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Fabbri Ferris Wheel pivot pin failure

NAFLIC has received the following information from a member IB in relation to a Fabbri-built Ferris Wheel. The information may also apply to other similar devices.

For assembly/disassembly, the main arms of the Ferris Wheel are connected in clusters of three by a bracket on the end of the centre arm. The two outside arms pivot from the centre arm on pins.

During repair work being carried out on a damaged arm, the removal of a pivot pin was necessary. The removed pin was found to have failed and was split into two halves at the shear point where the pins pass through the arm lug and centre arm retaining bracket. Subsequent ultrasonic inspection was carried out on the remaining arm pivot pins and 17 of the remaining 35 pins inspected were found to have one or two indications, all of which were located at the shear points.

Upon conferring with operators of similar devices the cause would seem to be a lack of lubrication causing the pins to seize. When the arms are pivoted in or out they shear the seized pins due to their weight and large leverage.

It is suggested that operators and inspectors should consider the need to inspect these pins on a regular basis. Failure of a pin during ride set-up could lead to serious injury.

Photos are included below to show pins in-situ and a damaged pin which has been removed.

While the manufacturer of this particular device was Fabbri we understand that other manufacturers use similar, if not identical, arm designs which may also fail in this way.

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Left: one of the arm fixing brackets incorporating two arm pivot pins. Right: a completely sheared pin.