

## Incident Summary #II-768291-2018 (#9315) (FINAL)

SUPPORTING INFORMATION	Incident Date	October 22, 2018	
	Location	Whistler	
	Regulated industry sector	Passenger ropeways - Above surface ropeway	
	Impact	Qty injuries	1
		Injury description	Collapsed lung, multiple rib fractures
		Injury rating	Major
	Damage	Damage description	NA
		Damage rating	None
Incident rating	Major		
Incident overview	<p>During the construction of an above surface ropeway a worker was assisting in the install of a communication cable onto the ropeway towers. During the process of pulling the communication cable over the towers the cable became jammed on some guide equipment. A subsequent release of the jammed cable and the resulting equalization in tension of the cable caused a line reaction in which the cable was whipped upward nearby the worker. The worker became entangled with the cable causing them to be lifted approximately 3m-4m and the dropped onto hard ground.</p>		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>Incident occurred during the construction process of an above surface ropeway. At the time the incident occurred the installation of ropeway tower structures had been completed. The task that was being conducted was the install of a communication cable which runs along the top of the towers down the entire length of the ropeway lift line.</p> <ul style="list-style-type: none"> <li>• The communication cable was being installed by use of a straw line (a lighter fiber line used to pull the heavier communication cable line).</li> <li>• The straw line was pulled by an engine powered winch (operated by a human operator) located at the top of the ropeway (communication cable is being pulled up the ropeway lift line). The straw line is wound back onto the winch spool as the straw line/communication cable is pulled up the ropeway lift line).</li> <li>• The straw line (fiber rope) is spliced to the communication cable that is unwound from a spool that was setup at the bottom of the ropeway lift line. (Figure 1, Figure 2)</li> <li>• The spool at the bottom of the ropeway lift line is provided with a braking system which during the cable install is operated by a human operator (operator controls the rate that the communication cable unwinds itself from the spool as the winch pulls straw line/communication cable uphill).</li> <li>• Communication between workers/operators involved with the cable install is through the use of VHF radios.</li> </ul>	

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	<ul style="list-style-type: none"> <li>Guidance to the cable and straw line is provide by a series of roller stringing blocks temporally mounted along the ropeway lift line. (FigureS 3 and 4)</li> </ul>
Failure scenario(s)	<p>The straw line splice to the communication cable became bound up on one of the intermittent roller stringing blocks during the install (while pulling cable uphill). Slack in the communication line developed downhill from the roller string block as tension uphill continued to be applied by the engine powered winch. The subsequent release of the bound-up splice caused a sudden equalization in the communication cable/straw line tension. The reaction due to the equalization in tension caused the communication cable to whip upward and entangle a worker.</p>
Facts and evidence	<p>The factual information regarding this incident is based on discussions had with contractors representatives and reports provided by the contractor:</p> <ul style="list-style-type: none"> <li>The worker was on loan to a ropeway install contractor from the operating contractor. The worker was assisting in the installation of communication cable along lift towers.</li> <li>The worker was initially assigned to the task of assisting in pulling the straw line downhill. A task deemed by the contractor, that the worker was experienced enough to conduct. Upon completion, the worker was re-tasked with a job to monitor the communication cable as it unraveled from the spool and moved past the bottom operator station. Report indicates that the worker was instructed to “watch the cable” with no clear instructions of the hazards and how to avoid them.</li> <li>As tension was being pulled on the communication cable/straw line the splice traveling through a roller stringing block mounted on tower #3 became jammed inside the block.</li> <li>An all stop was called by radio and both winch operator (top of ropeway) and brake operator (at bottom of ropeway) stopped the cable spools. Some of the cable spooled off the reel and ended up gathering on the ground near the bottom station lift hut during the stop.</li> <li>During the stop period the worker stepped near the cable to adjust it. The cable splice became dislodged from inside the roller stringing block and the cable that had gathered on the ground near the bottom station hut became under tension. As the cable tensioned it sprung up catching the worker standing near it. The worker was lifted 3m-4m and then fell landing on their side.</li> </ul> <p>Further reports provided by the contractor relating to instructions, site and equipment indicated that:</p> <ul style="list-style-type: none"> <li>At the bottom station multiple tasks were being completed in the same area; crane lifting roof station panels into place, IT personnel working in and around the lift hut installing a cable (not related to communication cable being installed on the towers).</li> <li>The person responsible for the supervision of the communication cable install at the bottom station did not communicate an operational plan to all the workers in the area. While the installation process was occurring, the person responsible for</li> </ul>

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	<p>the supervisor of the communication cable install did not have a clear view of all workers in the area.</p> <ul style="list-style-type: none"> <li>The worker that spliced the communication cable to the straw line did not ensure it would run smoothly through the roller stringing blocks.</li> </ul>
<p>Causes and contributing factors</p>	<p>It is very likely that the splice connecting the communication cable to the straw line was constructed in a method that allowed it to become jammed or bound up with guide equipment. The splice jammed in the roller stringing block, the sudden release and re-tensioning is what very likely caused the line reaction with which the worker became entangled with.</p> <p>It is certain that the worker was within the reaction zone (bight) of the communication cable that was being installed. As the worker was not provided with clear instructions of hazards and how to avoid them for task of monitoring the cable position. It is plausible the worker was not aware of the bight hazard around the moving/tensioned cable.</p> <p>The person at the bottom station responsible for the supervision of the cable install did not have a clear view of all the workers in the area. It is plausible, that the worker being within the bight hazard zone, was not realized by the supervisor. Further distraction to the workers and supervisors may have also been a contributing factor due to that multiple tasks were being completed in the same area</p>



Figure 1: (Looking Down From Bottom Station)



Figure 2: Straw Line to Communication Cable Splice



Figure 3: Roller Stringing Block

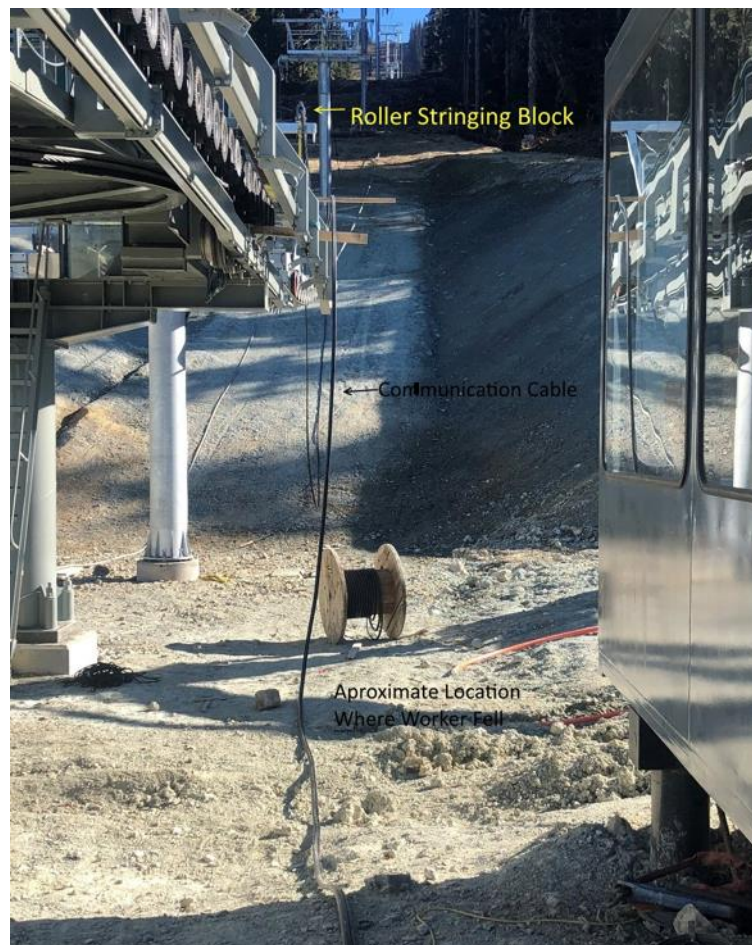


Figure 4: Looking Up From Bottom Station