

Incident Summary #II-671306-2018 (#6615) (FINAL)

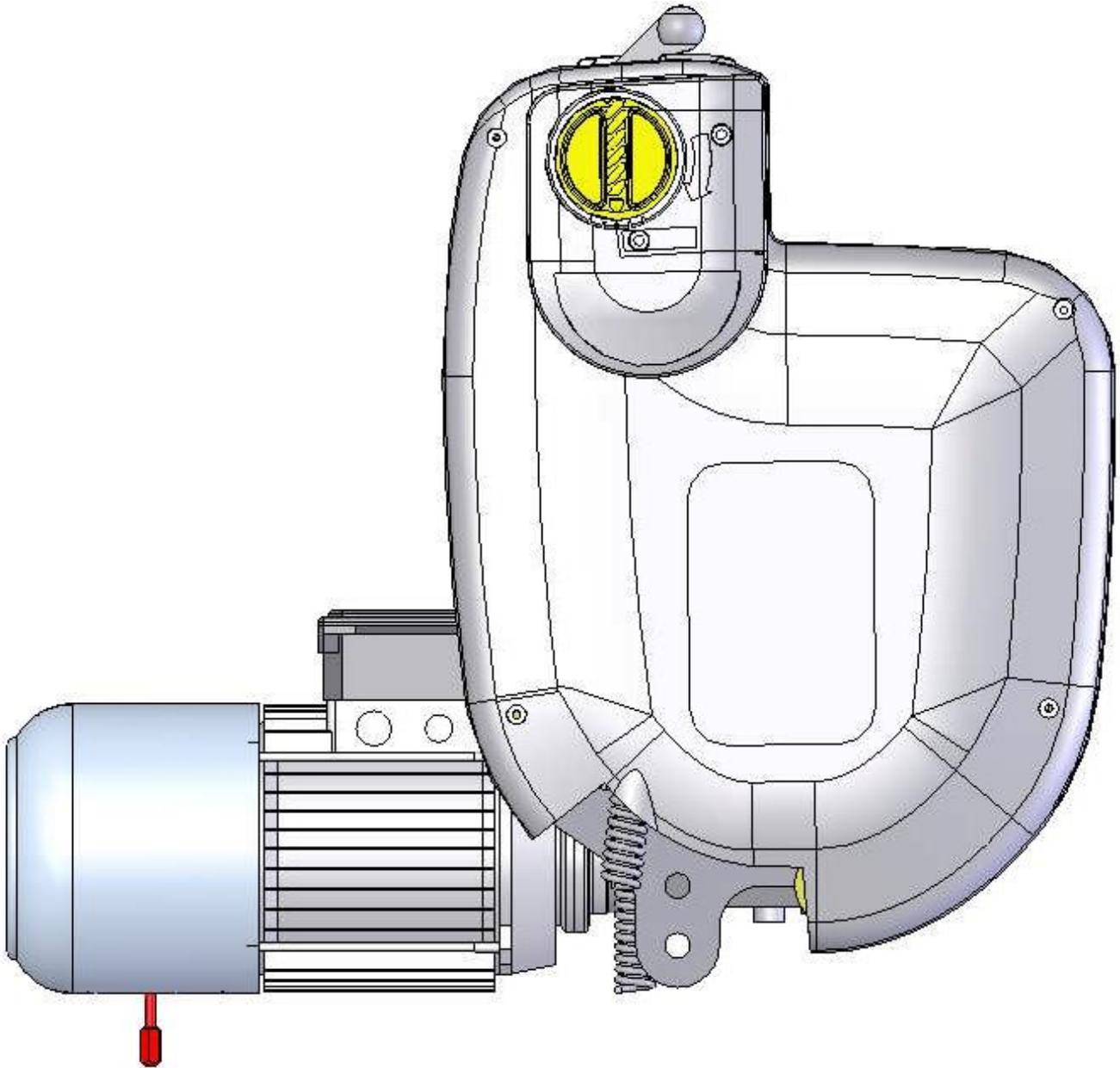
SUPPORTING INFORMATION	Incident Date	April 3, 2018	
	Location	Tumbler Ridge	
	Regulated industry sector	Elevating devices - Construction / personal hoist/ man lift	
	Impact	Qty injuries	0
		Injury description	None
		Injury rating	None
	Damage	Damage description	Door for the lift was damaged
		Damage rating	Minor
Incident rating	Minor		
Incident overview	A wind turbine technician rode the lift to top platform, upon arrival they opened the doors to exit lift. The lift then started to descend. A door was damaged then broke off as the lift continued to descend at a slower than normal rate of travel.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>Wind turbine lifts can be used for personnel or equipment transport within the tower.</p> <p>The lift is equipped with a safety system that must be reset in order to operate it. The technician operates the lift with a constant pressure switch within the lift. A constant pressure switch allows the lift to be energized when the switch is engaged but once the technician removes pressure from the switch, energy will no longer be supplied to the lift and therefore the lift will not be able to operate.</p> <p>An emergency stop button on the controls disconnects power to the lift. The lift will hold its position by an electro-magnetic service brake when it is not operating. Specific tolerance of 0.008" of brake gap is required for the electro-magnetic brake. The brake on this lift has a lever for manual operation in the event of power loss.</p> <p>The power cable for the lift hangs off a cable retainer centered on the underside of the lift. The technician must complete a daily checklist for the lift prior to use.</p>	
	Failure scenario(s)	The electro-magnetic service brake was out of adjustment, therefore unable to hold the weight of the lift and passenger at the top landing.	
	Facts and evidence	<p><u>As Reported by the Technician:</u></p> <ul style="list-style-type: none"> - Completed all tests required by the <i>Turbine Service Lift Daily Inspection log</i> without issue - 1 Technician and gear totaled 125 kg of the lifts 240 kg capacity - Technician rode the lift to the top platform - At the top platform the technician opened the doors and prepared to exit the lift - The lift began to slowly descend prior to the technician exiting 	

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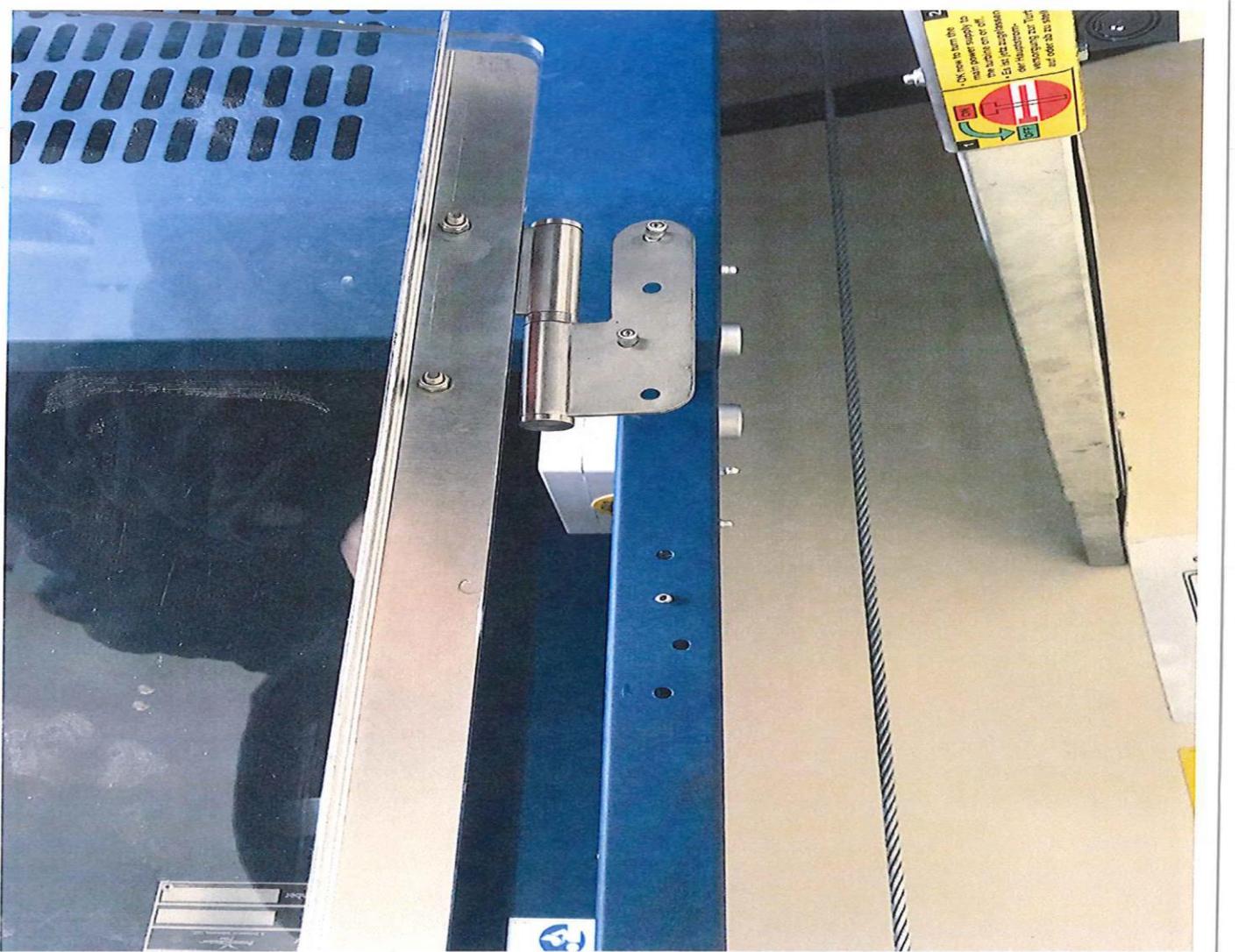
	<ul style="list-style-type: none"> - The technician tried to close the doors but one became jammed, the technician tried to ascend the lift with the manual controls but the system would not allow it to move with the doors open. - One door broke off at the hinges, the technician was then able to close the remaining door, get a reset on the safety system and make the lift ascend to the top platform. - The lift again descended when stopped at the top platform - The technician discovered that they could manually stop the descending lift by manipulating the manual lever for the electro-magnetic brake. <p><u>As Reported by Maintenance Contractor:</u></p> <ul style="list-style-type: none"> - They installed and maintained the lift since 2012 - 3 set screws which maintain the 0.008" brake gap brake specific tolerances had come loose - The added weight of the power supply cable made the lift descend while at the top of the tower and not while performing the daily test at the bottom of the tower where the cable weight is minimal, approximately 40 kg difference. - They were unable to produce documentation of the brake gap adjustment being verified and maintenance performed on the lift. <p><u>As Reported by Manufacturer:</u></p> <ul style="list-style-type: none"> - During the installation of all lifts on site in 2012 it was discovered that a batch of the electro-magnetic brakes were shipped without the proper brake settings - The installation contractor was trained on how to properly set and check brake adjustments during the installation in 2012 - After the incident, the lift was inspected and tested with the correct brake adjustments at the factory and operated correctly - Root Cause Analysis is that the electro-magnetic brake was not set properly by the original installation and maintenance contractor
<p>Causes and contributing factors</p>	<p>It is likely that the original installation and maintenance contractor did not ensure the electro-magnetic brake on the lift was properly set, causing the setscrews that maintain specific brake tolerances to become loose and the wind turbine lift to slowly descend from the top platform.</p>



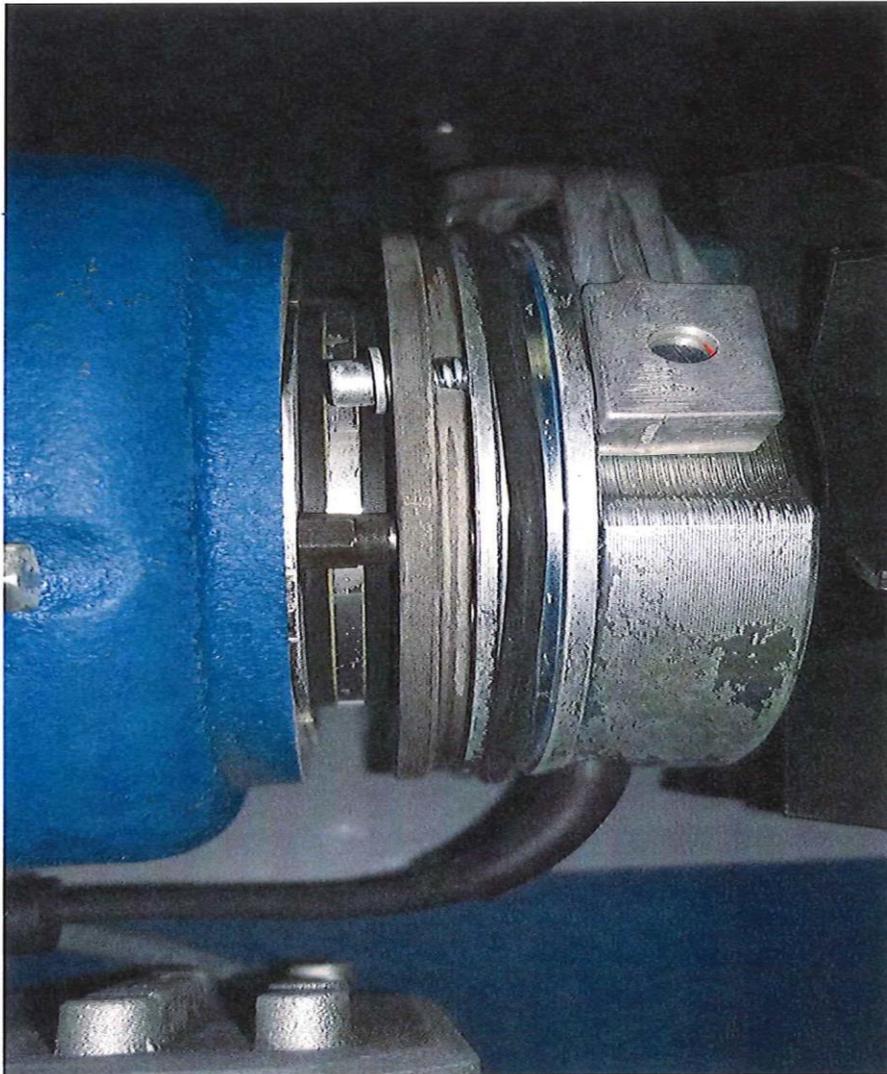
Wind Turbine Lift



Electric motor and traction hoist, red lever to release electro-magnetic brake for controlled descent



Broken off door at hinges



Loose set screw for retaining brake gap adjustment