Incident Summary #II-821979-2019 (#11294) (FINAL)

SUPPORTING INFORMATION	Incident Date		March 8, 2019
	Location		British Columbia
	Regulated industry sector		Passenger ropeways - Surface ropeway
	Impact – Injury	Qty injuries	1
		Injury description	Bruised fingers on left hand, soft tissue crush injury
		Injury rating	Moderate
	Impact – Damage	Damage description	None
		Damage rating	None
	Incident rating		Moderate
	Incident overview		A youth passenger was injured when they failed to unload at the designated unloading point and remained on the ropeway. The ropeway towed the passenger through a safety gate which then failed to automatically stop the ropeway before the passenger made contact with rotating machinery.
INVESTIGATION CONCLUSIONS	Site, system and components		The ski lift design was a circulating surface ropeway which is mainly utilized by users who are beginners in snow sports. These are typically smaller ropeways usually placed on a gentle slope for beginners, predominantly used by children. The passengers are transported by a circulating hauling rope which has affixed handles where the passenger grasps onto for uphill towing transport. There are no intermediate support structures for the hauling rope, the ropeway consists of a drive station, which is where the engine or motor and drive wheel are located. The drive station is also the tension station which maintains the required hauling rope tension. The return station consists of the hauling rope free spinning redirect or return bull wheel. The ropeway controls are located at the drive station. Both stations have manually operated safety stop buttons, including the safety gate which is an automatic stop cord which encircles the hauling rope that initiates a stop if a passenger fails to unload. The safety gate is required to be positioned 1.5 times the ropeways maximum stopping distance away from the first or closest machinery obstruction. An attendant is not required nor stationed at the unloading station. The ropeway only requires one operator at the loading station. The safety gate is an electrical current carrying automatic stopping device on a ropeway that is activated by passengers who fail to unload at the designated unloading point. The safety gate prevents the passenger from entering into the return station machinery or potential hazard created by excess snow or lack of snow grooming maintenance. The safety gate is constructed of extension cord type wire conductor. The safety gate cord is suspended taunt approximately 30 cm above the snow surface with each end of the cord being affixed with plug in receptacles. Passengers who fail to unload pull the cord and break the electrical safety circuit connection by pulling the plug out of the receptacle, which causes the ropeway to stop.

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Failure scenario(s)	A snowboard instructor was operating the tow ropeway at the time of the incident. The operator started the ropeway and loaded the youth passenger, whom went through non-functioning safety gate. When the loading operator noticed that the passenger failed to unload, they initiated a manual stop, The youth remained on the ropeway until it came to a complete stop and got their hand pinched between the hauling rope and the return station redirection wheel (bull wheel).
Facts and evidence	The safety gate consisted of electrical conductors with multiple end plugs and plug receptacles. In this case the wrong plug was inserted into the wrong receptacle, which completed the entire ropeway safety circuit for operation, but excluded and bypassed the safety gate. Therefore that safety gate would not function as it was not correctly plugged into the circuit. The snow level beneath the bottom trip cord of the safety gate was not maintained as required for safe operation of the lift and safety devices. The operator whom was most regular and experienced with the ropeway had left for the season. Senior resort management were not present to directly supervise ropeway operations and dispatch qualified personnel for ropeway operations. A snowboard instructor volunteered at the invitation of the rental shop manager to operate the handle tow ropeway. This invitation was made due to two regular lift operators and the lift operations supervisor being absent from the resort that day. The ropeway had been started earlier in the day by other personnel and the Snowboard Instructor assumed that the ropeway was ready for public operation. Two months prior, the snowboard instructor had limited training conducted by the Operations Supervisor, which consisted of the starting of the ropeway and what lights were required to be on the safety panel. The training that was provided to the snowboard instructor as stated, suggests the supervisor had limited knowledge of the ropeway and its pre-operational safety checks The snowboard instructor started the ropeway without having any knowledge or training of the pre-operational safety checks of the entire ropeway, nor were they familiar with pre-operational daily log and its required safety check point log entries
Causes and contributing factors	The primary cause of this incident is training. Management did not adequately train or assess their supervisor in their knowledge of the ropeway or their ability to train personnel as lift operators. Contributing factors was the training the Operator received by the Supervisor. Adequate training and understanding of the ropeways pre-operational inspection safety checks would likely have enabled the operator to detect a non-functioning safety gate. A fail safe means was not provided in the wiring of the safety gate that would prevent the occurrence of bypassing the system if electrical plugs were connected incorrectly. The snow level beneath and beyond the safety gate were not maintained correctly to allow proper activation of the safety systems by youth passengers.

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	Experienced operators were not available on the day of the incident. Senior resort management were not present to support operations and designate qualified operating personnel to operate the ropeway.