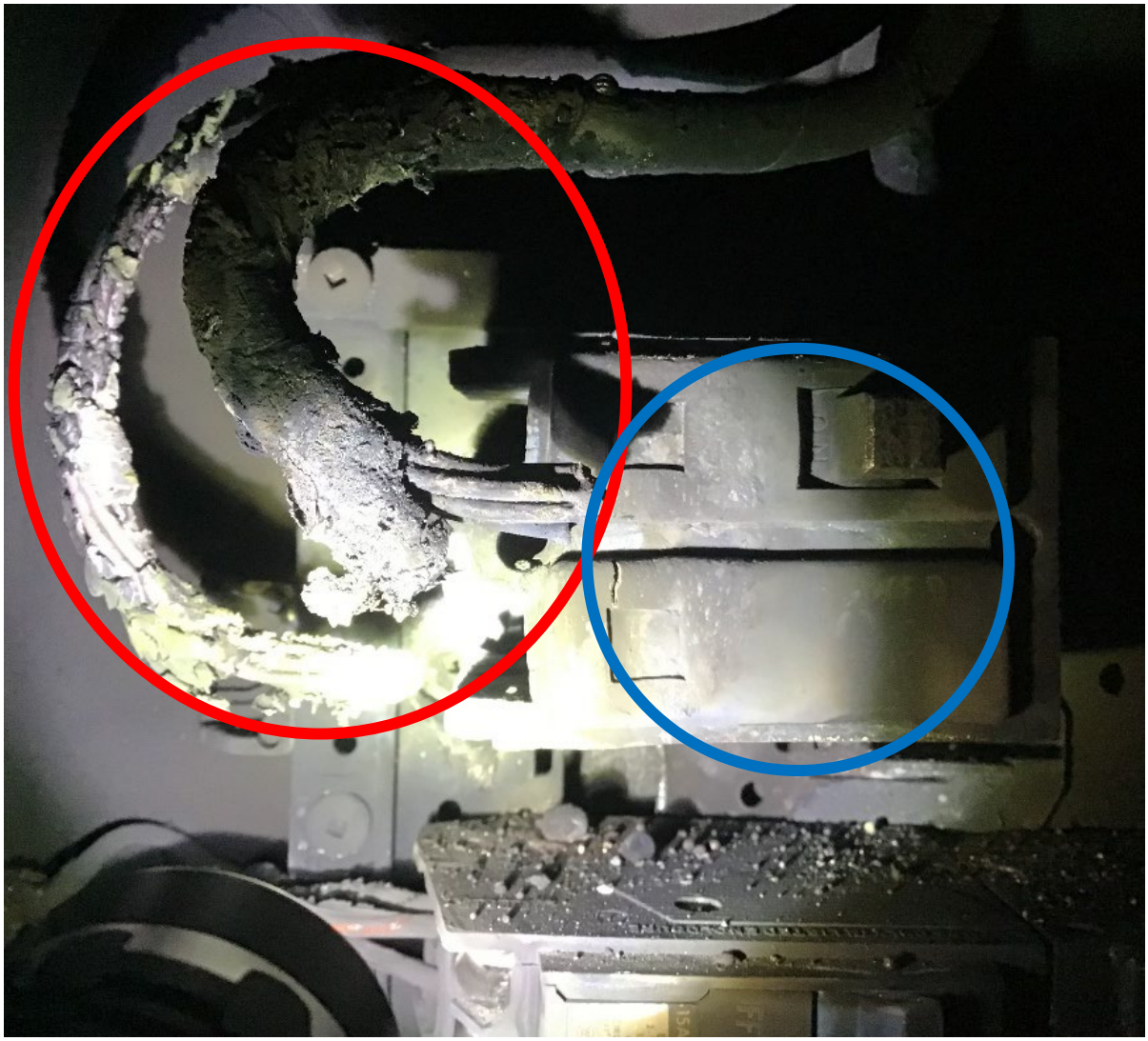

Photo 9 – **RED:** Burnt service conductors. **BLUE:** Main breaker and burnt

Photo 9 – Main Breaker section showing burnt service conductors and smoke damage throughout electrical panel.