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Mr Andrew Hall
Deputy Chief Inspector of Rail Accidents
Cullen House
Berkshire Copse Rd
Aldershot
Hampshire GU11 2HP

Dear Andrew,

RAIB Report: Buffer stop collision at Chester Station on 20 November 2013

I write to provide an update¹ on the action taken in respect of recommendations 1 & 3 addressed to ORR in the above report, published on 24 November 2014.

The annex to this letter provides details of the action taken regarding the recommendations. The status of recommendation 1 & 3 is '**implemented**'.

We do not propose to take any further action in respect of the recommendations, unless we become aware that any of the information provided has become inaccurate, in which case I will write to you again.

We will publish this response on the ORR website on 14 February 2020.

Yours sincerely,

Oliver Stewart

¹ In accordance with Regulation 12(2)(b) of the Railways (Accident Investigation and Reporting) Regulations 2005

Recommendation 1

The intent of this recommendation is to reduce the risk associated with low adhesion by extending the fitment of automatic sanders.

Operators of class 220 and 221 units should fit sanders to their trains which comply with Group Standard GM/RT2461 and automatically deposit sand on the rail when wheel slide is detected during heavy braking (equivalent to brake step 2 on step braked trains). The mode of operation of this new equipment should take account of recommendation 1 of RAIB report 25 (Part 3)/2006.

ORR decision

1. Bombardier have completed the contract to fit auto sanders to all 57 Class 220/221 units operated by Cross Country Trains.
2. ORR has previously reported to RAIB that Virgin Trains had implemented this recommendation.
3. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Cross Country Trains has:
 - taken the recommendation into consideration; and
 - has taken action to implement it.

Status: Implemented.

Previously reported to RAIB

4. On 13 June 2016 ORR reported that it had recently been provided with Issue 3 of Cross Country Trains' Voyager Auto-Sanders Project Update which confirmed the intention to complete fitment to all 57 units by the end of February 2017.

Update

5. On 1 October 2019 Cross Country Trains confirmed that the programme of work to fit auto sanders to the Voyager fleet had been completed.

Recommendation 3

The intent of this recommendation is that manufacturers of new trains for the UK railway system are made aware of the need for sanders to operate during braking in step 2 (or the equivalent brake handle position for units not fitted with stepped brakes) and above.

RSSB should propose and promote an amendment to Railway Group Standard GM/RT2461 to extend the requirement that sanders operate automatically when wheel slip is detected in full service and emergency braking, to braking at lower settings (e.g. step 2 on units with stepped brake controllers).

ORR decision

6. RSSB published the revised Railway Group Standard GM/RT 2461 on 4 June 2016. The standard includes guidance recommending the discharge of sand during service brake demand of 6% g and higher (equivalent to 'Step 2' on disc-braked multiple units) and emergency brake application when the presence of low adhesion is detected.

7. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, RSSB has:

- taken the recommendation into consideration; and
- has taken action to implement it.

Status: Implemented.

Previously reported to RAIB

8. On 13 April 2016 ORR reported that on 16 February 2016 RSSB confirmed that the deadline for providing comments to the industry consultation was 11 March 2016. On 11 April 2016 RSSB confirmed that the intended publication date for the revised standard is 3 September 2016.

Update

9. On 22 May 2019 RSSB provided the following update:

Email to ORR, 28 January 2015:

With reference to the recommendation, RSSB notes the following:

- *The Class 221 unit involved in the incident was not fitted with automatic sanders, being instead fitted with driver-activated one-shot sanders (plus a reserve). None of the RAIB findings into the actual incident are directly applicable to the recommendation.*
- *On those disc-braked multiple units fitted with automatic sanders, the industry has already implemented automatic sanding in brake step 2 (triggered by wheel slide protection (WSP) activity, which indicates the presence of low adhesion). This work was initiated as a result of RAIB's January 2007 report following the low adhesion incidents at Esher and Lewes during autumn 2005.*
- *GM/RT2461 clause 6.1 already permits automatic sanding in brake step 2. The industry – through the Rolling Stock Standards Committee – accepted that deviations against GM/RT2461 have not been required when train operators re-configured their automatic sanders to operate in brake step 2. (Extract from applicable clause: 6.1 Conditions for sanding equipment activation in braking mode. When operating in braking mode, as a minimum the sanding equipment shall discharge sand during full service and emergency brake applications when the presence of low adhesion is automatically detected.)*

In parallel with the modifications to the automatic sanders on the disc-braked multiple units, all tread-braked multiple units have now been fitted with sanders. On tread-braked units, the sanders are manually triggered by the driver as these units are not fitted with WSP equipment, so cannot automatically detect low adhesion. Incidentally, evidence was collected over a series of autumn trials to show that permitting a greater use of sanders has not contributed to an increase in wrong side track circuit failures (WSTCFs); consequently, a deviation to GM/RT2461 was granted during 2014 to permit driver-activated sanders in all brake positions.

Note too that GM/RT2461 is on the Rolling Stock Standards Committee's list of Railway Group Standards planned for revision but this work has still to be scheduled. In the meantime, an industry consultation on the existing document has been initiated – to determine feedback from users of the standard. Additionally there is ongoing RSSB-funded research work into sanders (T797 – Performance and installation criteria for sanding systems).

The Rolling Stock Standards Committee discussed the recommendation as written at its 16 January 2015 meeting. The Committee was minded to agree with it, but deferred implementation until the results from T797 are available. These are due by the end of 2015.

Email to ORR 13 August 2015:

It was noted at the Rolling Stock Standards Committee that the results T797 are still awaited. Once received, the decision can be taken re whether and how to revise the RGS. It was felt by the committee that the change proposed by the RAIB recommendation was not sufficient justification within itself to commence a project to amend the standard because changing the RGS will not (of itself) prevent a repeat of the Chester buffer stop collision (the deficiencies in sanding on the Voyager are not addressed by the recommendation).

However, despite the delay in awaiting results from T797, there are several changes that could reasonably be made to RGS GM/RT2461 and therefore the committee asked RSSB to promote the priority of the project. Technical resource has now become available and so the project to amend GM/RT2461 (including consideration of the RAIB recommendation) will commence July/August 2015.

Email to ORR 11 February 2016:

Mindful of the restrictions imposed by the Railway Group Standards Code, RSSB has re-drafted Section 1.2.1 of GM/RT2461 such that it now refers to GM/RT2045, in which stopping distances are mandated; it then refers to Appendix A (of GM/RT2461), in which criteria are presented for sanders that allow 'the required stopping distance in low adhesion' to be achieved. Specifically, GM/RT2461 Appendix A, clause A.1.3 c gives one of the parameters of that sanding system thus: 'Sand is discharged during service brake step 2 (or equivalent) or higher and emergency brake application when the presence of low adhesion is detected'. The proposed change to GM/RT2461 was presented to the Rolling Stock Standards Committee at its 15 January 2016 meeting and approved for industry consultation. It was noted that the ORR representative was satisfied with the way the proposed change addressed the recommendation. We will keep ORR informed of progress.

Email to ORR 16 February 2016:

The cut off for consultation comments is 11 March 2016 and the target is to publish the revised standard on 3 September.

Period 2 update:

After consultation with the Rolling Stock SC, it was agreed that publication of GM/RT2461 would be brought forward to June 2016.

Period 2 update:

On 4 June 2016, the revised version of GM/RT2461 was published. RSSB now considers the recommendation to be closed.

Previously reported to RAIB

Recommendation 1

The intent of this recommendation is to reduce the risk associated with low adhesion by extending the fitment of automatic sanders.

Operators of class 220 and 221 units should fit sanders to their trains which comply with Group Standard GM/RT2461 and automatically deposit sand on the rail when wheelslide is detected during heavy braking (equivalent to brake step 2 on step braked trains). The mode of operation of this new equipment should take account of recommendation 1 of RAIB report 25 (Part 3)/2006.

ORR decision

1. ORR notes that Cross Country trains has now produced a detailed timeline for the fitment of sanders to its fleet by February 2017.
2. After reviewing information received ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Cross Country Trains has:
 - taken the recommendation into consideration; and
 - is taking action to implement it by the end of February 2017.

Status: Implementation ongoing. ORR will advise RAIB when the actions to address this recommendation have been completed.

Previously reported to RAIB

3. On 16 February 2016 ORR reported to RAIB that Cross Country Trains had contracted Bombardier on 8 February 2016 to fit Auto-Sanders to all 57 affected units.
4. ORR reported on 22 October 2015 that Virgin Trains had implemented this recommendation.

Update

5. ORR has recently been provided with Issue 3 of Cross Country Trains' Voyager Auto-Sanders Project Update which confirms the intention to complete fitment to all 57 units by the end of February 2017.

Recommendation 3

The intent of this recommendation is that manufacturers of new trains for the UK railway system are made aware of the need for sanders to operate during braking in step 2 (or the equivalent brake handle position for units not fitted with stepped brakes) and above.

RSSB should propose and promote an amendment to Railway Group Standard GM/RT2461 to extend the requirement that sanders operate automatically when wheel slip is detected in full service and emergency braking, to braking at lower settings (e.g. step 2 on units with stepped brake controllers).

ORR decision

6. ORR considers that the approach that RSSB is taking to implement the recommendation is appropriate.

7. After reviewing information received ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, RSSB has:

- taken the recommendation into consideration; and
- is taking action to implement it by 3 September 2016.

Status: Implementation ongoing. ORR will advise RAIS when the actions to address this recommendation have been completed.

Previously reported to RAIB

8. On 22 October 2015 ORR reported to RAIB that RSSB was planning to undertake a project to review and amend RGS GM/RT2461 in which would include consideration of the requirements of this recommendation.

Update

9. On 11 February 2016 RSSB provided the following update:

Mindful of the restrictions imposed by the Railway Group Standards Code, RSSB has re-drafted Section 1.2.1 of GM/RT2461 such that it now refers to GM/RT2045, in which stopping distance are mandated; it then refers to Appendix A (of GM/RT2461), in which criteria are presented for sanders that allow 'the required stopping distance in low adhesion' to be achieved.

Specifically, GM/RT2461 Appendix A, clause A.1.3c gives one of the parameters of that sanding system thus:

'Sand is discharged during service brake step 2 (or equivalent) or higher and emergency brake application when the presence of low adhesion is detected'.

The proposed change to GM/RT2461 was presented to the Rolling Stock Standards Committee at its 15 January 2016 meeting and approved for industry consultation. It was noted that the ORR representative was satisfied with the way the proposed change addressed the recommendation.

10. On 16 February 2016 RSSB confirmed that the deadline for providing comments to the industry consultation was 11 March 2016. On 11 April 2016 RSSB confirmed that the intended publication date for the revised standard is 3 September 2016.