

# NAFLIC

*National Association For Leisure Industry Certification*

## Standards & Related Documents Committee

### TECHNICAL BULLETIN - SEPTEMBER 1999

#### 192. Zamperla Ferris Wheel Radial Arm Cracking

We have heard via NAFLIC member Leisure Technical Consultants Ltd that fatigue cracking at the inner (hub) ends of the main radial arms has been confirmed on a Zamperla Ferris Wheel. The ride is owned by Flamingoland and was manufactured in 1988. The maintenance staff found the cracking during daily / routine inspection.

It has previously been confirmed that cracks at the mid-length and outer butt-welded connections on the radial arms occur. Additionally, car axle shaft fatigue cracks were reported in TB 142 in February 1997.

By way of corroboration of the radial arm design limitation, we are told that NAFLIC member Wilson Consultants, in a Design Review study of the axle shafts and radial arms carried out in 1988, checked the theoretical fatigue lives. The calculations indicated the future cracking of these components at each of the cross sections so far known to have experienced it. However, please don't think that this is an unusual feature of this Zamperla ride - fatigue calculations show that most amusement rides have a variety of significant details with non-infinite life.

The manufacturer recommends periodic magnetic particle inspection of several locations on the radial arms.

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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