

NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Committee

TECHNICAL BULLETIN - JULY 2005

289. Hawk Fatality Report

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An accident in March 2004, involving a Zamperla Hawk in Tennessee, resulted in the death of a 51 year old passenger when she fell 60 feet from her seat on the ride.

Investigators say that a safety system had been bypassed. The system is designed to detect whether all of the passengers' restraints are properly closed and locked. If the system detects a problem, it should prevent the ride from starting.

As a result of the police and CPSC investigation, the manager of the Rockin' Raceway amusement park in Pigeon Forge, Tennessee, was indicted on charges of second-degree murder and reckless homicide by a Sevier County grand jury. He was arrested and released on \$100,000 bond. In May this year he was found guilty of reckless homicide.

We have obtained a copy of the U.S. Consumer Product Safety Commission's investigation report and include an abbreviated text attached to this Technical Bulletin.

Committee Members :- Dr Garry Fawcett MBE (Chairman), Mr Richard Barnes, Mr Peter Smith,
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**CPSC INVESTIGATION REPORT
HAWK AMUSEMENT RIDE INCIDENT**

ABBREVIATED REPORT

Information contained in this abbreviated report was obtained from the Pigeon Forge Police Department ... and during an [on-site] visit at the incident scene. Information concerning the approximate weather conditions at the time of the incident was obtained from an historical weather web site. Information requested from Zamperla's attorney was not obtained during this investigation and for that reason is not a part of this investigative report. No autopsy on the deceased victim was performed and therefore that record does not exist. Efforts to contact the owner of the incident site, as well as the manager/maintenance manager of the incident site were unsuccessful. All hard copies obtained from the Pigeon Forge Police Department have been forwarded to the appropriate Compliance Officer.

The victims involved in this incident were a 15-year-old male, a 54-year-old female, and a 50-year-old female. The 50-year-old female was the only fatality involved in the incident, with the other two victims escaping without injury. The physical characteristics of the two surviving victims were not known; however, the 50-year-old female victim was characterized as being "a heavy woman of short stature, 5'4" and approx. 230 - 250 lbs." The physical and mental health of the victims was not known and could not be determined. The 50-year-old female was the mother of the 15-year-old male, and the 54-year-old female was related to both, but whether she was an aunt, cousin, or in-law was not able to be determined. According to the Pigeon Forge Police Department, neither alcoholic beverages nor drugs, legal or illegal, were involved by either the victims or the operator of the ride involved in this incident.

On 3/14/04, at approximately 12:15 P.M. the three victims began riding an amusement ride at a local arcade/amusement park in Pigeon Forge, TN... The three victims were the only ones on that ride and were placed in the first car of that ride, with the 50-year-old victim being placed in the third seat. All [were] supposedly locked into their respective seats by the [ride's] operator with an over-the-shoulder restraint system prior to the ride being started.

Shortly after the ride started, exact time not able to be determined; all three of the victims began to yell down to the ride's operator that the 50-year-old victim's safety harness was not locked. The operator of the ride began hitting buttons to try and stop the ride, but with no success. The ride, designed to go completely around/upside-down, finally reached a position of approximately 210 degrees and the 50-year-old female was ejected from her seat and fell approximately 60' to 65'.

As she fell the 60' to 65', the back of her head made contact with an air compressor on the back side of the ride and she then landed on her back on a concrete pad that supported the ride.

Shortly after the incident, 911 was notified, with the local police department getting the alarm at approximately 12:16 P.M. and an officer arrived on the scene at approximately 12:17 P.M. EMS personnel arrived a short time later, time not known, and the 50-year-old victim was pronounced dead at the scene. The scene was immediately sealed off, to include the ride, by the local police department and investigation into the cause began. Officers were placed at

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the incident site and remained on duty 24/7 during the investigation, keeping everyone away from the ride.

The following day, all interested parties met at the ride and began an examination. Pictures were taken of the electrical panel as well as various other aspects of the ride. It was noted during the investigation that alligator clips had been used inside the electrical panel to bypass the ride's safety systems and the local police department called in a P.E. from California to do an investigation. At that same time, the Lead Criminal Investigator of the local police department ascertained that the manager/maintenance manager of the facility was the only person that conducted maintenance on the rides at the facility and that that person had not maintained any type of maintenance log for that ride.

The aforementioned P.E. did an investigation and submitted his report to police department on 4/27/04. It was the opinion of the P.E. that the incident occurred because of the following reasons:

1. Intentional destruction of the ride safety systems
2. Ride operator inappropriately or inadequately trained
3. At a minimum, the following standards were violated: ASTM F 770-93 (Reapproved 2000) Standard Practice for Operation Procedures for Amusement Rides and Devices Sections 4.1 through 4.3; and ASTM F 353-98 Standard Practice for Maintenance Procedures for Amusement Ride and Devices Sections 6.1 through 6.4.3, and in particular, section 6.3.4.

DESCRIPTION OF THE INCIDENT

I have not reviewed any official report of the incident or seen any witness statements. My understanding of the events is as follows:

The victim... entered the ride and was placed into seat no. 1. There were also other riders in seats nos. 2 and 3, but no other riders were aboard the machine. She pulled the "over the shoulder" restraint down until it contacted her body. The ride operator reportedly stated that he checked the position of the restraints and also pulled each restraint in order to validate that they were locked into position.

As the ride began to swing, [the victim] and her party began to call to the operator that her restraint was opening, and to stop the ride. [The victim] was a heavy woman of short stature, (5'4" and approx. 230-250 lbs.).

The operator claims to have initiated the "GO STATION" command on the control panel several times, followed by striking the Emergency Stop button.

The ride however, continued to swing higher, eventually going over the top. At some point at or near the peak position, [the victim] engaged from her seat and fell approximately 65' to her death.

INVESTIGATION OBSERVATIONS

At 9:00 AM on March 24, 2004, I arrived at a small park ... in Pigeon Forge, TN, the location of the incident. I was met by Rene Kendall and Wayne Knight of the Pigeon Forge Police Department. They escorted me to [the ride] and provided the background information given in [the above description of the incident].

I performed a visual examination of the ride to familiarize myself with the positions of the mechanical and operational aspects of the ride and the point of impact of [the victim].

Seat no. 1 ... was found with the restraint unit in a lower position, with lap bar locking pins extended, but not engaged into the locking plates located on the sides of the seat. The pins were checked for motion and spring operation by forcing them into the retracted position by

hand. The pins could be forced into the lap bar by hand, but snapped rapidly back to the locking position (extended) when released. Seats 2 and 3 were locked down... Mr. Knight informed me that when he inspected the seats just following the incident, the restraint device of seat no. 1 was fully extended in the up position. Seats 2 and 3 were locked down... The restraint of seat no. 1 was moveable upward, with approximately 40 lbs of force (my estimate). It returned rapidly and with force to the down position when released. The cover over the rear of the seat, which houses the restraint operating cylinder and other mechanisms and controls, was removed for inspection of the locking pin, air cylinder, and locking plates. The locking pin mounted on the restraint lifting cylinder behind the seat was not engaged. The Control Panel was examined with the following items noted: The E-Stop button is a spring return rather than a detent style button. The particular part number could not be located in the manufacturer's web catalog. No further information is known about its operation. The "Close Safety Bars" button was broken. Within the main electrical panel, several wires had diagonal cuts into their insulation, exposing the conductor. These cuts were clearly intentional and were the type of cut typically made for "jumping out", or accessing the out wire. The wires noted with cuts were numbers 120, 126, 143, 144, 145, 146 and 175. A red jumper wire connected wires 142 and 143. A black jumper wire was shown to me and I was informed by Mr. Knight and Mr. Kendall that following the incident, the black jumper connected wires 144 and 145. Another un-numbered wire was found with a yellow jumper spliced into it, but the clips were not connected to any other wires.

11:15 AM

An electrician (Bill Bradley), from the City of Pigeon Forge arrived on site at my request to test the functionality of the certain components of the safety control system.

We attempted to put power to the ride by actuating the main breaker in the electrical panel but were unsuccessful. I asked Mr. Bradley to test the functionality of the restraint locking pin micro switches in seat no. 1. Micro switches on the left and right side of the lap bar portion of the restraint were exposed, manually manipulated and checked for electrical continuity. Both switches were found to function properly. The cam operated micro switch on the pneumatic lifting cylinder, which confirms the position of the restraint, was exposed, manually manipulated and checked for electrical continuity. This switch was found to function properly. The locking pin micro switch on the pneumatic lifting cylinder, which confirms that the locking pin has engaged, was exposed, manually manipulated and checked for electrical continuity. This switch was found to function properly for the locked position. Because the harness was now locked in a down position, we could not move it to an open position to check the validity of the micro switch for that position.

12:32 PM

Concluded site inspection.