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Re: IUEC Safety Alert on unexpected elevator movement

It has recently come to our attention that the IUEC (International Union Elevator Contractors) released a safety alert, identifying two cases of an elevator moving unexpectedly. We reviewed the incidents. The purpose of this letter is to explain the failures, verify your unit's installed software and provide information on how to update your unit.

Description of Incident A:

A mechanic was performing routine maintenance on a 2 stop hydraulic elevator and was not following the access/egress process outlined in the Smartrise manual, raising the elevator on automatic operation as oppose to using the access inspection operation, then opening the bottom hall door using a door key after the elevator had left the floor. After the door was opened, the elevator stopped momentarily, then proceeded to level into the closest floor. This occurred twice and it was determined that depending on the closest door zone, it would level into that floor. After troubleshooting the controls, a shorted hoistway floor DZ sensor was found to be the cause of the hazard.

Analysis:

The door zone sensor failed in the active state. This indicated to the controller the car was inside the leveling zone. The re-level operation was performed, since the re-level operation can occur with the door open the car moved, if it is enabled in the parameter setting of pre-opening. Root cause failure: the door zone sensor failed active high, therefore the controller operated in the leveling zone.

Resolution:

In software version 2.49b, released on 12/04/2018, the logic was updated to incorporate the landing system encoder information to the door zone switch state information, whereas if the elevator moves more than 28 inches with the door zone switch active high, the controller will fault and remove the car from service, and it will remain out of service until a manual reset is performed.

Description of Incident B:

A mechanic performing routine maintenance and following the proper access/egress process for the car top, lowering the elevator using the top floor hoistway access key switch. When the car top reached the floor sill, he took control of the elevator by use of the car top inspection switch and stop switch. Once he verified, he had control of the elevator he got on the car top and allowed the hall doors to close. When he reset the stop switch to the run position, the elevator

ran down. He hit the stop switch and the elevator stopped. After troubleshooting the controls, he found the top of the car SRU board had an input stuck active. This input was for the top of car inspection down button and the car moved down without control.

Analysis:

The car top direction input faulted in the active high state. Therefore, with the stop switch deactivated, and with the car top inspection run enabled, the elevator moved at inspection speed.

Resolution:

In software version 2.44n, released on 08/21/2016, the logic was updated to prevent car inspection operation if both inspection direction inputs are NOT initially low. The controller must see a change of state on the input, otherwise the input is ignored.

These updates addressed the two incidents. Most units may have already been inherently updated because of technical bulletins 1-12, field modification updates, changes, or upgrades.

However, to see if your unit is updated, you will need to verify the installed software version. This is done by navigating the SRU board, to the “main menu > about” to find the installed software version. If the installed version is 2.49b or newer, then no action is required. Else, you can request the update, by contacting our technical Support department at: (469) 678-8000, or support@smartrise.us

Last, for a safe operation of the affected unit:

1. Never enter the hoistway when the car is on automatic operation. Instead:
 - a. Activate hoistway access, and move car using landing key switch, or
 - b. Activate the Stop switch before entering the hoistway, or
 - c. Place the car on machine room inspection.

2. When on cartop inspection, keep the cartop stop switch enabled until you are ready to run. The car may move unexpectedly at inspection, because of a stuck direction button, or a shorted wire on a direction input terminal, or a faulty input circuit, on software prior to the one listed above.