

Standards & Related Documents Committee

TECHNICAL BULLETIN - JUNE 2002

241. Rotor Rides

Page 1 of 2

It has recently been in the news in the USA that an amusement park has reached a settlement with the family of a girl who was injured on a Rotor ride. The particular Rotor in question was one of those manufactured by Chance Rides of Wichita, Kansas, in which centrifugal force is used to pin riders against the inner wall of a spinning drum. Once this has been achieved the floor, which also spins, drops away from under their feet.

Witnesses of the accident say that the floor was raised at the wrong time, and that two girls were injured when their feet got caught between the wall and the rising floor. The girl whose parents filed the lawsuit lost most of one of her toes. The other girl was not seriously injured. The reports say that the park's records showed that at least twelve other people had been injured on the ride. The park agreed to pay the victim an undisclosed sum of money.

Back in 1992 in Great Britain, the Health & Safety Executive called a meeting to discuss incidents regarding the trapping of passengers' feet between the rotating floor and side wall of a Rotor ride. This occurred, as a result of unconventional operation, during the raising of the floor at the end of the ride. Wear of the wheels which guide the floor up and down the drum can cause it to be able to float laterally, allowing increasing gaps between floor and side wall to occur. Because of size, children's feet are more likely to be trapped.

NAFLIC subsequently issued TB 033. Terminology etc. has, however, changed since that time, so this new Technical Bulletin is to be considered an update, and TB 033 is now withdrawn.

It was decided, in 1992, that the remedy was mainly operational. Certain points need to be considered by controllers and operators, as follows :-

1. The ride should be allowed to slow down with the floor in its lowered position. This means that, as the speed of rotation decreases, the passengers slide down the wall to meet the floor. When the drum has completely stopped, ensuring that the passengers' feet are not being forced against the wall, the floor can be raised if necessary.

2. An instruction sheet, detailing the above, should be made available to the operator at all times and also fixed, in a suitable and permanent way, within view of the operator. [We believe that most such instruction sheets no longer exist!].
3. Any rubber on the side of the drum at passengers' lower leg level is to be removed, to allow feet to slide easily out of the path of the platform.
4. Feet positions are to be marked on the platform floor, several inches from the edge, so that passengers are aware of the preferred position to stand. [Demarcation lines (yellow) are often used, with an associated verbal and / or written instruction].
5. It was also noted that main entrance doors [i.e. the outer door through the non-rotating structure] on some Rotor devices could be opened whilst the ride was in motion, giving access to the revolving drum. HSE suggested that this may be remedied by fitting an electrically sensed, or mechanical, interlock to the gates ensuring that :
 - a) The ride cannot be started with the doors open.
 - b) The doors cannot be opened with the ride in motion.

This does not preclude the use of any other equally effective control measures. It was thought that there existed a reasonably foreseeable problem in the lack of door interlocks, for which the risk would need to be considered even though we are not aware of an associated accident.

With respect to point numbered 5, we believe that interlocks are not common.