

Incident Summary II-827696-2019 (#11460) (Final)

SUPPORTING INFORMATION	Incident Date	March 15, 2019	
	Location	Salmon Arm	
	Regulated industry sector	Elevator	
	Impact	Qty injuries	1
		Injury description	Broken foot
		Injury rating	Moderate
	Damage	Damage description	N/A
		Damage rating	None
Incident rating	Moderate		
Incident overview	Person entered elevator at 3rd stop, the elevator was out of level, the person stepped in, tripped over the out-of-level sills and broke their foot.		
INVESTIGATION CONCLUSIONS	Site, system and components	<p>A hydraulic elevator is lifted and lowered by a hydraulic cylinder utilizing hydraulic oil. In the up direction, the elevator is lifted by pressure created by an electric motor driven hydraulic pump. The weight of the elevator and gravity are used to send the elevator in the down direction. A hydraulic control valve is used to regulate the speeds (fast and leveling) and stopping accuracy in both directions.</p> <p>With hydraulic controlled elevators the control valve plays a key role in elevator leveling. Leveling is described as the accuracy of an elevator car coming to a stop in line with the intended floor's walking surface. When the elevator is stationary the elevator will at times sink below floor level until the anti-creep device is activated.</p> <p>An anti-creep device is a switch designed to maintain the level of the elevator within 1 inch of the landing. When the anti-creep device is activated the elevator drives back up to floor level.</p>	
	Failure scenario(s)	The elevator was stationary at the 3 rd landing for an extended period of time, a slow valve leak caused the elevator to drift down in this time. A person went to use the elevator at the 3 rd floor by pressing the call button, the door opened, the person entered the elevator (now not level) and rolled and broke their foot.	
	Facts and evidence	<p>Statements from injured passenger and testing on site with elevator personnel.</p> <ul style="list-style-type: none"> Performed a "static load test" by parking the elevator at the third landing, turning power off to the elevator and measuring how far the elevator drifts down over a 45 minute period. The elevator drifted down approximately 0.38 inches during the test. Performed an anti-creep test by manually lowering the elevator until the anti-creep switch activates and re-levels the car to floor level. The anti-creep switch was found set at 1.5 inches below floor level. Code allows for 1 inch before the anti-creep activates and relevels the elevator. 	
	Causes and contributing factors	The switch for anti-creep would not activate until the elevator was 1.5 inches out of level, likely due to incorrect adjustment of the anti-creep setting. It is possible that the elevator was out of level up to 1.5 inches. It is likely that the elevator being out of level caused the person to be injured.	