Incident Summary #II-978216-2020 (#16586) (FINAL)

SUPPORTING INFORMATION	Incident Date		January 15, 2020
	Location		Spallumcheen
	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	Fire damage destroyed standalone shed housing electrical equipment for airport beacon signal system
		Damage rating	Major
	Incident rating		Major
	Incident overview		At a standalone structure that operates a beacon locator for the local airport houses electronic control/ monitoring equipment as well standard electrical installation with service, lighting, heating and ventilation components. It was reported that a suspected electric fan-forced heater mounted to the ceiling failed that caused the fire
INVESTIGATION CONCLUSIONS	Site, system and components		An electric fan forced heater in conjunction with a thermostat control is used to heat an area to maintain a safe operating temperature. The heater c/w a built in high limit switch designed to de-energize the unit during an over-temperature issue within the unit itself. The heater circuit is provided by a dedicated over-current device
	Failure scenario(s)		The branch circuit wiring left the electrical panel where the overcurrent device was installed and ran through the heavily fire damaged area where a remote thermostat was likely installed. From this heavily damaged area the branch circuit wiring continued to the force flow heater location. During a continued stretch of cold weather as low as -20 degrees Celsius, the requirement for the electric heater with an approx. 8'x8' standalone structure requires long operating times to maintain an acceptable operating temperature. The branch circuit overcurrent device for the force flow heater was still in the energized position and the area were the thermostat may have likely been located was where the fire damage appeared heavy.

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Facts and evidence	- Electrical service was intact with structural damage to building supporting mast, no evidence of source evident - The structure is a pre-built and Certified unit placed on site to house equipment, the structure is built with wood framed walls/ ceilings, insulated, armoured cable wiring and metal sheathing exterior, - the ceiling area was completely burnt away with little signs of structural remaining, - the wall next to the electrical panel has a section approx. 12” wide at base to 24” wide openings at top, the fire was involved within the interior of wall and burnt framing studs/ insulation within wall. Evidence provides the walls were opened by fire fighters - question asked if there was any electrical located at this lower section, answer from City Staff and Fire Investigators was no. - the electric heater was ceiling mounted and recessed into insulation, no evidence of surface mount housing noted, wiring connections lead to control by a wall mounted thermostat. No evidence provided - other electrical not noted as damaged from heat, lighting fixture hanging from ceiling with florescent lamps still in place - 7x single pole breakers noted as being in the tripped position, the 2-pole breaker for the heater was not tripped - review of heater included, fan not freely spinning, elements still in place - discussion with City staff lead to a report by technician the heater was not working correctly last October 2019, City staff checked Logbook and noted the repairs were never performed - greatest fire damage included on wall beside electrical panel board leading to excessive damage in the ceiling area, excessive heat discoloration of metal sheathing noted on exterior wall by service and roof .
Causes and contributing factors	- Photos provide by others; The evidence gathered with interview discussions leads to the electric heater circuit as likely the cause. No other electrical equipment was noted in badly damaged areas, remaining electrical equipment showed little fire damage noted.

Photos or diagrams (if necessary)

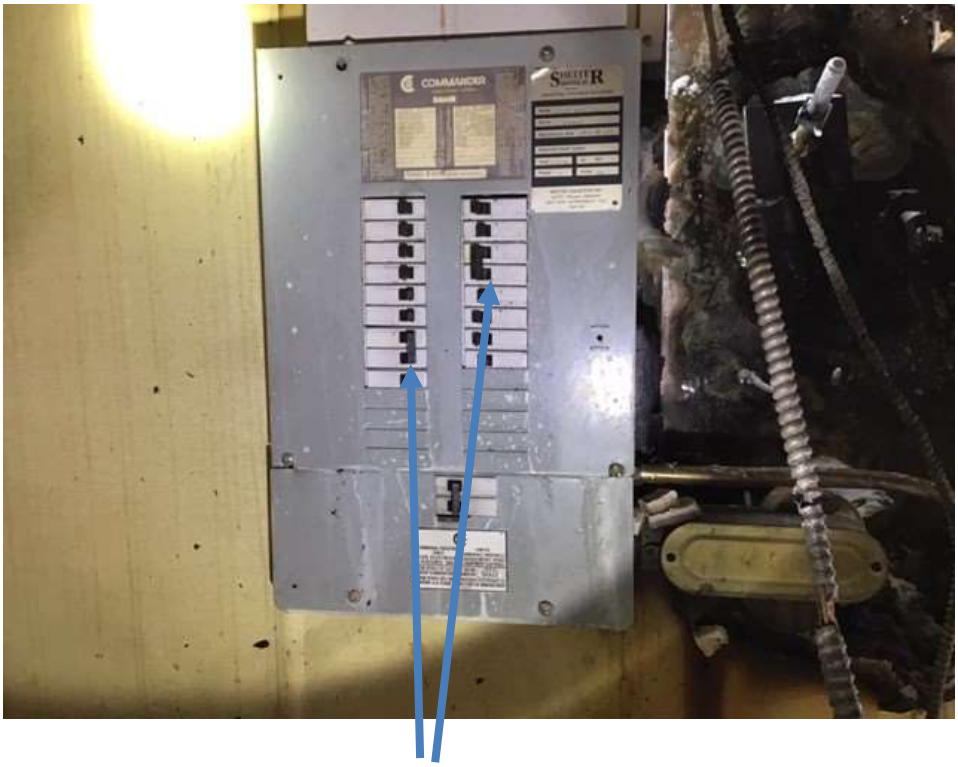
North side interior wall where main panel board is located. Heavily damaged wall.

Building structure, exterior view of north wall

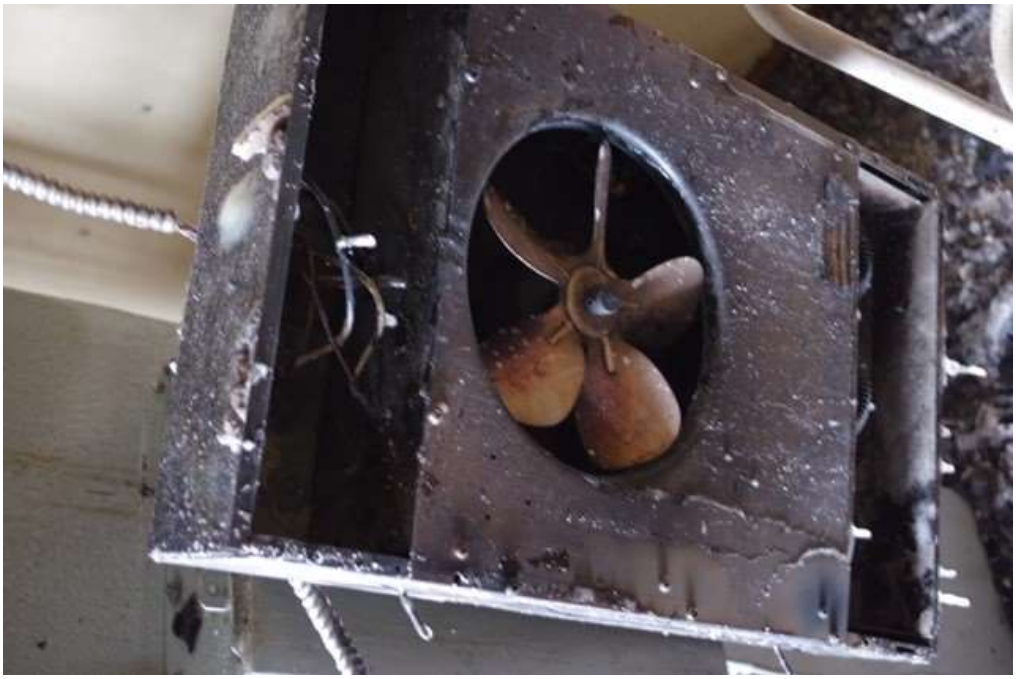
Looking at south-east interior wall

Entry view into structure, south wall/ ceiling area

Ceiling damage at approx. heater location



Electrical panel. 2 pole overcurrent devices in energized position



Fan forced heater, hanging from branch circuit wiring

Heater junction box, direct power to heater connection, no built in thermostat wiring

Badly damaged ceiling space approx. where heater was located

Wall located beside panel, interior of wall damaged, approx. location of wall thermostat

Wall opened by fire fighters below panel, damage to interior wall only