

NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Subcommittee

TECHNICAL BULLETIN - SEPTEMBER 1993

062. Chair-O-Plane Centre Column Failure (Corrected September 1993)

NAFLIC members Pollard Engineering have informed us of some of the details of an accident involving a set of Chair-O-Planes, originally of German manufacture, in which fatigue failure of the main centre column occurred.

The column diameter was approximately 9" and a fatigue crack had developed around the circumference. Following the accident, there was just 7" of metal remaining. The crack initiated from the edge of a hole in the tube wall through which cables from the light bands passed.

We may have more details when the investigation has progressed further but, at this stage, we are reminded of several points which we think are worth mentioning in this Bulletin :-

- ◆ It is recommended, in Guidance Note PM 62 from the Health and Safety Executive entitled "Safe operation of passenger carrying amusement devices - The Chair-O-Plane", that these columns should be regularly subjected to NDT (see paragraph 42).
- ◆ In a ride of this type the column stresses contributing to fatigue are broadly of the same magnitude throughout the entire length - a fact which should be borne in mind during examination. Stress raisers such as welds and holes are the main priority.
- ◆ The presence of a circular hole in a plate or tube wall increases the nominal stress locally at the edge of the hole by a factor of 4 compared with plain steel. There will also be blemishes introduced which hasten the onset of fatigue cracking. The net effect is that the fatigue life with a hole present may be only 1/10th of that for plain steel.
- ◆ No new holes in, or unauthorised welded attachments to, structural or safety critical components should be permitted without recourse to the procedure appropriate to "Modifications to amusement devices" in paragraphs 43 - 45 of "Fairgrounds and Amusement Parks - A Code of Safe Practice". Preparation of suitable calculations, which should be independently reviewed, is highly likely to be required.