

Crazy Frogs, Orbitor and Tageda

Technical Bulletin

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HSE has identified several issues involving Crazy Frog and Orbitor devices following recent site visits by the NFIT team.

In addition, HSE has also been informed of potential issues relating to Tagada devices.

In due course HSE will be issuing more detailed guidance on these matters but wanted to issue some interim information to so that remedial action can be taken in a timely manner by both ride controllers and Inspection Bodies carrying out annual in-service inspections.

1. Crazy Frog/Jumping Frog

At recent inspection HSE identified significant cracking to the GRP of the passenger seat in several places (see attached pictures). HSE understand that the subframe of the passenger seat is completely encased in foam and GRP and cannot easily removed for inspection.

Initiation (root cause) of the cracks is not clear, but breach of the outer gelcoat surface protection of the GRP will lead to exposure of the fibre underneath, and it these GRP fibres that offer strength to the structure.

Aside from the obvious risk of passengers receiving cuts etc, on the exposed and sharp edges, such damage allows the ingress of water, that could potentially cause corrosion to the steel subframe and accelerate damage to the GRP of the passenger seat.

As part of the intervention, HSE reviewed the Design Review, NDT schedule and NDT report, and HSE consider that this documentation does not provide satisfactory detail on how the overall subframe for the passenger seat is assessed using NDT (visual or otherwise), to ensure that its integrity is not compromised, and it is safe for continued use.

HSE are concerned that this type of seat arrangement (not just on this type of device) may not be subject to suitable assessment through NDT (visual or otherwise) and that with the ingress of water through damaged outer coating could lead to significant undetected deterioration, and that lack of suitable NDT could also fail to detect cracking and other deformation leading to potential catastrophic failure.

HSE require that these types of passenger seats (along with all other components) are maintained in a good condition and are subject to suitable and sufficient regime of assessment via NDT to ensure that the device remains safe for continued operation.



2. Orbitor

HSE recently identified an issue with the locking mechanism on an Orbitor device, where it was possible for the occupant of the device to open the restraint bar during operation (see attached video).



See a video of the inspection here.

HSE would consider that if a restraint bar has been provided for the purposes of retaining a passenger within a car, whether that be in the seated position or to physically prevent

them from kneeling, standing etc., then it should not be possible for them to open the bar whilst the device is in motion i.e., the restraint should not fail to danger.

HSE require that ride controllers in conjunction with their IBs consider the locking arrangements on these devices (and similar amusement devices) and ensure that where it has been identified by the manufacturer or in the DR that a restraint bar is required, that these are fitted with a positive locking arrangement that is constructed and/or positioned so that they cannot be readily opened by passengers in the car i.e., they should have double feature catches, suitably shrouded catches or catches positioned so that only the ride attendant can open them, or an equally effective design to prevent them being opened by passenger during the ride cycle.

3. Tagada

HSE has been informed of a potential issue relating to Tagada devices, which involves the subframe of the passenger turntable and a lack of suitable and sufficient assessment through NDT (visual or otherwise) to confirm its ongoing integrity and safety.

HSE understands that as the subframe of the passenger is normally covered by a GRP moulding, and as these coverings are not readily removable the subframe may not be subject to suitable and sufficient assessment through NDT (visual or otherwise) and could be heavily corroded and cracking and other deformation may also not be detected, leading to potential catastrophic failure.

HSE require that Tagada turntables (along with all other components) are maintained in a good condition and are subject to a suitable and sufficient regime of assessment via NDT (visual or otherwise) to ensure that the device remain safe to operate.

As with each of these issues, the ride controller should consult with their Inspection Body to ensure that their device has been suitably inspected, giving due consideration to the matters highlighted in this email, and seek confirmation that their device is safe for continued operation.

If remedial action is required, the IB should determine whether the device is safe to operate in the interim period but were it cannot be established, or the device is unsafe, it should be taken out of use until the necessary work is completed by a competent person and the IB is satisfied that it is safe to operate.

Please note that should any safety critical modifications be required, these must be subject to a partial design review, assessment to conformity to design and initial test in line with the requirements set out in HSG 175.

Finally, I would also refer people to the HSE/ADIPS letter sent 25th September 2019 regarding NDT and the requirements regarding changes to NDT schedules and techniques [see below].

Kind regards

David



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LETTER TO THOSE OPERATING AMUSEMENT DEVICES UNDER ADIPS

The HSE and ADIPS have been working closely together to ensure that all applicable standards, rules and legislation are followed by those working within the Fairground and Amusement Park industry. As a consequence of audits carried out by ADIPS it has become apparent that ISO 9934-1:2016 is not being applied to its fullest extent: "Non-ferromagnetic coatings up to approximately 50microns thickness, such as unbroken adherent paint layers, do not normally impair detection sensitivity. Thicker coatings reduce sensitivity. Under these conditions, the sensitivity shall be verified."

The removal of paint thicker than 50 microns when using the Non-Destructive Testing (NDT) technique of Magnetic Particle Testing (MPI) must take place prior to the ADIPS Inspection Body (IB) carrying out their inspection. The industry at present has not satisfied any specialist NDT organisation, Level 3 qualified NDT practitioner or any regulatory body of the sensitivity of fault detection beyond the internationally recognised standard of 50 microns.

ADIPS have sought advice from NDT specialists at The Welding Institute (TWI) and a training event was held for all ADIPS registered IBs; also, in attendance were representatives from the SGGB and BALPPA. During this event the relevance and applicability of this standard to our industry was discussed in detail. Following consultation with TWI it is the firm view of the HSE, and ADIPS that this standard has always been relevant and must be applied and adhered to forthwith.

There is a potential for other techniques to be used in place of MPI such as Eddy Current and ACFM which do not have the same preparatory conditions. If such changes are proposed the IB must ensure that this is an acceptable alternative method which must be done with the agreement of a suitably qualified NDT practitioner, whether that is in-house NDT practitioner or a third-party company. In this instance, the NDT practitioner must be aware of the acceptance standard being applied, the design detail of the component or fabrication and the quality of the fabrication welding. It may be that the quality of the fabrication welds can only be observed by attending site.

NDT schedules must be in place for all devices registered under ADIPS that require NDT and those schedules must remain suitable and sufficient to the device <u>throughout its life</u>. Where changes are required or made to the NDT schedule and the IB does not have the competence to carry out or approve this then they will need to seek advice from a suitably competent IB.