

Incident Summary II-655223-2018 (5985) FINAL

SUPPORTING INFORMATION	Incident Date	February 28, 2018	
	Location	Lytton	
	Regulated industry sector	Above-surface ropeway	
	Impact	Qty injuries	None
		Injury description	N/A
		Injury rating	None
	Damage	Damage description	Indications of damage to gondola cabin, gondola carriage, materials crane attachment, and the lower terminal loading platform.
		Damage rating	Moderate
Incident rating	Moderate		
Incident overview	<p>As a part of daily pre-operational checks, the gondola cabin/carriage and attached crane/carriage, were run without load to ensure that operations were running normally.</p> <p>On reversal of the gondola run, the operator situated at the upper terminal, witnessed the hauling rope jerk violently, which was not normal.</p> <p>The operator immediately shut down the system and proceeded to investigate the cause.</p>		
INVESTIGATION CONCLUSIONS	Site, system and components	<ul style="list-style-type: none"> Fixed cable crane used for material and passenger transport, installed to construct and service an industrial site. System consists of fixed track ropes, situated side by side, anchored at the top and bottom terminals. A hauling rope, controlled by a winch located at the top terminal. 2 towers supporting the track and hauling ropes. Crane/carriage and 16 passenger Gondola cabin/carriage linked together, and attached to the hauling rope. Control and safety system. Both upper and lower terminals have loading/unloading platforms constructed separately from the cable crane system, that serve as a means to access and egress passengers to the gondola cabin. The crane has a 20 ton capacity, and consists an independently operated winch connected to the carriage, with a spreader bar installed with spring closed snap hooks, used as attachment points, to pick and transport loads 	
	Failure scenario(s)	<ul style="list-style-type: none"> Initial run to the lower terminal was successful, however; approximately 10 seconds after a start was initiated for the return trip, the single operator located at the upper terminal, witnessed the hauling rope jerk violently, as it was pulled into the drive winch drum. Operator immediately halted the return trip of gondola cabin/carriage and crane/carriage with a service stop, contacted his direct supervisor, and began a discovery to determine the cause of the haul rope behaviour. Procedures for daily checks, do not include confirmation that the cranes spreader bar, located under the crane/carriage, is at its top position, as close 	

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	<p>to the crane as possible, and, therefore; able to maintain a safe distance over the lower terminals passenger loading/unloading platform and associated structure.</p> <ul style="list-style-type: none"> • The position of the crane/carriage underhanging spreader bar is not monitored by a safety circuit, which means the fixed cable crane and gondola can be operated with the spreader bar at any elevation. • The spreader bar has 3, 20 ton spring closed snap hooks installed full time, to connect loads to the crane. The snap hooks are not removed when the crane is not in service. • The crane/carriage and spreader bar are located on the downhill side of the connection to the gondola/carriage; therefore must pass through the lower terminal passenger loading/unloading platform and associated I-beam structure with safe clearance, to conduct a return trip to the upper terminal.
<p>Facts and evidence</p>	<ul style="list-style-type: none"> • Upon completion of an initial site survey, it was discovered that both the gondola/carriage, and crane/carriage, had become derailed from their rolling elements, but were still supported by the fixed track ropes on their respective carriage structures. • It was discovered that the hauling cable had performed a throw over, a term used to describe the lower hauling rope coming out of its predetermined path of travel, and completing this unexpected movement by coming to rest on top of the fixed track rope. • It was discovered a structural section of the passenger loading/unloading platform gondola cabin guides, at the lower terminal had sustained a load that it was not designed for. It had been bent sufficiently in the direction of crane/carriage travel, to break its structural connection bolts. • It was observed from the ground, that the most uphill of the 20 ton, spring closed snap hooks, had sustained damage to its spring closed gate. The gate was stuck in the open position. • CCTV video confirms the slingshot action sustained by the system at the lower terminal, when a return to the upper terminal was attempted. • CCTV video confirms the jerking action of the hauling rope at the drive winch, located at the upper terminal, during the time of the incident.
<p>Causes and contributing factors</p>	<ul style="list-style-type: none"> • It is likely the spreader bar located beneath the crane/carriage, was in too low a vertical position to maintain safe clearances at the lower terminal loading/unloading platform gondola cabin guides. • It is very likely, the 20ton snap hook, located on the most uphill connection of the spreader bar, became attached to the structural I-beam of the passenger loading/unloading platform, gondola cabin guides, at the lower terminal.

Photos or diagrams



This photo shows the Gondola/carriage(yellow) and Crane/carriage(red), including the underhanging spreader bar and its attachments, as they were found after the incident.



This photo shows the spreader bar and its attachments, hanging underneath the Crane/carriage. The uppermost 20ton Snap Hook gate shows indications of stress or impact, as the gate is deformed in the open position.

(far left hook in picture)



This photo shows the deformed I-beam in the foreground and the Crane/carrriage spreader bar in the background