NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Subcommittee

TECHNICAL BULLETIN - MARCH 1994

075. Zamperla Balloon Race

This bulletin is another resulting from information provided by LTC Ltd. It concerns fatigue cracks occurring in a travelling version of the 8 arm Zamperla "Balloon Race" ride.

The cracks were found in the lifting trunnions which attach the upper end of the hydraulic ram rods to the main centre of the ride. The rams are used to push the rotating ride arms and balloons to their elevated position in the course of the ride cycle. We note that the trunnion design detail of the 12 arm version is the same and the load is commensurately larger so, although we are not aware of any cracks, it seems possible that this larger version could also be affected.

The trunnions consist of a pair of stub shafts welded in to an annular collar. After welding each connection is subsequently machined with the result that it does not obviously appear to be a weld. The fatigue cracks were initiated near the weld toe.

With respect to examination it should be noted that the cracks, which were at an early stage in their development, were not detectable using UT (i.e. ultrasonic). They were found using MT (magnetic particle) following a relatively simple strip down operation.

We recommend any Appointed Person who examines a Balloon Race to institute a programme of periodic NDT of these components. We would like to hear from anybody who finds similar cracking.

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