Incident Summary II-682766-2018 (#7048) (Final)

SUPPORTING INFORMATION	Incident Date		April 30, 2018
	Location		Port Coquitlam
	Regulated industry sector		Electrical - Low voltage electrical system (30V to 750V)
	Impact – Injury	Qty injuries	None
		Injury description	None
		Injury rating	None
	Impact – Damage	Damage description	Electrical sub-distribution panel board and its electrical equipment components of conductors, bus bars and over-current devices (breakers) damaged from fire contained inside panel board enclosure.
		Damage rating	Minor
	Incident rating		Minor
	Incident overview		A fire occurred in an electrical distribution panel board.
INVESTIGATION CONCLUSIONS	Site, system and components		Approved distribution panel boards are approved for use, entry and connection of feeder and branch circuit conductors use and conductors must be terminated with correct tightness as per approved terminal torque tightness ratings specified for approved equipment. Other foreign materials, such as cardboard paper, are not approved to be installed or used within approved electrical equipment.
	Failure scenario(s)		A 100amp sub-distribution panel board with power supply feeder conductors loosely connected to this panel board 3-phase bus bars and its conductor termination lugs overheated and failed to carry the amperage of connected distribution loads resulting in an electrical fire. Foreign cardboard paper had been installed and caught fire inside panel board between bus bars, conductor terminal lugs and the inside backboard of metal panel board enclosure. Fire initiated due to the heat from the equipment loads connected to loosely connected and overheated feeder conductors and its terminal lugs.
	Facts and evidence		• Electrician on site reported that panel board bus bar conductor terminal lugs were found loosely connected and torqued inadequately onto feeder power supply conductors, (Photo 4) • Electrician on site reported and showed the evidence of fire damaged, overheated and mechanically damaged terminal lugs, • Electrician reported finding cardboard paper installed inside panel board between all bus bars conductor terminal lugs and the inside backboard of metal panel board enclosure, (Photo 7) • There was almost no fire damage outside of panel board • The electrical fire was contained to the top portion inside the panel board (Photo 4) • No other ignition sources were identified in the vicinity or location of the fire • No evidence of electrical operating permit

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Causes and contributing factors	The fire was likely caused by loose terminal lug connections on conductors. It is possible that if the paper hadn't been inside the panel board near the feeder conductor terminal lugs, there would not have been a fire. If the owner had obtained an electrical operating permit with a proper maintenance program, a qualified individual would have checked and possibly found and corrected feeder conductor terminal lug connections, ensuring proper tightness and also removed cardboard paper from inside panel board.

Photo #1 Main electrical room with 400amp 120/208 volt main service from utility hydro.

Photo #2 Main electrical room with sub-distribution feeder disconnects on right which feeds sub-panels on other side of this wall where electrical fire occurred.

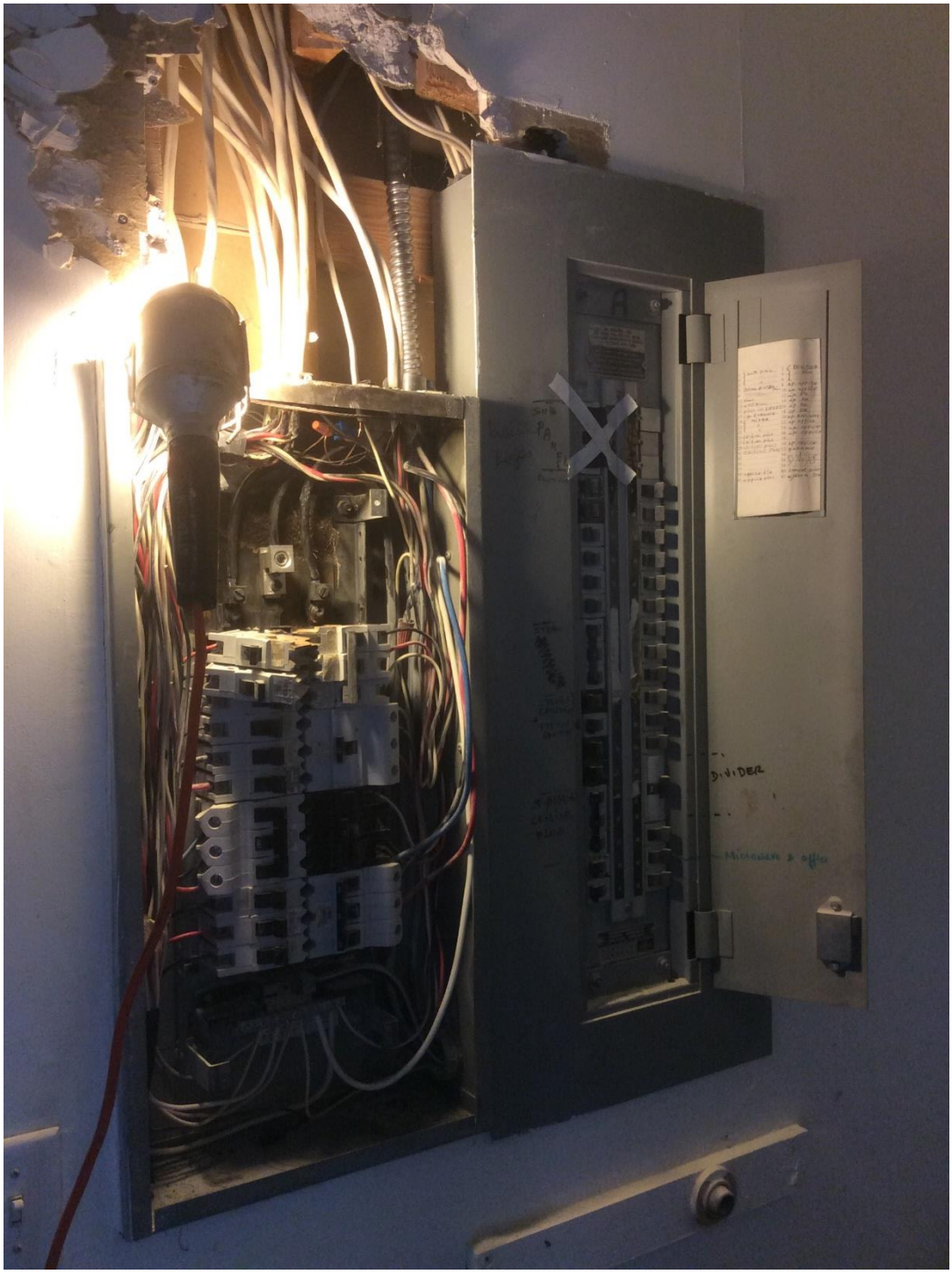

Photo #3 Sub-distribution panel on opposite side of wall where feeder disconnects are. Panel board on left is where electrical fire occurred. Panel board on left is fed from power from panel board on right via a breaker which has an “X” of white tape covering feeder breaker to leave OFF.

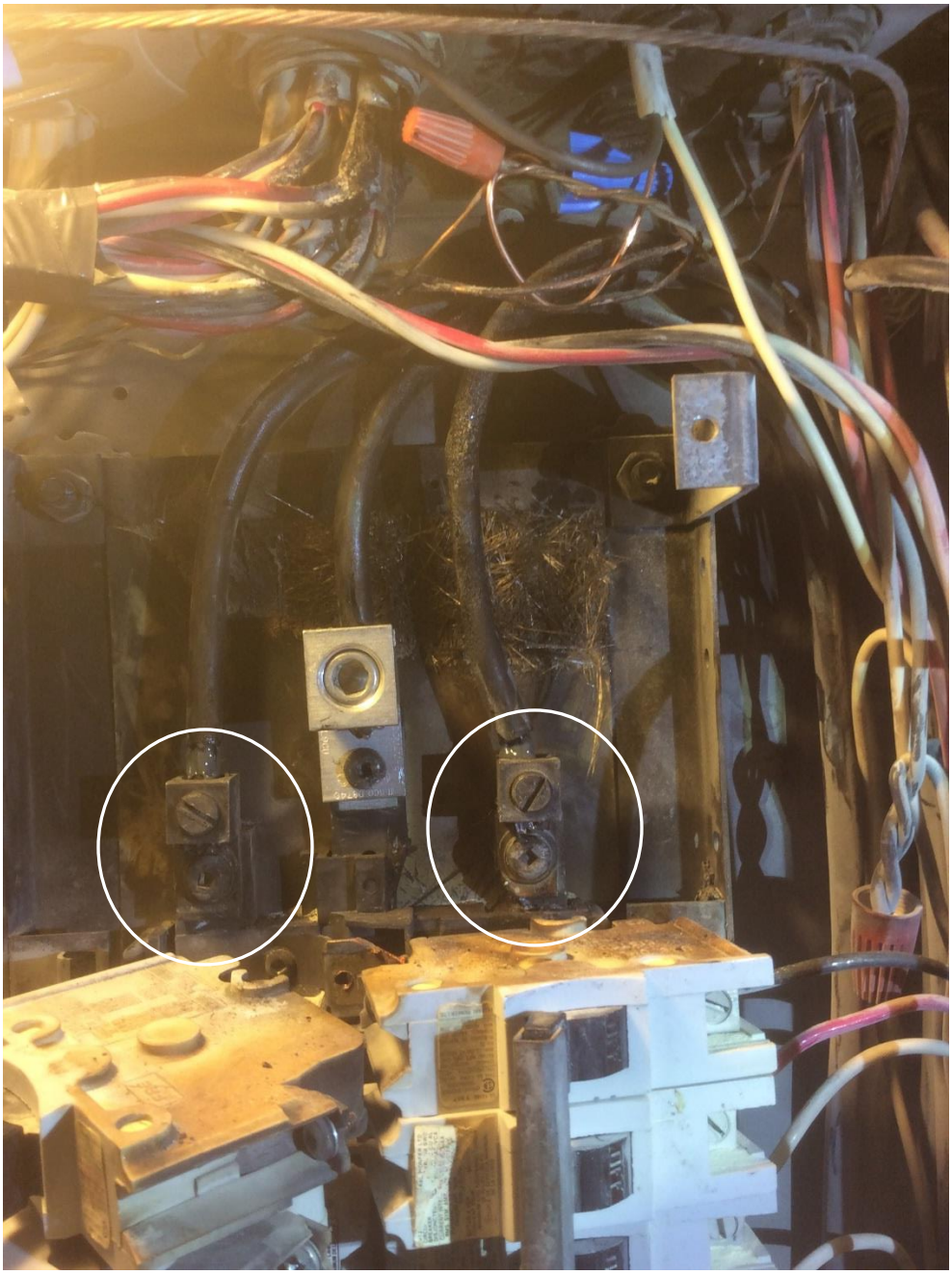

Photo #4 Panel board where electrical fire occurred in top portion of this panel at location of 3 feeder conductors terminated above the white breakers

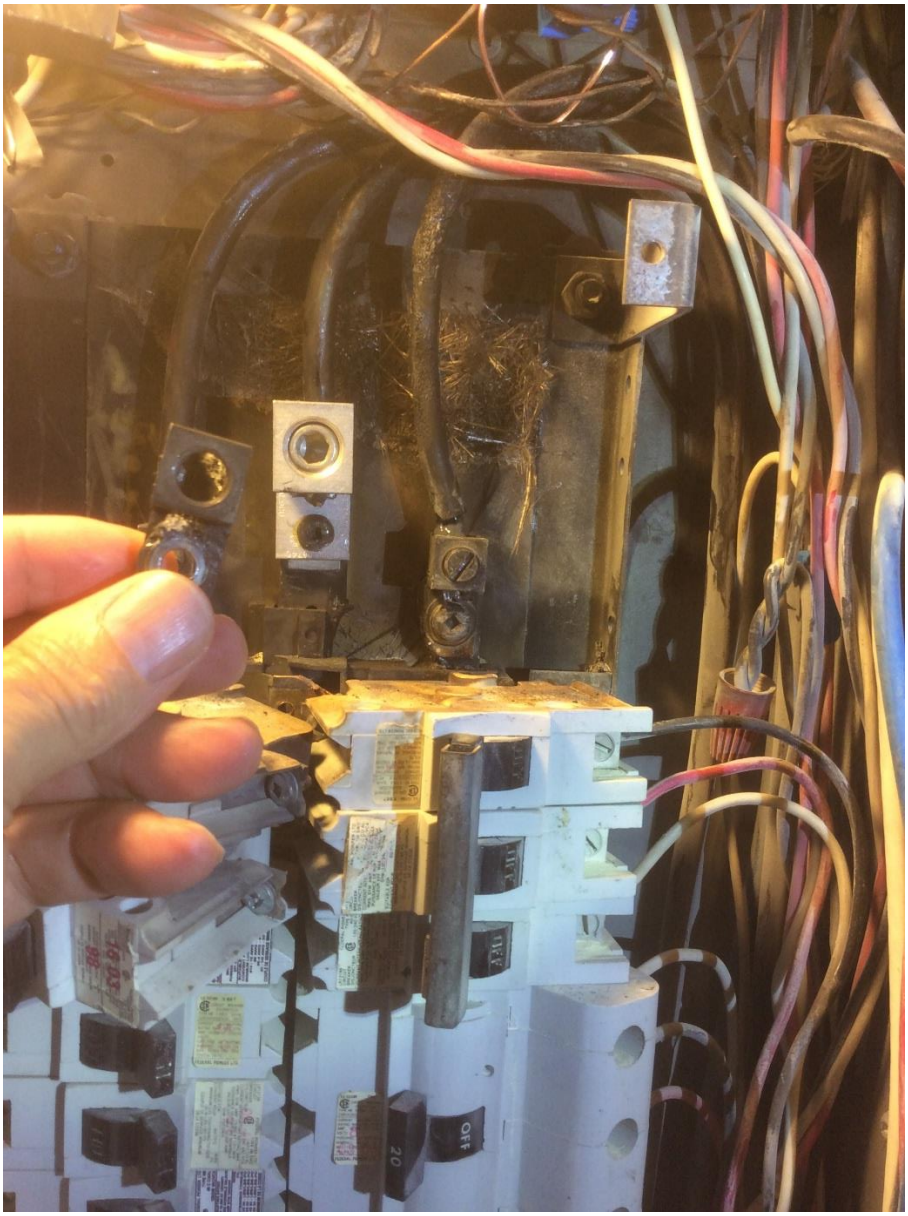

Photo #5 Person holding terminal lug in fingers is the one that was removed and replaced by shiny new terminal lug on middle phase of the 3 feeder conductor terminal lugs above

Photo #6 Remnants of the cardboard paper laying on the floor below panel board that electrician said was inserted beside terminal feeder lugs and paper caught fire near 3 phase terminal lugs

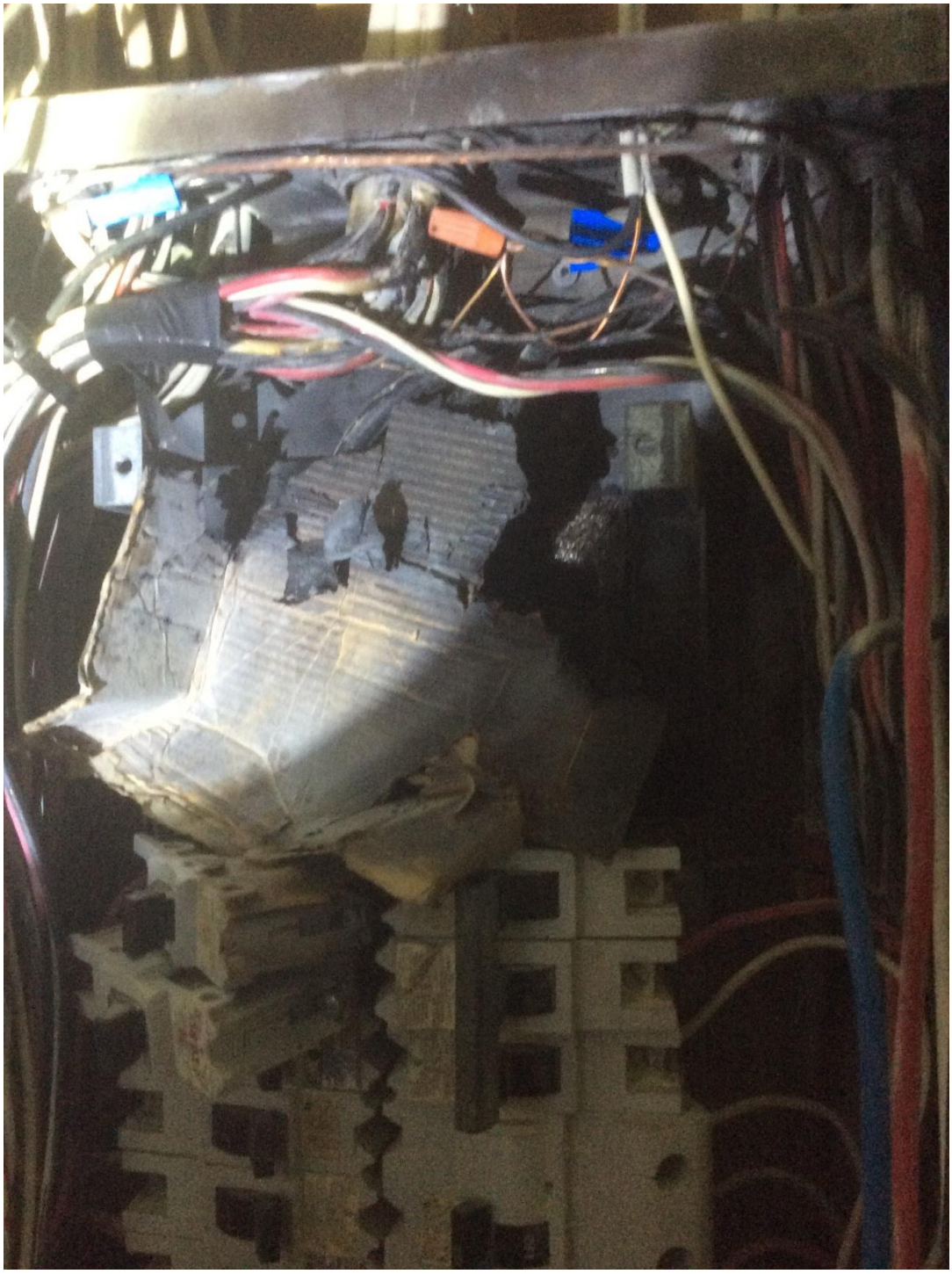

Photo #7 Picture of cardboard paper that is a mock-up and placed to show where cardboard was found installed and to exist and which caught fire near feeder terminal lugs that were loosely connected and overheated.

Photo #8 The previous existing terminal lug was removed and was replaced by electrician doing repairs as shown a shiny new terminal lug as compared to the other two burned and damaged terminal lugs.