

Standards & Related Documents Committee

TECHNICAL BULLETIN - JULY 2005

291. Log Flume Accidents

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On Saturday 19 March 2005 a 21-year-old girl and her 14-year-old sister were injured in an accident on a log flume ride at the Miami-Dade County Fair and Exposition in Miami, Florida. The ride, called Niagra Falls, is operated by Southeast Amusement.

Reports say that the injured persons' boat had stopped on the conveyor belt at the top of the ride's tallest chute because the ride detected that other boats became stuck at another point along the ride. The suggestion is that the safety stop turned off the pumps causing the ride's water level to drop too low for their boat to travel safely. A spokesman for the controller of the ride said that a ride operator then mistakenly pressed a button which restarted the conveyor belt, allowing the boat to proceed down the 40-foot-tall chute and hit the side of the ride's fiberglass trough.

One of the passengers suffered facial fractures and was expected to undergo surgery; the other rider suffered minor injuries.

Reports say that inspectors later examined the ride and found no mechanical problems and that they agreed that the accident was the result of the operator's error.

We note that the best principles applying to restarting after a safety stop would appear not to have been incorporated into the design of this ride. For instance, paragraph 40 of Chapter 8 (Safety-related control systems) of *Safety of Amusement Devices: Design*¹ says "After a safety stop has been initiated, a restart may not take place until the cause for the stop has been removed.". There are different ways of achieving this but it is commonly the case that there would not be a button available to allow the operator to override the safety system. If the reason for the stoppage doesn't automatically clear, a person competent in the correct functioning and maintenance of the device would be expected to investigate and a key would be needed to override the system. The competence and staff training required by this person is obviously significant. Even then, any ability to override automatic water level detection, whether the control system is in automatic or manual mode, is questionable since it seems to allow the risk of injury as well as the risk of damage to equipment even if the logs are empty. Damage to equipment / empty logs can lead to subsequent accidents for a variety of reasons.

¹ *Safety of Amusement Devices: Design* (NAFLIC; ISBN 0 9546161 0 3)

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Designers and inspection bodies involved with pre-use inspection should confirm, where necessary, the presence and adequacy of water level detection, suitably interlocked to prevent movement under low water conditions. If a designer wishes to provide muting facilities for such interlocks then he needs to carry out very careful justification and, to comply with British requirements, he should record it in his risk assessment.

Controllers, as the primary dutyholders for maintaining in-service safety, should be carrying out regular checks that these systems are correctly functioning, and Appointed Inspection Bodies should confirm correct functioning at the time of their thorough examination.

Since drafting this Technical Bulletin we have become aware of a similar accident at Steel Pier amusement park in Atlantic City, New Jersey. A press report says that five family members were injured, on Saturday 18 June, in an accident on a Steel Pier log flume ride. Officials said the most serious injury was to the father, who was ejected from a car when it reached the empty trough at the bottom of the ride. He is said to have been thrown into a sheet of plexiglass.

We have no information about who manufactured the Log Flumes involved in these two accidents.