

Incident Summary #II-986630-2020 (#16758) (FINAL)

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| SUPPORTING INFORMATION | Incident Date | February 20, 2020 | | |
| | Location | Victoria | | |
| | Regulated industry sector | Elevating devices - Elevator | | |
| | Impact | Qty injuries | 1 | |
| | | Injury | Injury description | Sore lower Back |
| | | | Injury rating | Minor |
| | Damage | Damage description | Elevator position electronic fault. | |
| | | Damage rating | Minor | |
| Incident rating | Minor | | | |
| Incident overview | The passenger entered the elevator at the top floor landing (4 th floor). The passenger then proceeded to place a down call to a lower floor. The elevator then moved in the up direction and stopped when the final limit safety switch was activated. The passenger was trapped until the elevator contractor arrived on site to release them from the car. The passenger reported a lower back injury. | | | |
| INVESTIGATION CONCLUSIONS | Site, system and components | <p>The elevator has a position measuring device (<i>tape head reader</i>) mounted on the car. As the elevator car moves, a stationary metal tape feeds through the tape head reader which determines the cars position and electronically sends the position to the elevator controller.</p> <p>When the tape head reader and controller position do not match an electronic fault would occur. When this fault occurs the elevator will slowly move itself towards a terminal landing to re-establish its position.</p> <p>A final limit safety switch is installed above the top terminal landing. When this switch is activated it shuts the elevator down.</p> | | |
| | Failure scenario(s) | <p>The elevator tape head reader faulted by providing a false signal to the controller.</p> <p>This caused the elevator to drift in the up direction in an attempt to re-establish its position. The elevator was then stopped on the final limit safety switch which placed the car ~10cm above the top floor.</p> | | |
| | Facts and evidence | <p>Evidence considered during investigation:</p> <ul style="list-style-type: none"> • The passenger was released from the elevator within minutes of being trapped. • The final limit safety circuit operated as designed stopping the elevator. • While attending the trouble call, contractor confirmed there were no previous electronic position faults recorded by the onboard controller computer. • The top floor final limit was measured as ~10cm above top landing. | | |

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| | <ul style="list-style-type: none"> • The elevator contractor dismantled the entire tape head assembly, disconnecting and reconnecting all electrical connections and cleaned the tape head. The elevator was then tested for an entire day without fault and placed back into service. • The elevator was inspected by the Technical Safety BC on December 30, 2019. The certificate of inspection was issued with non-compliances • The non-compliances issued during the acceptance test were not related to the fault. Safety circuit operated as intended during the acceptance testing. • Dust was noted (internal) as being a site hazard during the acceptance testing. Concrete dust and other contaminants were present on-site. The site still had active construction activities when the elevator was conditionally passed. |
| <p>Causes and contributing factors</p> | <p>It is likely that construction dust on-site collected in the tape head reader leading to the faulty reading. It is very likely that a fault occurring at the top landing caused the elevator to drive into the final limit switch. It is certain that the elevator driving into the final limit switch caused the entrapment.</p> |