

# NAFLIC

*National Association For Leisure Industry Certification*

## **Standards & Related Documents Sub-Committee**

### **TECHNICAL BULLETIN - SEPTEMBER 1997**

#### **152. Pinfari Roller Coaster Restraint Failures**

We have been informed by NAFLIC member John H Rundle Ltd that a number of shoulder restraint ratchet bar failures have occurred on an RC50 Pinfari roller coaster in the first year of its operation. It has since been confirmed by Leisure Technical Consultants Ltd that they have also become aware of a number of similar failures on a three year old Pinfari Python (ZL42) ride. These failures are serious since they render the passenger restraint unlocked and free to open.

The design specification of the ratchet bar has slight differences between the two types of Pinfari roller coaster. We have not seen a Design Review in this country covering the safety of either of these passenger restraint ratchet bars. We therefore don't know whether the failures result from faulty design or bad construction.

The failures have all been by fatigue from the root of a threaded section on the end of a larger ratchet bar. In both cases there is a nearby weld which may or may not be implicated, i.e. without more detail of the specifications we cannot express a view on this. The failures that have occurred demonstrate that cracks have been initiated, have propagated and ended in failure in a one year period between NDT examinations specifically intended to find them. It is not therefore possible to rely on this method alone, i.e. annual NDT, to ensure that failures in service will not happen.

Controllers of Pinfari roller coasters with shoulder restraints, and Inspection Bodies dealing with such rides, will need to make an informed judgement of the necessary action to be taken.

Committee Members :- Dr Garry Fawcett (Chairman), Mr Richard Barnes, Mr Bob Nicholls, Mr Robert Casey,  
Mr Peter Smith and representatives of Plant Safety Ltd, and Banwell & Associates Ltd

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