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Uncontrolled start-up of amusement rides

WorkCover Queensland, part of the Queensland Government in Australia, has issued a safety alert relating to the uncontrolled starting of amusement rides following an incident on a Wave Swinger ride with a design feature common to many older amusement devices. The device unexpectedly started to rotate at high speed while patrons were getting off the ride.

NAFLIC has previously issued another technical bulletin on the subject of unintentional start-up of devices, the number of which is TB259 (see NAFLIC website for details).

This incident also serves as a reminder that allowing unauthorised access to the control panel of a device is another potential issue for controllers to consider in relation to unintentional start-up.

Committee Members: Mr. D Dadswell (Chairman), Mr. A Mellor (Secretary), Mr. P Smith, Mr. J Green, Mr. D Cox, Mr. I Davies, Mr. J Shilling, Mr. D Inman & Mr. R Hiscoe

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Workplace Health and Safety
Electrical Safety Office
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Uncontrolled starting of amusement devices

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Purpose

Background

Contributing factors

Action required

Further information

Purpose

The purpose of this safety alert is to provide information on an incident with a *Wave swinger* amusement ride with a design feature common to many older amusement devices.

Background

A *Wave swinger* amusement ride unexpectedly started to rotate at high speed while patrons were getting off the ride. Fortunately, the operator activated the emergency stop and managed to stop the ride with the help of the foot brake. Although patrons received only minor injuries, potentially the incident could have been far worse. Figure 1 is a photo of a typical *Wave swinger* ride.



Figure 1 – Photo of a *Wave swinger* amusement ride

Contributing factors

The *Wave swinger* ride involved in the incident was manufactured in 1977. During our investigation, the ride's electric over hydraulic control system was tested but the fault could not be identified. However, it has been confirmed that the ride did not have safeguards in the control system (which are normally installed in modern machinery) to prevent uncontrolled re-starts.

Action required

To prevent similar incidents on amusement devices manufactured before 2008, a risk assessment should be conducted to determine operation areas which, if not protected by safety features, can result in serious injuries. These include unexpected starting of the amusement device, the emergency stop, locking of entries to hazard zones of the device while it is in operation and rider restraint interlocks. Areas with high risks should be upgraded to the level of machinery safe-guarding required by technical standards such as Australian Standard *AS 4024 Safety of machinery* and International Standards Organisation *ISO 13849 Safety of machinery – Safety related parts of control systems* (or equivalent).

Owners of amusement devices must have an engineering assessment conducted on the control system of their amusement devices to determine whether an upgrade is required. This assessment should be conducted within 12 months of this safety alert being issued, either separately or as part of the annual inspection. The engineer should recommend the timeframe for any required upgrade to be implemented.

Further information

Further information can be obtained from the following:

Australian standard AS 3533 on amusement devices

Australian standard AS 4024 on safe guarding of machinery

Technical standard EN ISO 13849-1/-2: Safety of machinery – Safety-related parts of control systems

[Managing risks of plant in the workplace Code of Practice 2013](#) (PDF, 1477.22 KB)

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