

## Incident Summary (Reference # II-628126-2017 )

SUPPORTING INFORMATION	Incident Date	<i>December 7, 2017</i>	
	Location	<i>Vancouver</i>	
	Regulated industry sector	<i>Elevating- Elevator</i>	
	Impact	Qty injuries	<i>0</i>
		Injury description	<i>None</i>
		Injury rating	<i>None</i>
	Damage	Damage description	<i>None</i>
		Damage rating	<i>Insignificant</i>
Incident rating	<i>Insignificant</i>		
Incident overview	<i>It was reported to Technical Safety BC that first responders and patient entered an elevator and became entrapped.</i>		
INVESTIGATION CONCLUSIONS	Site, system and components	<i>Hydraulic elevators consist of a hydraulic pump which provides pressurized hydraulic fluid to a hydraulic cylinder to provide upward movement to a piston attached elevator cab. Hydraulic elevators use a hydraulic valve system to control the downward motion of the piston and, therefore the elevator cab. A key safety component of the elevator hydraulic system is the over-speed valve. The over-speed valve controls the downward velocity of the elevator. The over-speed valve is adjustable and is set for each specific elevator application. In the event that the downward velocity of the elevator exceeds allowable limits the over-speed valve closes and arrests the downward motion of the elevator. A certified individual is required to reset the over-speed valve in this condition to enable further operation of the elevator.</i>	
	Failure scenario(s)	<p>Scenario 1- Six persons, a stretcher and equipment was loaded into the elevator. The people in the elevator were proceeding down to street level to remove the person on the stretcher. While travelling in the down direction the elevator velocity exceeded the velocity trip setting of the over- speed valve due to the improper trip setting value of the valve.</p> <p>Scenario 2- Six persons, a stretcher and equipment was loaded into the elevator. The people in the elevator were proceeding down to street level to remove the person on the stretcher. The persons in the elevator were actively performing CPR on the person in the stretcher while the elevator was in motion. The action of CPR created oscillations in the elevator that caused speed fluctuations that caused the over-speed to trip.</p>	
	Facts and evidence	<p><i>Sequence of events as reported by contractor supervisor::</i></p> <p>A time line of the events of December 7, 2017.</p> <p>8:27 AM – Call placed to our dispatch of the entrapment.              8:50 AM –1'st mechanic arrives on site.              9:15 AM – 2'nd Mechanic arrived on site.</p>	

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	<p>9:20 AM[approx.] – Emergency personnel evacuate entrapped Emergency personnel from elevator at the ‘LOBBY’ level, with a ladder.</p> <p>9:40 AM[approx..] – The elevator is moved to the 2nd floor by mechanic and the last ‘person’ is removed from the elevator.</p> <p>10:15 AM – Contractor supervisor arrive on site to find no Emergency Personnel.</p> <p><i>Rescue personnel Lieutenant statement:</i></p> <p>Lieutenant informed me that there were 6 people, a stretcher (of sort), some equipment. Estimated total weight 1700lbs. They were performing CPR on the patient before, and during the entrapment.</p> <p><i>Equipment History:</i></p> <ul style="list-style-type: none"> <li>• <i>Unit had undergone major alteration in 2011</i></li> <li>• <i>Major alteration consisted of new Cylinder, Pit steel, and Over-speed valve.</i></li> <li>• <i>Records indicate that over-speed valve setting tests were performed and recorded as a value of 172 feet per min.</i></li> </ul> <p><i>On-site observations/ evaluations:</i></p> <ul style="list-style-type: none"> <li>• <i>Arrived on-site. Valve adjustment sealed with tamper proof seal.</i></li> <li>• <i>Device locked out at the time of arrival.</i></li> <li>• <i>Removed lock-out and began testing.</i></li> <li>• <i>Name plate load rating observed as max. 2500lbs.</i></li> </ul> <p><i>Tests Performed:</i></p> <ul style="list-style-type: none"> <li>• <i>TEST 1= Loaded elevator car with the approximate weight in the elevator at the time of the entrapment- 1750 lbs. Recorded elevator running velocity. NOTE: Over-speed valve tripped during test and stopped the elevator.</i></li> <li>• <i>TEST 2:= Loaded the elevator with a full load capacity and readjusted the over speed valve setting and verified readings meet elevator specifications.</i></li> <li>• <i>TEST 3= Monitored normal elevator operation to verify system</i></li> </ul>
<p><b>Causes and contributing factors</b></p>	<p>It is highly likely that a combination of the improper over speed valve setting and the compressions from CPR being performed caused the elevator to stop.</p>

Photos or diagrams (if necessary)