

# **Investigative Report of the August 16, 2003 Accident at Christus St. Joseph Hospital Houston, Texas**

**August 16, 2003** I received a phone call from Alan Van Nort, the Elevator Advisory Board Chairman, and he advised me that there had been an accident on an elevator at St. Joseph Hospital in Houston and that a doctor had been killed.

I immediately called my Division Director, George Ferrie. He, in turn, called the Executive Director, William Kuntz, who asked that I go to St. Joseph Hospital to offer assistance if needed.

**August 18, 2003.** A meeting was assembled by Mr. Edward Kroger, attorney representing St. Joseph Hospital, a sign in sheet was circulated and signed. Representatives from the Houston Elevator Program were present and asked to be excused from further participation in the investigation. They were excused.

The investigative team was assembled and it was agreed that all correspondence was to go through Edward Kroger.

The team members:

Edward Kroger, Attorney for Christus St. Joseph  
Randy Bailey, Otis Elevator Company  
Ron Emerson, Kone Elevator Company  
Mark Goodson P.E  
Ray Higgins, Christus St. Joseph  
James Mathew, Christus St. Joseph  
Joe Morrissey, Consultant  
R. S. Rowlett, Consultant  
Jim Staggs, Otis Elevator Company  
Ron Steele, Texas Department of Licensing and Regulation  
David Waters, Occupational Safety and Health Administration  
John Weber, Kone Elevator Company

One video person and one photographer

We assembled at the elevator on the second floor and checked for damage and the precise location of the elevator involved. The accident happened on the second floor and the hoistway door was open approximately 10 (ten) inches. There was damage to the hoistway door interlock, apparently caused by the accident. The damage prevented the hoistway door from closing.

The elevator had traveled to a position where the cab floor was approximately 4 (four) feet below the 5<sup>th</sup> floor. We found the car door open as would be the case when there was a rescue of a passenger. I was told that a woman was rescued from the cab after the accident. There was a clear view of the top of the cab and no damage was noted. The cab door electric contact was checked for proper operation and adjustment. It was determined that the contact was set properly.

We then went to the machine room and checked for obvious problems that might cause the elevator to run with the doors open. We found nothing that could be considered an obvious cause. Nothing was touched or moved, and we scheduled to resume the investigation on August 21, 2003.

**August 21, 2003.** A sign in sheet was circulated and we resumed the investigation in the elevator machine room. Several loose connections were found on the generator. Controller relays were in need of repair. For example, relays UX and DX had a bracket that was not in the correct position, relay SE had a piece of paper to act as a residual guard, and various relay contacts were burnt. Also noted were burnt resistors, loose wires, and unmarked wires. The selector was not properly lubricated and had excessive wear on brushes and contacts. It was noted the selector tape could move, meaning it was either broken or loose. We opened the bottom door to gain access to the pit and discovered the selector tape hitch was broken on the bottom of the car and was lying loose in the pit. Personnel were provided to clean the pit. The pit contained bio-hazardous material and all necessary precautions were taken. The elevator car was cleaned in the same manner. The condition of the controller, motor/generator, and selector is unchanged. The investigation was to resume on August 28, 2003.

**August 28, 2003.** A sign in sheet was circulated and we resumed the investigation in the elevator pit. Our goal on this day was to make necessary repairs to place the elevator in the condition it was in at the time of the accident. First, the selector tape was re-attached to the bottom of the cab with a new hitch plate and accessories. The broken selector tape hitch appeared to be a result of the accident and not a cause. Jumper wires were used to enable the car to be moved to the second floor for repair of the second floor interlock. First, the hoistway door interlock and the surrounding area were cleaned and checked for bio-hazardous material. The hoistway door interlock was repaired by bending the hoistway door interlock mounting bracket into proper position. We determined the elevator hoistway should be cleaned and checked for bio-hazardous material before any further investigation.

Many team members left at this time, and the elevator was made safe for the cleaning personnel. At this time I observed the elevator would run with the doors open. We checked several other floors with the same result. However, the operation was sporadic and efforts to identify a cause were inconclusive at this point. Further testing determined the selector had to be advanced for the elevator to run with the doors open. The emergency stop switch circuit was checked and it was fully operational. Instruction was given to a Kone mechanic for safe operation as he was to operate the elevator for the cleaning crew. The investigation was to resume September 3, 2003.

**September 3, 2003.** A sign in sheet was circulated and the investigation resumed in the elevator machine room. After reviewing the elevator electrical wiring diagrams, we identified the area of concern. We visually inspected each wire as indicated on the wiring diagram and found the C105 controller stud had two field wires connected to it, although the wiring diagram indicated that it should have only one. The two wires in question were checked at the selector stud and the controller stud, and the C105 wire was correct but the wire on selector stud C103 that should have been connected to controller stud C103 was placed on controller stud C105. This was tested and verified to be the necessary correction for the elevator wiring to be the same as the wiring diagram. The team met to discuss this wiring mistake and it was generally accepted that this

was a major contributing factor to the elevator malfunction. The team was then asked if there were any other tests or information required or requested. Everyone was in agreement that the wiring mistake should be corrected and that was accomplished. There were no other requests or questions.

By Ron Steele  
Chief Elevator Inspector  
Texas Department of Licensing and Regulation

### **Definitions**

**car door or gate electric contact** - an electrical device, the function of which is to prevent operation of the driving machine by the normal operating device unless the car door or gate is in the closed position

**controller** - a device or group of devices which serves to control in a predetermined manner the apparatus to which it is connected

**door or gate electric contact** - an electrical device, the function of which is to prevent operation of the driving machine by the normal operating device unless the door or gate is in the closed position

**emergency stop switch** - a device located in the car which, when manually operated, causes the electric power to be removed from the driving-machine motor and brake of an electric elevator or from the electrically operated valves and/or pump motor of a hydraulic elevator

**hoistway (shaft), elevator, dumbwaiter, or material lift** - an opening through a building or structure for the travel of elevators, dumbwaiters, or material lifts, extending from the pit floor to the roof or floor above

**hoistway-door interlock** - a device having two related and interdependent functions, which are:

(a) to prevent the operation of the driving machine by the normal operating device unless the hoistway door is locked in the closed position; and

(b) to prevent the opening of the hoistway door from the landing side unless the car is within the landing zone and is either stopped or being stopped

**pit, elevator** - that portion of a hoistway extending from the sill level of the lowest landing to the floor at the bottom of the hoistway

**selector** – a mechanically or electrically driven device which initiates and/or controls some or all of these functions: establishment of direction of travel, acceleration, deceleration, leveling, stopping. Call cancellation, door operation, position indicators and, and hall lanterns

**selector tape** – a metal tape connecting the elevator cab to the selector

**selector tape hitch** – a connecting mechanism for fastening the selector tape to the cab.

*Source of definitions were the ASME A17.1 1993 code for elevators and A17.1 Handbook by Zack McCain.*