

Incident Summary (Reference #5610787) Final

SUPPORTING INFORMATION	Incident Date		January 18, 2017	
	Location		Lac La Hache	
	Regulated industry sector		Passenger ropeways, passenger conveyor	
	Impact	Injury	Qty injuries	1
			Injury description	Multiple compound fractures to both arms
			Injury rating	Major
	Damage		Damage description	NA
			Damage rating	None
	Incident rating		Major	
Incident overview		A maintenance worker (working temporarily alone) became entrapped with the rotating equipment of a tail section of a passenger conveyor for approximately 3 minutes until an assistant shut down the conveyor and extracted the maintenance worker by cutting the conveyor belting.		
INVESTIGATION CONCLUSIONS	Site, system and components		<p>Figure 1 shows a basic illustration of the conveyor's tail section and components. The passenger conveyor tail pulley is located at the bottom end of the conveyor (tail section) within a boxed heavy gauge (10 GA) steel sheet metal enclosure. The tail drum for this unit also acts to maintain tension and alignment of the conveyor belt.</p> <p>A snub pulley is used to re-direct the conveyor belt over the top running surface of the passenger conveyor.</p> <p>Adjustment of the belt tension or alignment may be required during the operating season and is considered to be a routine part of maintaining the equipment.</p> <p>There are four removable cover plates on the top of the tail unit enclosure: two larger center cover plates and two hinged side cover panels on either side of the center plates. There are rear access holes which allow for adjustment of the tension and alignment of the belt. Accessing the rear access holes is difficult during the operating season due to the buildup of snow.</p>	
	Failure scenario(s)		A maintenance worker with an assistant in the process of correcting a tracking misalignment of the tail pulley instructed their assistant to retrieve a tool from a shop facility nearby. The maintenance worker, now working alone, was making observations of the rotating equipment in the tail section of the operating passenger conveyor. The worker's hands were placed on the edge of the open enclosure (the center cover plates removed) when one of the workers hands slipped into the enclosure and rotating equipment.	
	Facts and evidence		<ul style="list-style-type: none"> Narrative of events and physical condition of conveyor: <p>Interview statements indicated that:</p>	

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<p>Facts and evidence, continued</p>	<p>A maintenance worker with an assistant in the process of correcting a tracking misalignment of the tail pulley instructed their assistant to retrieve a micrometer from a shop facility nearby. The maintenance worker theorized that misalignment was due to wear of the return roller and intended to obtain a reference for measurement of the roller by use of a micrometer. The maintenance worker, now working alone, was making observations of the rotating equipment in the tail section of the operating passenger conveyor. The workers hands were placed on the edge of the open enclosure with the center cover plates removed when one of the worker's hands slipped into the enclosure and rotating equipment causing them to fall forward into the rotating equipment.</p> <p>Photos taken by staff on the date of the incident indicate:</p> <ul style="list-style-type: none"> - That snow had accumulated on the surface of the tail section enclosure and therefore it is likely the enclosure cover plate surfaces were slippery. - Both of the two larger center cover plates of the tail section enclosure had been removed providing full access to the tail drum. The two side hinged cover plates were closed. <ul style="list-style-type: none"> • Operator's policies, procedures and training. <p>Statements indicated that the injured maintenance worker had received training in the method of conducting tail roller alignment work. This training was received under the leadership of the previous manager. The extent of the training is not known.</p> <p>The operator did not have written safety procedures to be used during maintenance that related specifically to work being conducted to the conveyor</p> <p>The operator's lift operations manual indicates that workers are to always work with someone when working on or near a lift and any moving parts, and that one worker is always at an arm's length from a stop button. The lockout procedures are part of the lift operation's manual and a copy of the manual was maintained at the attendant station of the conveyor.</p> <p>The operator's lockout procedures:</p> <ul style="list-style-type: none"> - The lockout procedure is described in the lift operation manual which was maintained at the attendant station (top end of the conveyor). - The lockout procedure indicates that it is to be implemented when any work comes within 2 feet of hazardous machinery. - The lockout procedure indicates that main power is to be shut off and the keys (control power keys) are to be removed. - Lockout location(s) were not marked <p>In communications with the manufacturer, the manufacturer has indicated that the cover plates are intended to provide guarding. The designer's intended method to be used in conducting pulley alignment work is to access the equipment through the two hinged access cover</p>
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	<p>plates along either side of the two center cover plates of the conveyor tail section. Belt tracking can be observed by looking at the tail pulley through the hinged access cover plates. Lock-out/Tag-out procedures are to be followed and guarding is to be maintained in place.</p> <p>NOTE: Some of the procedures suggested by the manufacture may be challenging to implement due to the small work space and limited visibility of the tail drum through the hinged side cover panels.</p>
<p>Causes and contributing factors</p>	<p>It is likely that the worker was not following the lockout procedures. The lock out procedure indicates that it is to be implemented “when any work comes within two feet of hazardous machinery”.</p> <p>It is possible that the worker’s training did not adequately acknowledge the hazards and safeguards associated with adjustment procedures.</p> <p>It is very likely that the absence of guarding was a contributing factor to the incident.</p> <p>It is likely that the slippery surface at the entrance of the tail unit and inside the tail unit was a contributing factor of the incident.</p>

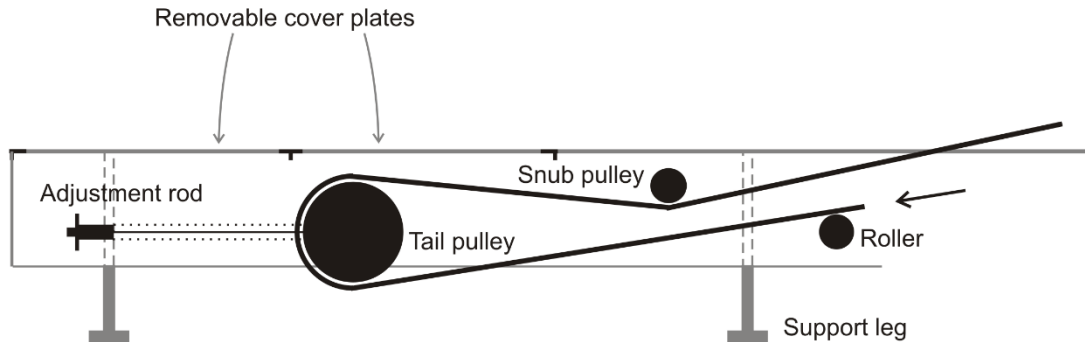


Figure 1: Illustration of the conveyor tail unit and components

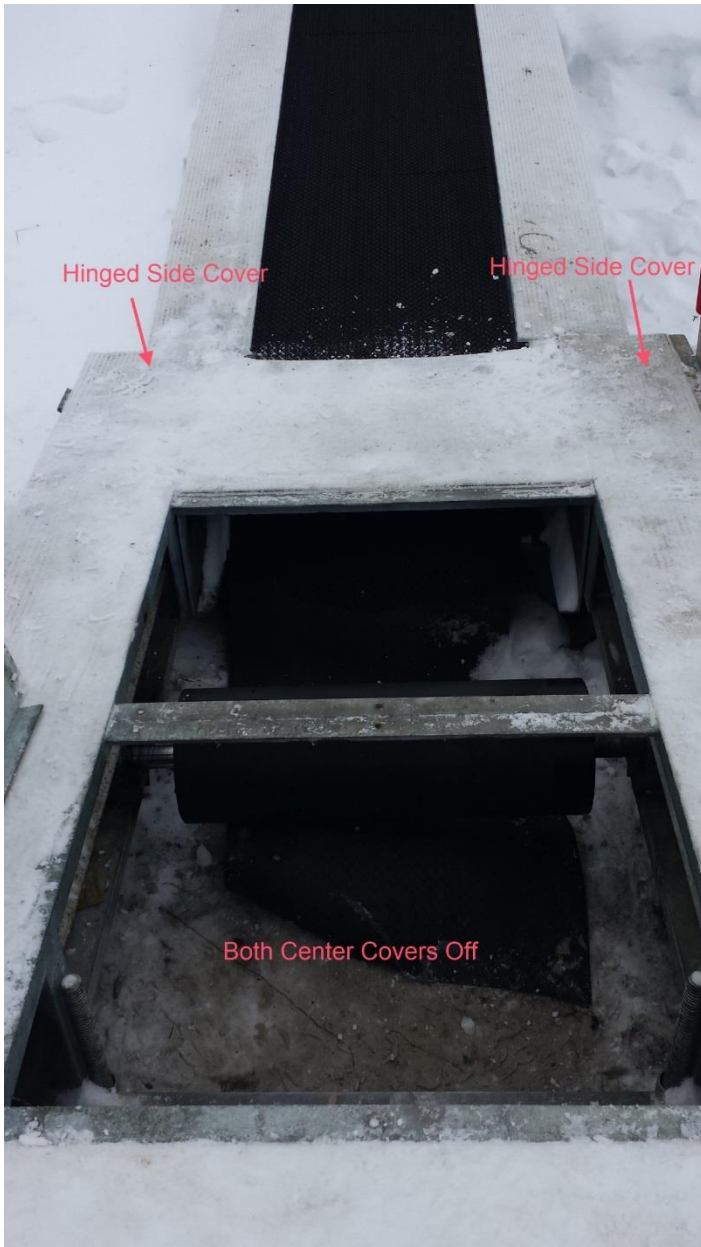


Figure 2: Photograph of the conveyor tail unit without the centre cover plates. The hinged side covers are closed and covered with some snow.



Figure 3: Photograph of the conveyor tail unit with the centre cover plates.