NAFLIC

National Association For Leisure Industry Certification

Standards & Related Documents Committee

TECHNICAL BULLETIN - OCTOBER 2002

255. Reverchon Spinning Coaster Limitations

We have been informed of several safety-related matters which NAFLIC member Wilson Consultants believe to affect some Reverchon spinning coasters.

Analysis of accelerometer results taken from 3 different rides, recorded by 2 different inspection bodies, showed braking deceleration magnitudes in all cases which exceeded the values in the Reverchon specification by about 60%. This was true of brake section no. 3, with an average deceleration magnitude of about 11 m/s^2, and may be the case for other brake sets.

Reverchon Industries says that these magnitudes are too high and that brake units need to be correctly set. Unfortunately, there are no brake checking or adjustment instructions included in the Manual supplied with the ride. Dutyholders may need to consider the specification of adequate instructions for inclusion in the Operations Manual.

High braking decelerations have implications for passenger restraint integrity since one of the main applied loadings assumed for calculation purposes occurs as a result of braking. On the basis of this loading it was Wilson Consultants' view that, even when brake settings are within the range assumed by the designer, fatigue failures at some constructional details of the restraint have not been ruled out. The excessive braking decelerations described above would have the additional effect of reducing fatigue lives to just ¼ of the time that would ensue for the deceleration assumed by the designer.

Unfortunately the Manual supplied with the ride contains no specific instructions for the inspection of those locations on the passenger restraints where fatigue is likely to occur. It is our view that dutyholders with respect to design safety may need to consider identifying these locations and specifying appropriate inspection and monitoring instructions for inclusion in the Operations Manual.

It has also been noted that impact loads, from braking, cause dynamic magnification of the equivalent static loading and the possibility of stresses occasionally exceeding the 0.2% proof stress for the stainless steel restraint bar material has not been ruled out. It is thought that consideration may also need to be given to monitoring for the accumulation of small permanent deformations of the restraints.

PO BOX 752, SUNDERLAND, SR3 1XX
TEL: (0191) 5239498 FAX: (0191) 5239498