Subject: ELEVATORS WITH INVERTED HYDRAULIC CYLINDERS & NO EXISTING PRESSURE SWITCH (CONFORMANCE TO B44 4.22.13)

Sent to: ALL ELEVATOR CONTRACTORS IN SCOPE U1, L1, F1, P1

1. Background

1.1. TSSA has recorded three incidents where elevators utilizing the Armor Inverted Hydraulic cylinder drive have fallen into the pit causing damage. No persons have been injured however the potential for injury exists.

1.2. The subsequent incident reports filed by the maintaining contractors have all concluded that the deterioration of the cylinder seals resulted in the cylinders binding, to the extent that the cars became hung up in the hoistway.

1.3. With the car hung up on the jammed seals and the down valve opened (call to a lower floor), oil may return to the tank leaving the elevator suspended on a column of air. Once the friction factor is overcome the unsupported car falls.

1.4. The incidents were recorded on units installed during the early 1980’s on Armor designs utilizing a cantilevered sling with inverted hydraulic cylinders. Low pressure switches were not installed nor mandatory at the time.

1.5. Indicators of this potential hazard are not apparent since the oil is returned to the tank.

2. Order to Contractors

2.1. Not later than February 1, 2002, contractors shall carry out the modifications listed in 2.2 below, where elevators on their maintenance, regardless of make, meet the following criteria:

- the elevator utilizes inverted hydraulic drive technology
- where the top of the cylinder, when at its highest elevation, is above the storage tank and
- which do not have a low-pressure switch.

2.2. If such units are found, contractors shall add a low-pressure switch between the cylinder and the valve in conformance with current code requirements, (B44 4.22.13). This applies to all manufacturers equipment, which meet the criteria specified in 2.1.

2.3. If the required work does not constitute a part of your maintenance contract, and you cannot obtain authorization from the elevator owner to complete this order, you shall notify this office immediately. Indicate the installation numbers of the relevant elevators so that TSSA may issue an order to the owner to have the work completed.

2.4. Addition of a pressure switch shall be classified as a “Notification of minor Type B Alteration”.

NOTES:
- Contractors should attempt to assess the integrity of the cylinder seals and if this is not possible, consideration should be given to replacement of the seals, utilizing safe working practices.
- This Director’s Order has been developed in consultation with the TSSA Elevating Devices Council.

Roland Hadaller - Chief Engineer
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