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RAILTRACK
Safety & Standards

Briefing Notes for: Resistance of Railway Vehicles to Roll-over in Gales
Document No: GM/RT2142 **Issue:** Two
Subject Committee(s): Traction & Rolling Stock
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BACKGROUND

Tilting trains are designed to curve at higher speeds and at higher cant deficiencies than conventional trains. Hence tilting trains are more susceptible to roll-over on curves than existing non-tilting stock of comparable aerodynamic characteristics travelling on the same curves. Issue one of GM/RT2142 makes no mention of train tilt.

KEY CHANGES INTRODUCED BY THIS STANDARD

GM/RT2142 has been revised to make it clear that its existing provisions apply to non-tilting trains only. In addition, new requirements have been added to cover tilting trains. Revisions in this issue have not been marked by a vertical black line in the adjacent margin because the text has been revised throughout.

A non-tilting vehicle is required to satisfy at least one of two criteria in order to ensure safe operation in gales. For a tilting train it will not be sufficient to consider the train on straight and level track only; the risk of roll-over over the whole route of operation, including on curves, will have to be assessed too.

This is because tilting trains are designed to curve at higher speeds and at higher cant deficiencies than conventional trains. Hence it is likely that the roll-over wind speeds on curves will be less than those of existing non-tilting stock of comparable aerodynamic characteristics travelling on the same curves. It is thus necessary to determine the probability of roll-over of a tilting train over its proposed route of operation.

In addition, the calculation of the intrinsic roll-over wind speed has been revised to include an allowance for any shift of the vehicle's centre of mass due to either train tilt or tilt failure.

Finally, a requirement has been added for train operators to inform Railtrack of certain train characteristics for trains that are required to operate at cant deficiencies in excess of 6°. This data will enable Railtrack to calculate the enhanced permissible speed for the train on each curve on its route, using the formulae and processes described in Group Standard GC/RT5021, "Track System Requirements".

COMPLIANCE

The effective date of this document is 02/12/2000 and the requirements mandated in this document shall be complied with no later than the dates detailed below.

The design requirements are to be complied with by all vehicles of previously uncertificated

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designs with a Design Scrutiny certificate signed on or after 02/12/2000. The design requirements shall be complied with from 03/12/2005 by any future vehicles, built to the same design as a vehicle already having Engineering Acceptance.

The design requirements do not apply retrospectively to existing vehicles with Engineering Acceptance. The exception is that where vehicles are undergoing engineering change, the requirements shall be applied so far as is reasonably practicable.

For tilting trains the provision of this document are to be complied with from the commencement of their operation.