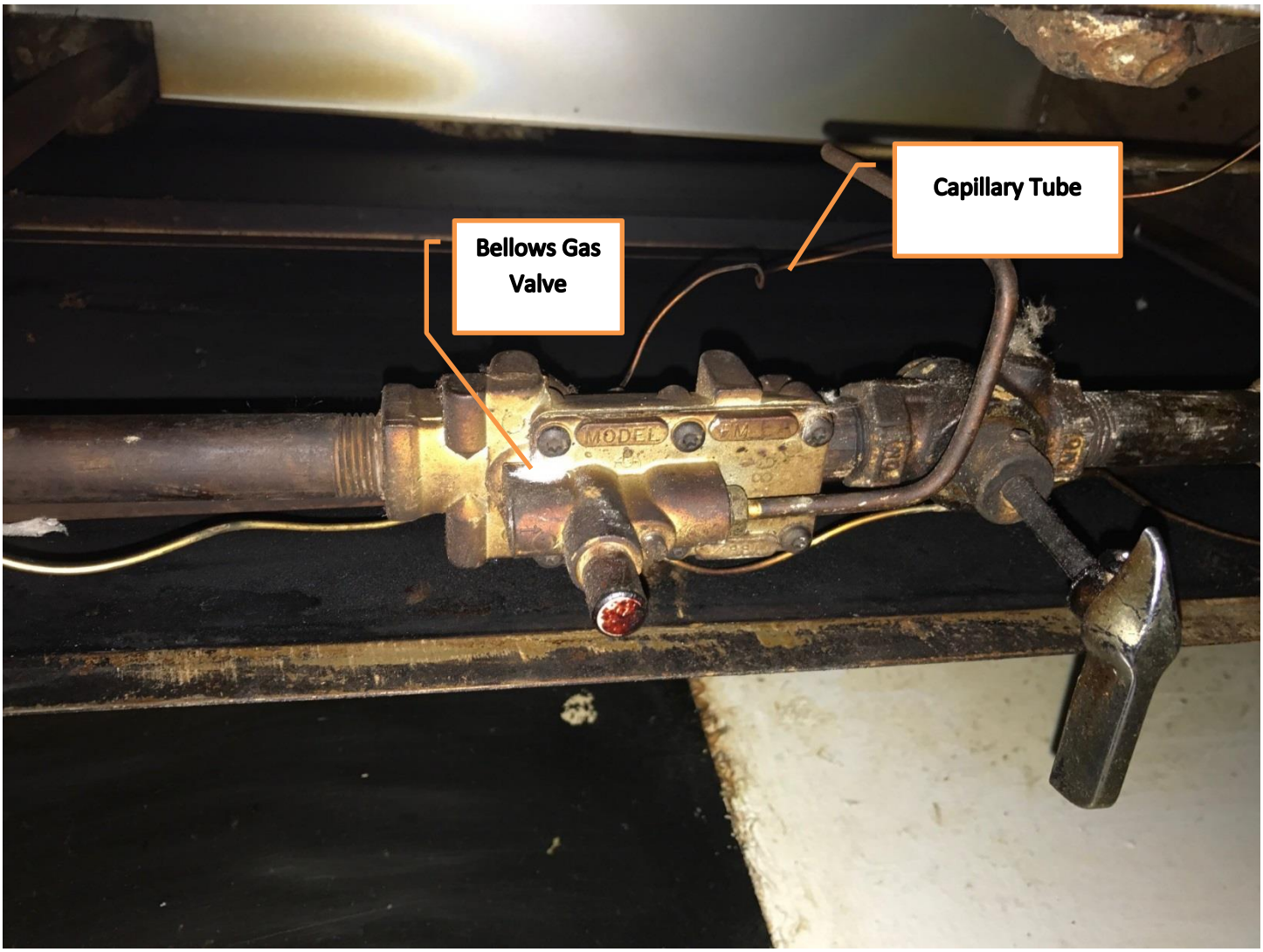
Incident Summary (#5619277)

SUPPORTING INFORMATION	Incident Date			May 28, 2017
	Location			Vancouver BC
	Regulated industry sector			Natural Gas system
	Impact	Injury	Qty injuries	1
			Injury description	One person sustained 1st and 2nd degree burns to left arm.
			Injury rating	**Minor**
		Damage	Damage description	Minimal damage to commercial gas oven and minimal fire damage to surrounding area
			Damage rating	Moderate
	Incident rating			Moderate
	Incident overview			The gas valve serving a commercial gas oven failed in the open position allowing gas to enter the oven combustion chamber without a pilot flame, resulting in the accumulation of gas within the chamber which resulted in a fire and minor explosion when the oven door was opened and the escaped gas found a source of ignition. An employee received 1st and 2nd degree burns to left arm.
INVESTIGATION CONCLUSIONS	Site, system and components			In normal operation the gas valve will remain closed unless a standing pilot flame is detected and the oven temperature dial is engaged. Once the temperature dial is engaged, the gas will flow through the valve and ignite via the standing pilot flame and supply gas to the main burner. If the pilot flame is absent the gas valve will remain closed. The gas valve itself operates with a standing pilot flame that is sensed via a capillary tube that expands and contracts with heat. This type of gas valve is referred to as a bellows gas valve. When the capillary is heated via the pilot flame the medium expands, opening the gas valve. If the pilot flame extinguishes the medium within the capillary will contract and close the gas valve.
	Failure scenario(s)			An employee attempted to turn on the gas oven by engaging the temperature dial. Unbeknownst to the employee the pilot flame had extinguished and the failed gas valve allowed gas to accumulate within the oven combustion chamber. Once the employee realized that the oven temperature was not increasing after engaging the temperature dial, they opened the oven combustion chamber door to investigate the cause, at which point the accumulated gas found a source of ignition and ignited, causing a fire and minor explosion within the kitchen. Other gas appliances within the kitchen are the likely source of ignition.
	Facts and evidence			Upon testing it was determined that the gas valve had failed in the open position. The oven was tested and the scenario described above was replicated, indicating that the failed gas valve was indeed the cause of the incident. Upon removal the gas valve was found to be stuck in the open position, which would allow the flow of gas without a safety pilot flame.
	Causes and contributing factors			The likely cause of the fire/explosion is the failed oven gas valve which allowed an uncontrolled volume of gas to enter and accumulate in the oven combustion chamber which in turn ignited when the oven door was opened and the accumulated gas found a source of ignition. The age of the oven and gas valve likely contributed to the failure.


BAKER'S PRIDE


Bellows Gas Valve
Temperature Dial


Capillary Tube
Bellows Gas Valve
MODEL