



Certificate of Derogation with a Railway Group Standard

(in accordance with part 6 of the Railway Group Standards Code)

1. Type of deviation

Deviation Number: **13/008/DGN**

Derogation

2. Details of applicant:

Railway Vehicle Technologies, Windhoff Bahn- und Anlagentechnik GmbH, Hovestrasse 10,
D-48431 Rheine, Germany

3. Your reference number:

Windhoff/2400/05

4. Status of applicant:

Manufacturer – Contracting Entity

5. Title of certificate:

Non-provision of lifeguards on an OTM operating as lead vehicle in a possession.

6a. Details of Railway Group Standard (RGS):

RGS Number:	Issue No:	Issue Date:	Title:
GM/RT2400	Four	September 2011	Engineering design of on-track machines

6b. RGS clause(s):

3.25.12

6c. RGS clause requirements:

“3.25.12 Lifeguards

3.25.12.1 All leading bogies shall be fitted with lifeguards, as stipulated below, with the aim of reducing as far as is practicable the risk of derailment due to impact by small obstacles on the rails.

3.25.12.2 A lifeguard shall:

- a) Be made of a ductile material.
- b) Be able to resist a sustained concentrated proof load of at least 20kN applied at its bottom edge horizontally and in a longitudinal direction towards the adjacent wheel. During deformation beyond the proof load, the lifeguard shall resist an ultimate load of at least 35 kN.
- c) Be able to resist the proof load defined in b) combined with a transverse load, in either direction, of at least 10 kN.
- d) Be designed so that, as the load in b) or c) is increased up to the maximum dynamic load that it can sustain during impact with the obstacle, it deforms plastically so as to maximise the amount of energy absorbed.

- e) Be designed so that, during plastic deformation, it does not foul the track or running gear and that contact with the wheel tread, if it occurs, does not pose the risk of derailment.
- f) Be designed so that, under the conditions described above, it remains securely attached to the bogie.

3.25.12.3 The bogie and the attachment of the lifeguard to the bogie shall not be damaged or suffer significant permanent deformation under the loads defined above.

3.25.12.4 If mounted on a bogie frame, the lifeguard and its attachment to the bogie frame shall be capable of withstanding the proof loads defined in 3.25.11.2.

3.25.12.5 If mounted on a bogie frame, the lifeguard and its attachment to the bogie frame shall be capable of withstanding without failure the inertia forces associated with the fatigue accelerations defined in 3.25.11.3.

3.25.12.6 If mounted on an axlebox, the lifeguard and its attachment to the axlebox shall be capable of withstanding the proof loads defined in section 3.25.13.1.

3.25.12.7 If mounted on an axlebox, the lifeguard and its attachment to the axlebox shall be capable of withstanding without failure the inertia forces associated with the fatigue accelerations defined in 3.25.13.2.

7. Scope of deviation:

This application applies to existing KFA and Falcon wagons modified and re-classified as OTMs to form part of the Network Rail High Output OLE Construction System (HOPS) that will be hauled in train formation when travelling to and from site, and either hauled or propelled when working in a possession or work site. This application applies to the following vehicles when propelled as the leading vehicle.

KFA wagons:

- 99709131002-6
- 99709131004-2
- 99709131008-3
- 99709131012-5
- 99709131016-6
- 99709131017-4
- 99709131019-0
- 99709131009-1 (not to be fitted with lifeguards).

Falcon wagon:

- 99709131007-5.

8. Impacts of complying with the current RGS requirement:

The retro design and fitting of lifeguards compliant with the standard would be extremely difficult since the wagons are fitted with traditional freight bogies which were not designed as a leading bogie to carry lifeguards. The associated costs with the design and testing of a compliant retro fit lifeguard are also considered prohibitive and for these reasons, it is considered unreasonable to comply with the quoted RGS clause.

9. Proposed alternative actions:

When operating within a possession, the vehicles will be propelled at a maximum speed of 5 km/h and the corresponding maximum stopping distance is less than 3 m. This combination of low speed and short stopping distance is comparable to that of on-track plant compliant with RIS-1530-PLT Issue 4.

On-track plant is not fitted with high performance lifeguards but is fitted with a device compliant with RIS-1530-PLT, clause 5.10.11 to brush aside small obstacles from the rail head. It is proposed that such a device, compliant with, and taking guidance from, RIS-1530-PLT will be fitted to the vehicles listed in this application.

This approach is the same as that adopted by derogation 12/008/DGN approved in March 2012.

In addition to the device to move obstacles, clause 5.10.12 of RIS-1530_PLT requires that an assessment is carried out in accordance with the Machinery Directive, to identify whether a rail wheel poses a trapping danger to the feet of personnel, and that where such a danger is identified, that additional guarding is provided to prevent this. Unlike on-track plant where the leading wheel is often close to, or in advance of the moving vehicle, the wheel/axle arrangement of the vehicles covered by this application remain unchanged from their original design, and are positioned some 500 mm (KFA) / 400 mm (Falcon) from the front of the vehicle. It is therefore considered that the wheels are not in an exposed position and do not therefore present a trapping hazard, and consequently, that additional guarding is not required.

10. Impacts of the alternative actions:

Installation of an on-track plant type device that meets the requirements of RIS-1530-PLT Issue 4 may pose a risk when the vehicles are in travel mode outside possession. In order to mitigate this risk, the design will be retractable or removable.

Evidence of compliance with RIS-1530-PLT when the machine is working within a possession and other standards when travelling outside a possession will be submitted to the NoBo/DeBo/CP in support of demonstrating conformance of the vehicles to all required standards.

The use of this alternative action is considered to deliver an equivalent level of control and safety that will not require further actions or operational constraints.

11. What other options have been considered?

In discussion with RSSB, the non-fitment of a protection device was not considered a viable option since the working parameters of these machines are similar to on-track plant where the requirement has already been defined. Since the option of fitting lifeguards compliant with RGS's is considered unreasonable (see section 8 above), the project decided to implement and validate a design that is in conformance with RIS-1530-PLT Issue 4. No further options have been considered.

12. Consultation with affected parties

In view of timescales to which the project is working, this application has been sent to Network Rail and Amey Rail in parallel to the submission being submitted to RSSB. Each of these parties has been asked to indicate that they will support the derogation for discussion at the next appropriate Standards Committee meetings.

13. Additional actions/observations:

Upon receipt, the applicant is required to identify affected, interfacing parties and copy this certificate, together with supporting information, to those parties.

14. Method of elimination:

N/A.

15. Start and end date:

N/A

16. Signature of applicant:

Railway Vehicle Technologies

Date of application:

17/01/2013

17. Lead Standards Committee details:

Name of Committee:

Plant

Date of meeting

07/02/2013

Minute reference:

13/PLT/02/014

Authorised by:

Signed by Cliff Cork on 04/03/2013

Date of Authorisation:

04/03/2013

Cliff Cork
Head of Delivery, Infrastructure and Rolling Stock