

## Incident Summary #II-1312877-2022 (#25753) (FINAL)

SUPPORTING INFORMATION	Incident Date	January 11, 2022	
	Location	Revelstoke, BC	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 750V)	
	Impact	Qty injuries	0
		Injury description	N/A
		Injury rating	None
	Damage	Damage description	A fire destroyed the electrical wiring and panel board within single wall space of a dwelling where the electrical panel board is located
		Damage rating	Major
	Incident rating	Major	
Incident overview	A fire occurred within a wall space where an electrical panel and associated feeder and branch wiring was located destroying all the wiring within the wall space and charring the wood structure. Additionally, the electrical panel, interior wiring and overcurrent devices were also badly fire/ heat damaged. The power was disrupted to a dwelling unit making the area unsafe and unusable.		
INVESTIGATION CONCLUSIONS	Site, system and components	An electrical service provides a suitably sized electrical power feed from a fused service to a panel board located within a stand-alone residential dwelling structure with numerous circuits connected to individual over-current devices. Appropriately sized branch circuit over-current protection is designed to protect the conductors. Connected residential loads are designed to trip on overload and/or short circuit conditions to provide a safe operation of an electrical system.	
	Failure scenario(s)	The occupants, while at home, were interrupted when they noticed smoke billowing from an area located at the south end (within the dwelling) from the ceiling space within the washroom. It was later noted the fire ignited in the area where the electrical panel was in the adjacent room.	
	Facts and evidence	<ul style="list-style-type: none"> <li>- The only area damaged by fire was within a single wall space where the electrical panel and associated wiring was located.</li> <li>- The weather at the time in the area was not noted as having any extreme cold temperatures, there were cold temperatures noted in late December 2021. The owner stated they had a small plug-in electric heater plugged into the washer outlet to keep the chill out. The location was not near the fire origin.</li> <li>- The wiring noted in photos includes a mixture of original wiring that was stapled to wooden supports as well number of cables of both non-metallic sheathed cabling (NMSC) and armoured cables that were fished in the wall.</li> <li>- The area within the ceiling space above the panel as well as below structure where cables exit show little damage to electrical or structural.</li> </ul>	

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- Wiring above the panel had the non-metallic sheathed cabling jacketing up to just below the wall top plate completely burnt with a minor amount visible. The armoured cabling had the thermoplastic jacket burnt off with the metal armour exposed. Area above wall in ceiling space has heat damage evident but cabling insulation is still intact.
- The burn pattern of the structural portion shows deeper charring of the wood blocking near to bottom of the wall and the pattern went vertical with the majority running up the right side of the panel and into the upper portion of the wall. Building insulation is evident behind wiring above the panel and behind burnt cabling below the panel location.
- the heaviest structural burn is noted located at the lower section of the wall below the panel on a 'cross brace' between the vertical studs on either side. There are several cables that are strapped or fished tightly together in this area.
- Once the panel was removed it was noted the panel was installed on a sheet of plywood backing onto cross-member wood supports, the plywood is fire damaged mainly on the right and upper sides.
- Contractor removed panel and cover to provide photos of panel interior. There were no evident openings noted for an interior fault that may have occurred. The interior showed no evidence a fire starting in the interior of the panel. Wiring within the panel has extensive heat damage with most conductor insulation removed, however some of the conductors were noted to still have insulation.
- The owner stated they originally thought the fire was located in a washroom but soon realized it was just smoke billowing from the ceiling space and was originating from the adjacent room
- Owner has seen both mice and rats within the area of the home. No evidence was noted of rodent droppings or tracking marks in the area below or above the panel.

### Causes and contributing factors

It is likely the fire ignited due to damage to cables located within the wall space near the bottom of the panel as multiple cables were added and drawn past existing cables attached to wooden cross bracing within the wall. The space required to pull cables was limited. This tight space can easily damage cable insulation with rubbing with existing cables damaging the jacketing of the cable and conductor insulation. This could cause a weaker insulation value of the conductors that could have overheated and ignited.



Image 1 - Fire damage above and below the electrical panel and contained in the stud space of panel and cables

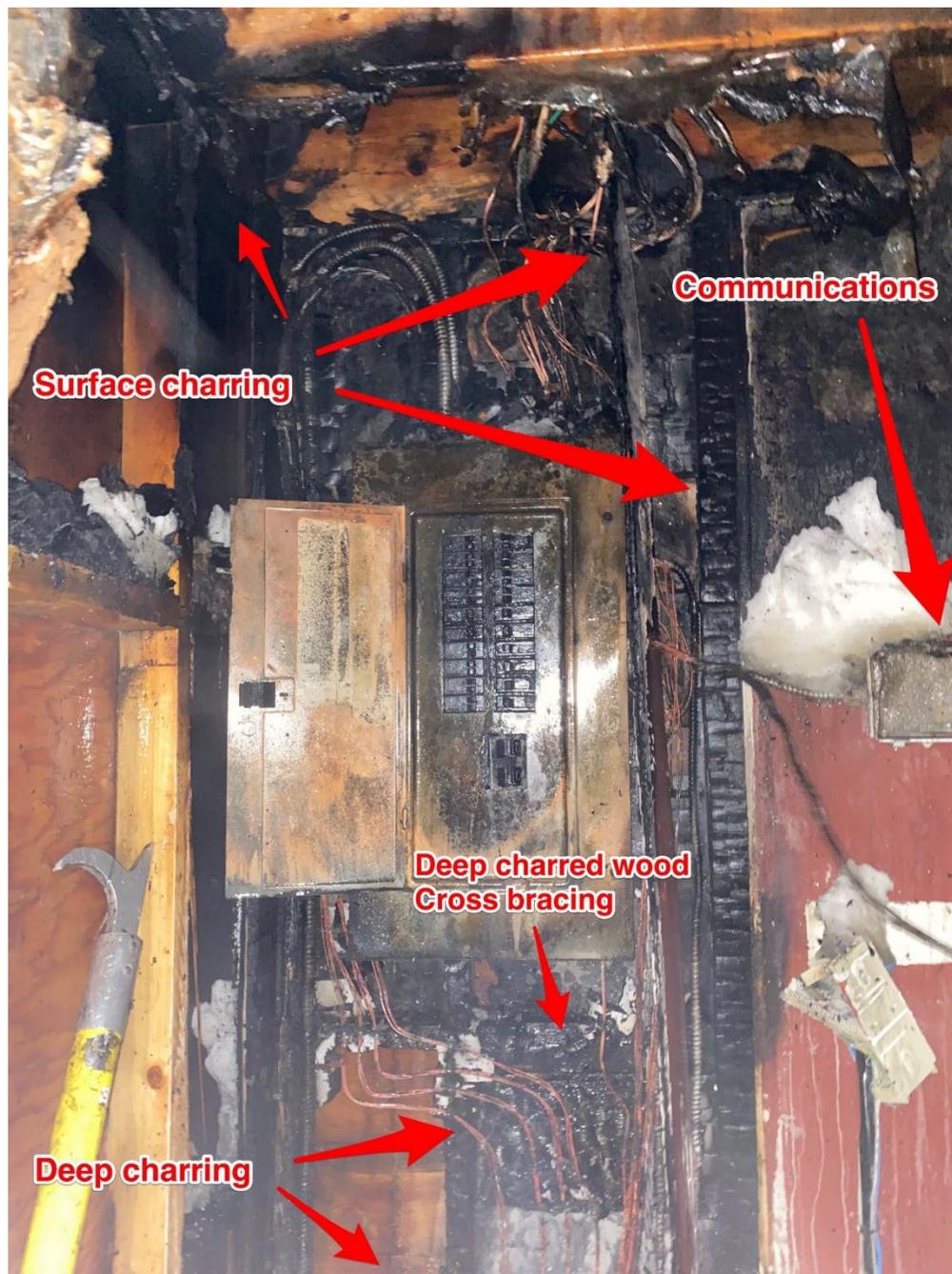


Image 2 - The upper thermoplastic armoured cabling was noted to have had the plastic covering melted away, but the armour is still intact. Upper ceiling area, non-metallic sheathed cables noted to still have areas with outer jacket still intact. Fire damage to structure at top end of wall not as evident as lower section of wall



Image 3 – The crawlspace below the dwelling unit where cables are drawn into the finished wall space below the electrical panel. No evidence of fire noted in this area.

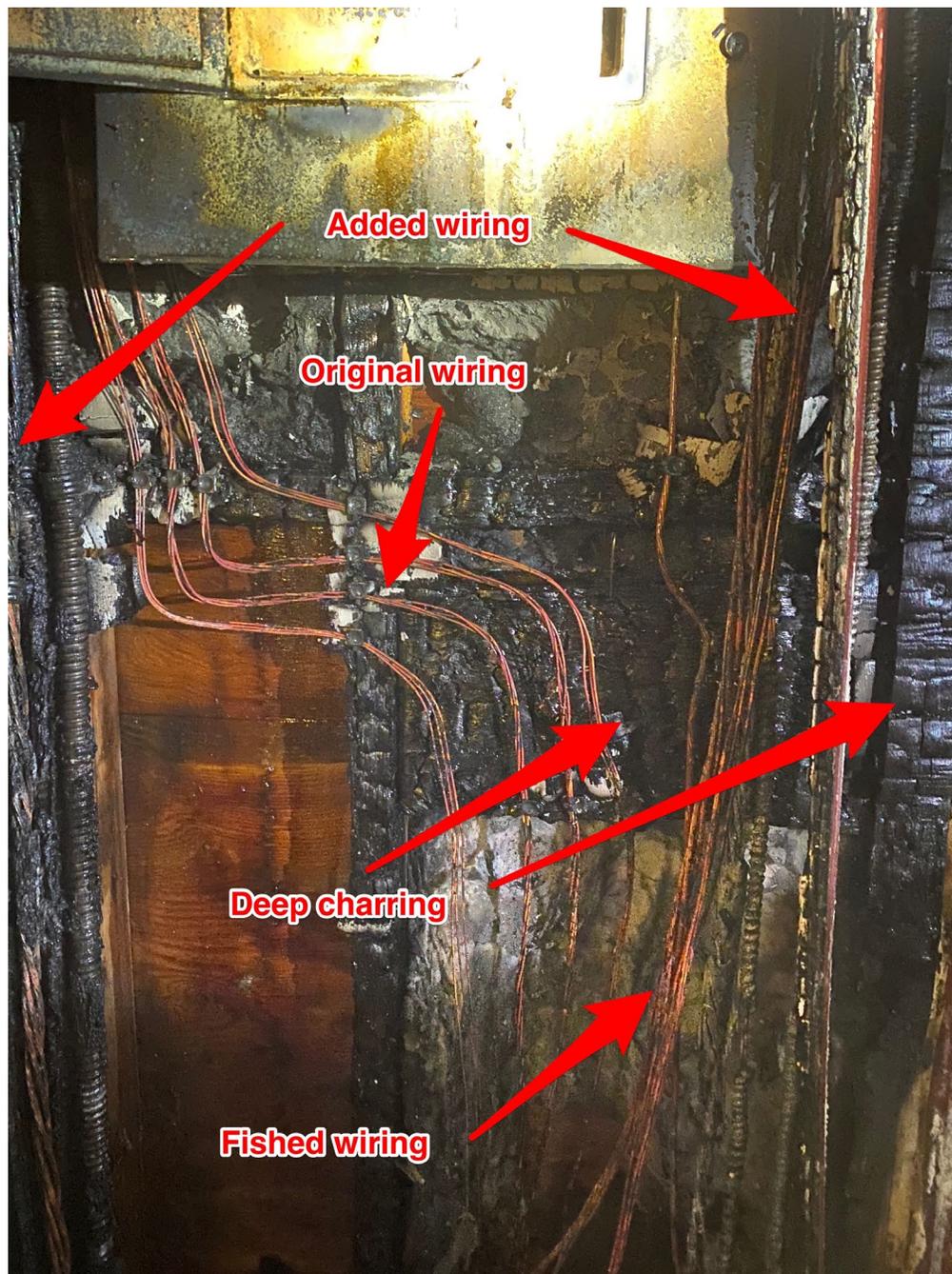


Image 4 - Lower wall area provides evidence of the deepest charring of the wall and damage to electrical cabling. There is evidence of a combination of original wiring strapped in position as well as multiple added 'fished' cabling installed. Fished cabling added seems to include non-metallic sheathed and metal armoured cables. Sections of armoured cabling seems to have armour damage.



Image 5 - Lower section of wall - Area had original wiring and fished cabling run through this area with some in a tight space. A cross brace was in place leaving little depth for added cabling installed. Some insulation is noted behind lower cross brace



Image 6 - Shows wiring was installed to cross bracing near floor, limiting available wiring space for fished wires. Insulation is in place behind wires in wall, behind cross brace, higher up the wall, below the panel

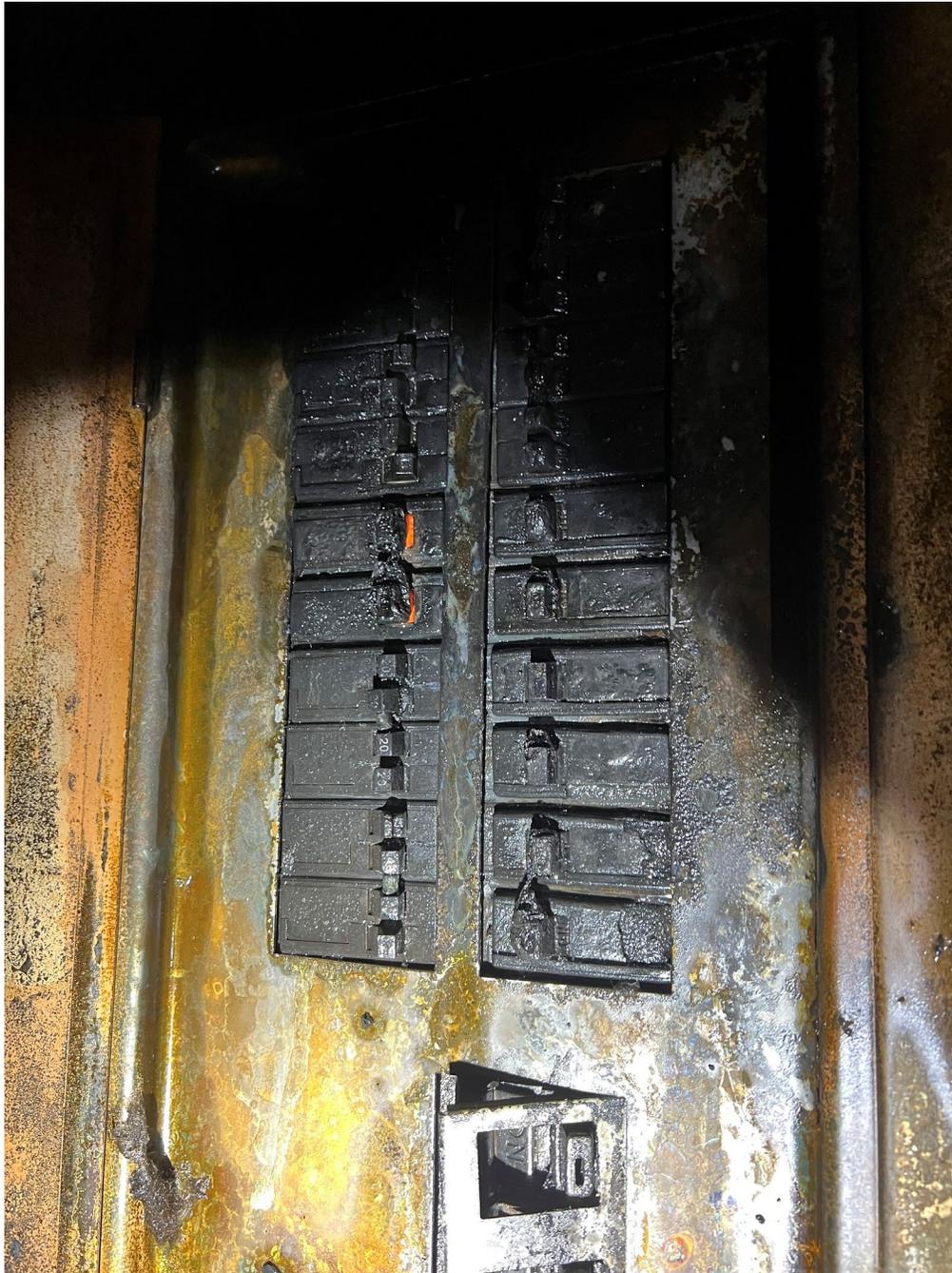


Image 7 - Front view of panel in place. No openings noted, no evidence of fault/flames exiting front of panel.

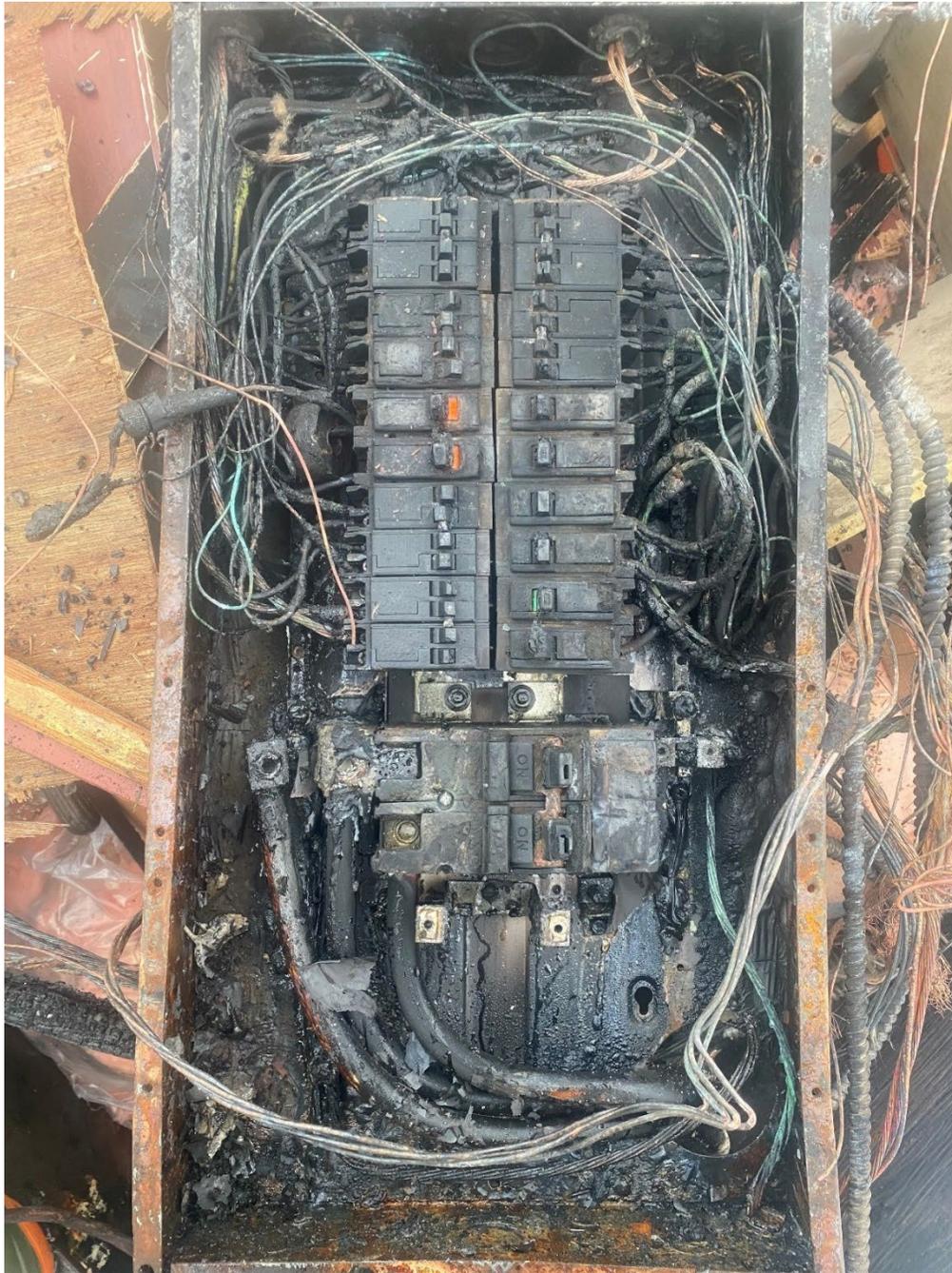


Image 8 - Panel removed and laid on ground showing inside of electrical panel. This shows the heat damage that occurred within the electrical panel. Not all insulation of electrical cabling has been melted away.

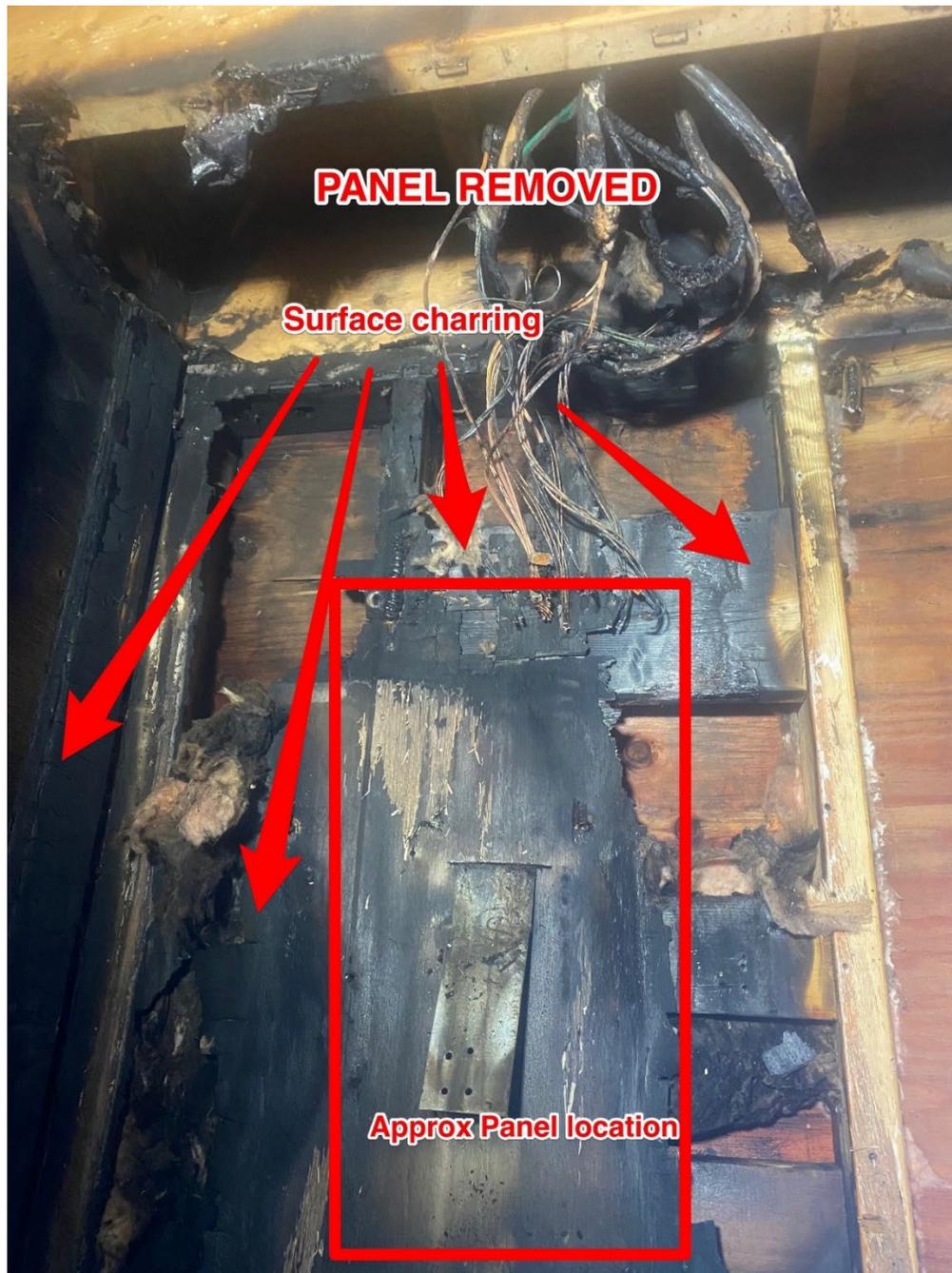


Image 9 -

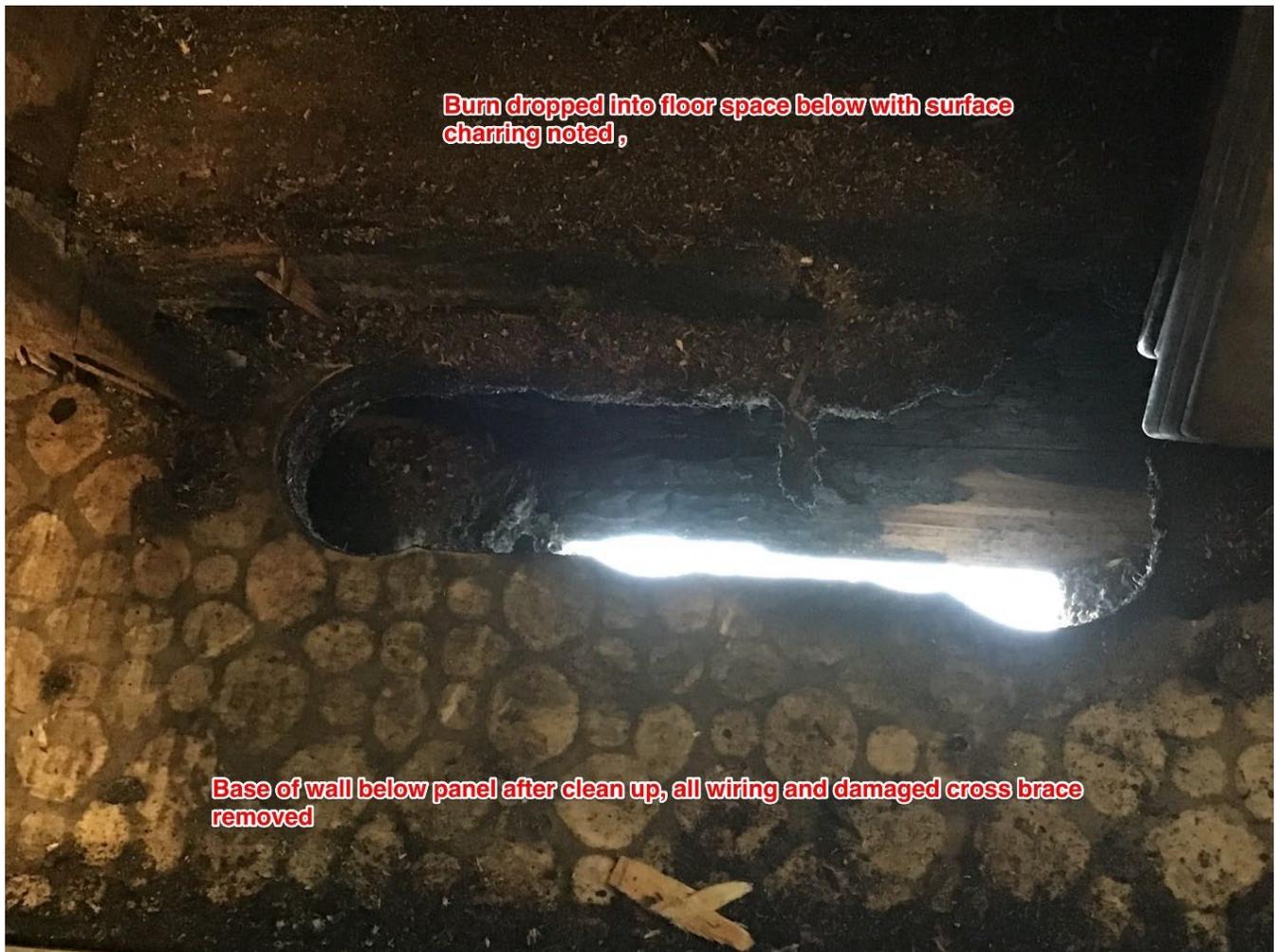


Image 10 - Post clean up view of floor, fire damage noted to enter lower floor space charring wood structure