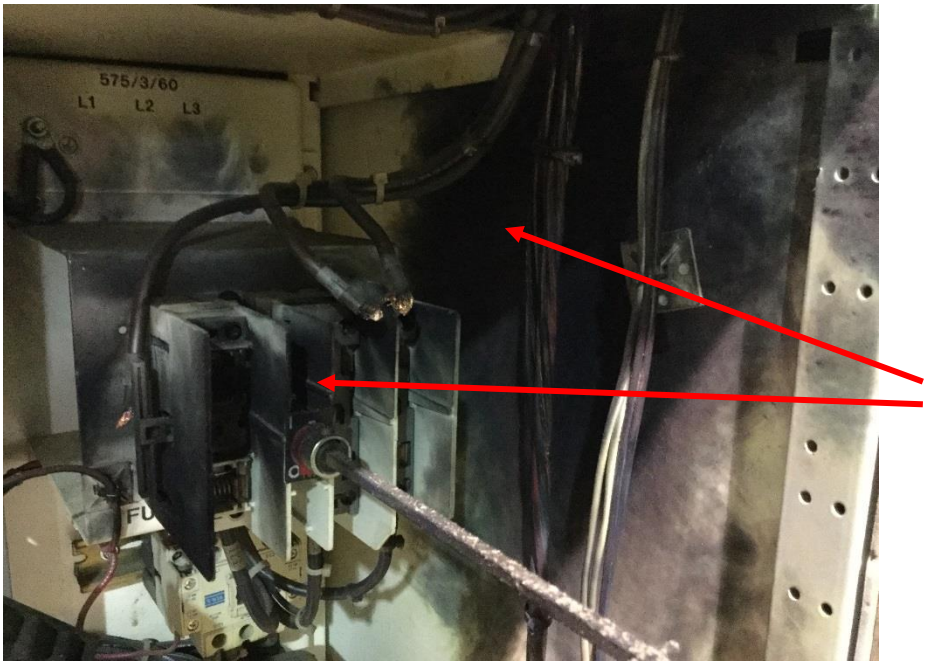
Incident Summary #II-905321-2019 (#15204) (FINAL)

SUPPORTING INFORMATION	Incident Date		September 12, 2019
	Location		Prince George
	Regulated industry sector		Electrical - Low voltage electrical system (30V to 750V)
	Impact – Injury	Qty injuries	1
		Injury description	Minor arc flash burn to left hand
		Injury rating	Minor
	Impact – Damage	Damage description	Minor arc flash damage to VFD cabinet
		Damage rating	Minor
	Incident rating		Minor
	Incident overview		An electrician was going to replace the fuse holder in a VFD cabinet. The line side terminals were loosened to remove the conductors, the local disconnect was off but the main motor control center disconnect was still on so the conductors were still energized. When the electrician tried to remove the wires an arc flash occurred damaging the individual's hand and the inside of the cabinet as shown.
INVESTIGATION CONCLUSIONS	Site, system and components		The Sawmill would have motors for conveyors and for feed rolls that feed logs through the machines. These motors can be driven by Variable frequency drives (VFD) to control the speed of the logs as they are cut by each machine. Some machines can have a complete motor control center full of variable frequency drives due to the large number of motors on the machine. Lockout is accomplished at two locations, Local, at the VFD cabinet, and at a feeder disconnect that removes all power off the MCC. Local disconnects only remove power from the cabinet they are mounted on.
	Failure scenario(s)		The electrician had turned the local disconnect off then proceeded to loosen the line side terminals of the fuse holder. The local disconnect would not disconnect power off the line side of the fuse holder. As the electrician pulled on the conductors they arced as they contacted the individual's hand and fuse mounting hardware.
	Facts and evidence		The electrician was troubleshooting the Canter VFD for the centering rolls and found a problem with the fuse holder. The plan was to replace the fuse holder during some down time. When the time came to remove the fuse holder, the electrician turned the local disconnect off for the cabinet and disconnected the line side of the fuse. This shorted the conductors creating an arc flash, injuring the electrician's hand and damaging a small area inside the cabinet.
	Causes and contributing factors		It is very likely the electrician did not test the line side of the fuses for voltage. When the electrician turned off the disconnect for the VFD cabinet, the electrician likely assumed all power was removed from the cabinet wiring.

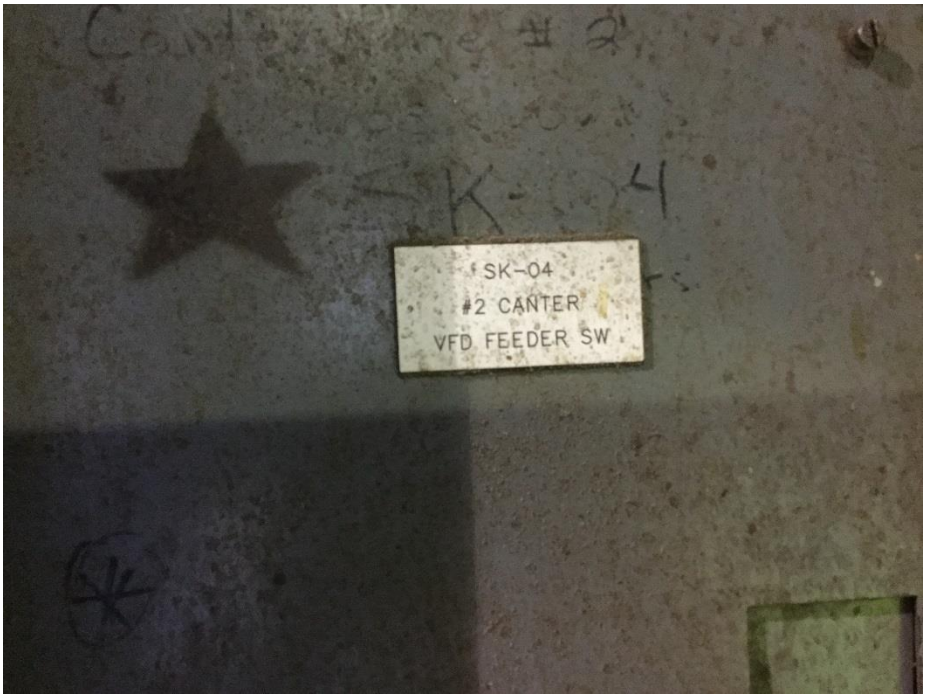
VFDs on MCC SK-04 disconnect



There is minor arc damage to the inside of the switch.

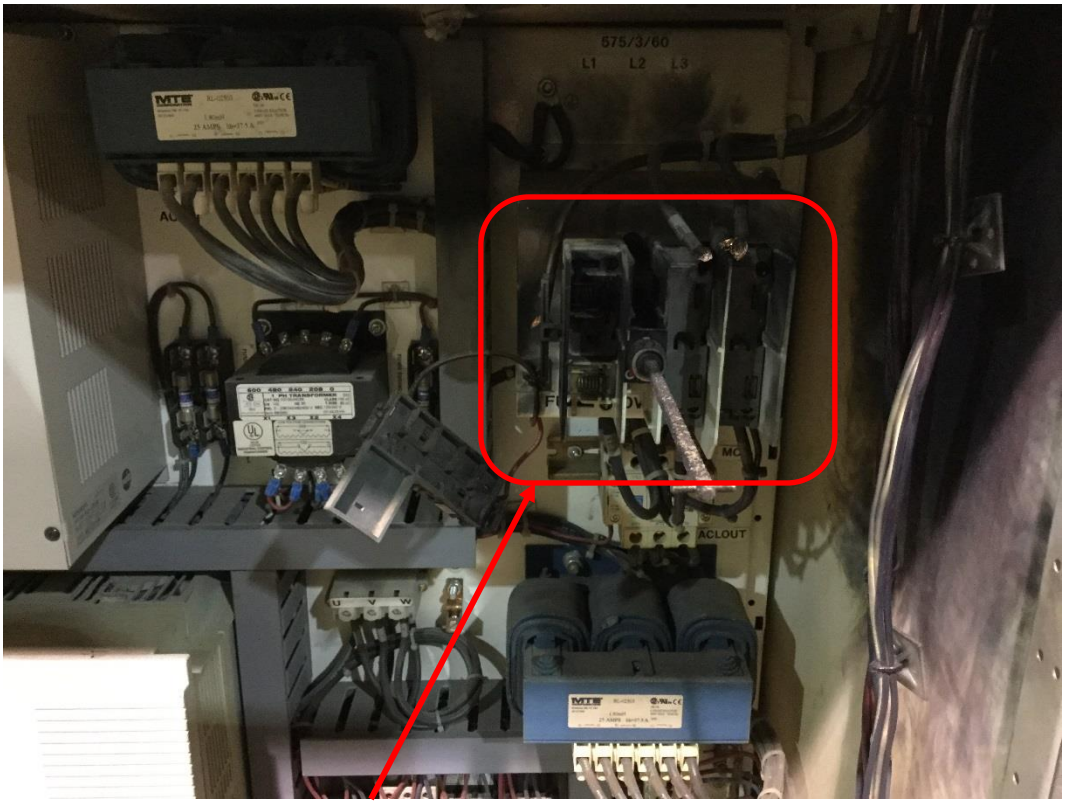
The electrician loosened the terminal screws on the line side conductors of the fuse holder and pulled them off the terminals while still energized resulting in the damage seen here

Inside the VFD cabinet



This is the switch that should have been used to lock out SK-04 MCC.

There was no other damage to the VFD cabinet



The fuse holder that the electrician was going to remove