

Incident Summary #II-1660116-2023 (#43359) (FINAL)

SUPPORTING INFORMATION	Incident Date	January 12, 2024	
	Location	Oak Bay	
	Regulated industry sector	Gas - Natural gas system	
	Impact	Qty injuries	0
		Injury description	N/A
	Damage	Injury rating	None
		Damage description	Fire damage to the enclosure containing a direct vent fireplace. Fire damage to fireplace controls and valve train. Fireplace was a total loss due to removal as part of the investigation.
		Damage rating	Moderate
Incident rating	Moderate		
Incident overview	A fire started resulting in damage to the fireplace enclosure containing a direct vent gas fireplace in a home.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>A direct vent fireplace uses two pipes, one to take in all of the air for combustion directly from the outdoors and another to expel all of the flue gasses directly to the outdoors.</p> <p>The direct vent fireplace was installed into an enclosure with all clearances to combustibles maintained as shown in the installation instructions. Fireplace is prewired from the factory with final connection to the house wiring using an AC – DC adaptor.</p> <p>The fuel supply was a ½” black iron line @ 2 PSI with a shut off valve and a pressure regulator installed downstream with a copper tubing used for a final connection.</p> <p>Pyrolysis is the continued exposure to a heat source, gradually reducing the ignition temperature of a combustible material like wood.</p>	
	Failure scenario(s)	A fire originating in the fireplace plywood sub- base impinged on both the pressure regulator and the gas control valve resulting in a release of gas. Fire department noted that intensity of fire was diminished by 90% when the fuel supply was turned off.	
	Facts and evidence	<p>Site examination:</p> <ul style="list-style-type: none"> The fire appears to have originated under the gas train and control module. There was observed damage to the service regulator and gas control valve. The greatest amount of charring on framing members was observed in this location. The entire sub-base under the fireplace suffered fire damage as well. Service regulator was found missing both the seal cap and adjuster plunger. This could have resulted in the vertical release of 2 psi gas due to a diaphragm failure caused by excessive temperature. 	

	<ul style="list-style-type: none">• There was observed a smell associated with "burning dust" noted the night prior to the fire. The fireplace was turned off overnight and restarted the day of the incident. A subject matter expert retained by the insurance underwriter has attributed the most probable cause as Pyrolysis of the accumulation of dust under the fireplace.
Causes and contributing factors	It is possible that the long-term operation of the fireplace eventually caused pyrolysis of the combustible wood installed underneath that started a fire causing the damage.



Image 1 - Top left, top right, and lower showing plywood base with fireplace.

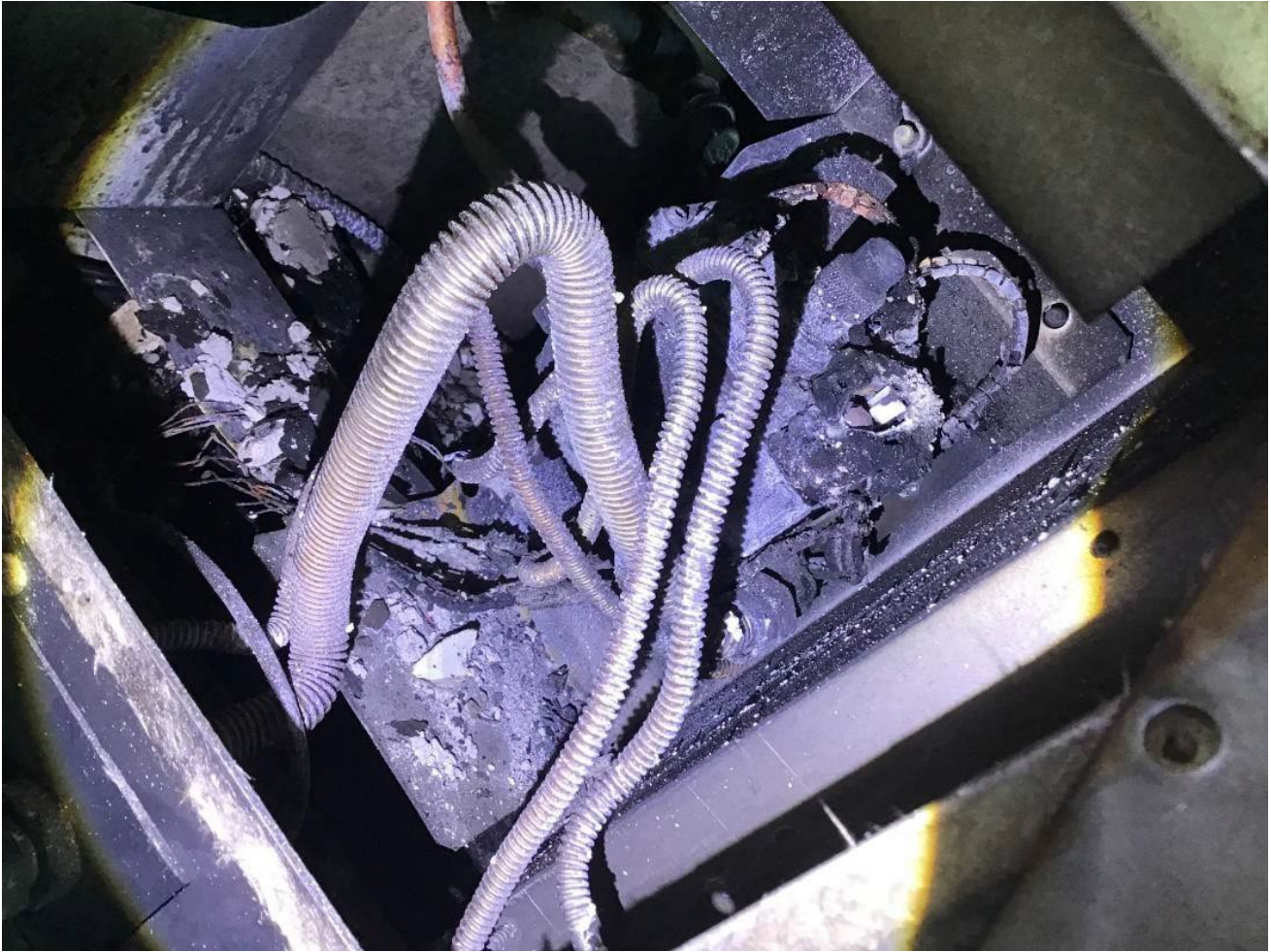


Image 2 - Right side view showing location of gas control valve.