

## Recommendation(s) Status: Passenger train derailment near East Langton, Leicestershire

This report is based on information provided to the RAIB by the relevant safety authority or public body.

The status of implementation of the recommendations, as reported to us, has been divided into six categories:

### Key to Recommendation Status

<b>Implemented:</b>	All actions to deliver the recommendation have been completed.
<b>Implemented by alternative means:</b>	The intent of the recommendation has been satisfied in a way that was not identified by the RAIB during the investigation.
<b>Implementation ongoing:</b>	Work to deliver the intent of the recommendation has been agreed and is in the process of being delivered.
<b>In-progress:</b>	The relevant safety authority has yet to be satisfied that an appropriate plan, with timescales, is in place to implement the recommendation; and work is in progress to provide this.
<b>Non-implementation:</b>	Regulation 12(2)(b)(iii) = recommendation considered and no implementation action to be taken.
<b>Awaiting response:</b>	Awaiting initial report from the relevant safety authority or public body on the status of the recommendation.

RAIB concerns on actions taken by organisations in response to recommendations are reflected in this report and are indicated by one of the following:

-  The red triangle shows recommendations where the RAIB has concerns that no actions have been taken in response to a recommendation.
-  The blue triangle shows recommendations where the RAIB has concerns that the actions taken, or proposed, are inappropriate or insufficient to address the risk identified during the investigation.
-  The white triangle shows recommendations where the RAIB notes substantive actions have been reported, but the RAIB still has concerns.

Note: The tables which follow, report the status of recommendations on 31 December 2015. In some other cases the end implementer has already sent information to the relevant safety authority about the actions it has taken, or proposes to take and the safety authority is considering whether it is satisfied that those actions and the associated timescales are accepted.

Number/ Date/ Report No/ Inv Title / Current Status	Safety Recommendation	Summary of current status (based on latest report from the relevant safety authority or public body)
<p>1            20/02/2010    01/2012</p> <p>Passenger train derailment near East Langton, Leicestershire</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is to reduce the risk of recurrence of a similar final drive gearbox failure on the Meridian and similar fleets.</p> <p>Bombardier Transportation, in conjunction with Voith, should undertake a design review of the final drive gearboxes and axles used on the Meridian and Voyager fleets (Class 220, 221 and 222) and, where appropriate, implement design and maintenance improvements, including verification of the over-temperature detection, to reduce the risk from loss of output bearing interference fits on the axles (paragraphs 189, 191a).</p>	<p>Bombardier Transportation, in conjunction with Voith have reported that they have taken actions in response to this recommendation.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>2            20/02/2010    01/2012</p> <p>Passenger train derailment near East Langton, Leicestershire</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is that safety lessons from the East Langton investigation, in particular that a final drive output bearing failure can lead to axle failure, are captured in procedures for the design and assembly of final drive gearboxes at new build and overhaul, to maintain adequate bearing interference fits.</p> <p>ROSCOs and other Contracting Entities (purchasers of rolling stock), and Entities in Charge of Maintenance (responsible for overhaul of rolling stock) should review, and where appropriate improve, the design, manufacture and overhaul procedures used for final drive gearboxes in their current and future fleets, in particular those featuring hollow axles, by checking that they adequately address the following factors:</p> <ul style="list-style-type: none"> <li>I reduction in the size of output bearing seats due to shrinkage arising from other nearby interference fits and/or wear during service;</li> <li>I bearing bore growth during the service life of the bearing (eg obtained by measuring a sample of bearings);</li> <li>I bearing seats being made undersize; and</li> <li>I detection of overheating output bearings.</li> </ul> <p>(paragraph 189).</p> <p>Note for information relating to Recommendation 2: In conjunction with the publication of this report, the RAIB has written to the European Rail Agency (ERA) to request their assistance with the dissemination of the identified issues to national safety authorities and national investigation bodies in other member states of the European Union, for their information and action as appropriate to their circumstances.</p>	<p>ROSCOs and other Contracting Entities have reported that they have taken actions in response to this recommendation.</p> <p>Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>

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<p>3            20/02/2010    01/2012</p> <p>Passenger train derailment near East Langton, Leicestershire</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is to improve the failure detection capability of oil sampling regimes for final drive gearboxes to reduce the risk of future axle failure.</p> <p>Bombardier Transportation should review the final drive oil sampling regime on the Meridian and similar fleets (including consideration of sampling frequency and consistency, action levels, oil colour and use of cumulative trending) and, where necessary, make changes to maximise effectiveness in detecting impending failures (paragraph 189e).</p>	<p>Bombardier Transportation has carried out a review in response to this recommendation and has developed a plan to improve its arrangements for the sampling of oil. ORR proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>
<p>4            20/02/2010    01/2012</p> <p>Passenger train derailment near East Langton, Leicestershire</p> <p>Status: Implemented</p>	<p>The purpose of this recommendation is that train crew are familiar with, and practised in, on-board alarm handling procedures so that correct and timely action is taken to minimise adverse consequences of an out-of-course incident.</p> <p>East Midlands Trains should provide practical, rolling stock specific, initial and refresher training, that includes the simulation of on-board emergency and out-of-course situations. This should enable drivers and train crew to maintain their understanding of, and familiarity with, correct alarm handling in various scenarios (paragraphs 190 and 191c).</p>	<p>East Midlands Trains has reported that it has taken actions in response to this recommendation. Office of Rail Regulation (ORR) proposes to take no further action unless they become aware that the information provided becomes inaccurate.</p>