

Incident Summary #II-1207159-2021 (#22389) (FINAL)

SUPPORTING INFORMATION	Incident Date	June 7, 2021	
	Location	Trail, BC	
	Regulated industry sector	Electrical - Low voltage electrical system (30V to 750V)	
	Impact	Qty injuries	1
		Injury description	One person received an electric shock
		Injury rating	Insignificant
	Damage	Damage description	A multi-conductor flexible cord type cable that was secured to the guardrail of a swing-stage elevating platform separated: all conductors and exterior cable jacket severed
		Damage rating	Minor
	Incident rating	Minor	
	Incident overview	Workers secured a flexible cord to an elevating platform guardrail by wrapping the cord around the horizontal rail prior to entering the platform to perform industrial cleaning. The cord was energized by facility qualified persons. The workers entered the platform, proceeded to operate the platform control to elevate the platform to the work area. As the platform was elevating, the flexible cord separated at the area where it was wrapped around the guardrail. As the energized section of the cable fell to ground, an exposed energized conductor contacted the metallic guardrail momentarily energizing the guardrail a worker was in contact with.	
INVESTIGATION CONCLUSIONS	Site, system and components	A swing-stage style elevating platform is fitted with manual and electrical controls operated by workers on the platform to elevate or descend the platform. The electrical controls are supplied from a 20ampere, 240volt AC, single phase power supply delivered to the platform by a flexible multi-conductor flexible cord type cable, sized 12AWG. The cable is routed from facility sub distribution equipment, controlled, and protected by a 20A circuit breaker. The flexible cable is secured to and energized from the sub distribution equipment by facility qualified persons. The load end of the flexible cable is supplied with a twist-lock style cord end, cord connected to the electrical features on the swing stage by the individuals operating the swing stage platform. A flexible cable is required to accommodate the vertical movement of the platform.	
	Failure scenario(s)	The flexible cord type cable was secured to the swing stage platform guardrail by wrapping and knotting the cable around the top horizontal section of the guardrail. The flexible cord was provided by the contractor operating the platform and was used repeatedly at various work sites prior to the incident. Wrapping or knotting the flexible cord around the guardrail is a typical method of securing the cable, however repeatedly wrapping, or knotting the cable along the same section of the cable imposes a strain on the cable jacket and conductors when the cable is exposed to bend radius that is less than the minimum bend radius the cable and conductors are designed to safely be exposed to. A facility electrician energized the cable when informed that the cable was secured, the cord ends connected, and the platform was ready for use. Workers entered the platform and proceeded to operate the electrical controls to elevate the platform. The platform elevated approximately 5m above the area where the remaining loops of cable were staged. As the platform neared the elevated work area the weight of the suspended cord increased. The flexible cord separated along the length where the cable was wrapped and knotted. An exposed, energized conductor contacted the guardrail as the energized section of the cable fell	

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	<p>away from the platform. One of the two workers aboard the platform was in contact with the guardrail and sustained a minor electrical shock as a result.</p>
<p>Facts and evidence</p>	<p>Safety officer examined the elevating platform and the severed cable and noted that the cable separated along a section of the cable that is repeatedly secured to the platform by wrapping and knotting. Safety officer also noted a discolored area on the guard rail like a ground fault arcing mark and is likely the location where the energized conductor contacted the guard rail as the cable fell toward grade. Safety officer noted that both the suspended, severed cable and the platform electrical control interconnecting cables are wrapped and knotted about the platform guardrails and not supported and secured by approved methods as prescribed by the BC Electrical Code.</p> <p>Safety officer was unable to obtain photographs from the incident site as the facility does not permit unauthorized photography on the facility property. The safety officer was able to review an internal incident investigation report, performed by an on-site contractor managing the equipment installed at the incident site. The internal incident investigation details and photographs support the observations, summaries, and conclusion of the safety officer.</p>
<p>Causes and contributing factors</p>	<p>The cause of the incident was likely a result of:</p> <ul style="list-style-type: none"> - the workers operating the platform failing to examine the cable prior to use - repeated wrapping, unwrapping, and knotting the cable when securing it to the elevating platform compromised the cable structure and integrity - an acceptable and approved cable supporting method was not used