Oliver Stewart
RAIB Recommendation Handling Manager

31 October 2023

Mr Andy Lewis
Deputy Chief Inspector of Rail Accidents

Dear Andy,

RAIB Report: Overspeed at Sandy South Junction, Bedfordshire on 19 October 2018

I write to provide an update[1] on the action taken in respect of recommendations 2 & 3 addressed to ORR in the above report, published on 1 August 2019.

The annex to this letter provides details of actions taken in response to the recommendations and the status decided by ORR. The status of recommendations 2 & 3 is **'Closed'.**

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 1 November 2023

Yours sincerely,

Oliver Stewart

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

Recommendation 2

The intent of this recommendation is to provide drivers with early warnings of emergency speed restrictions en route.

Rail Delivery Group, in consultation with Network Rail, should consider and review options for a safe and suitable means of providing drivers with warning of emergency speed restrictions on the route ahead through the use of available technologies

ORR decision

1. As previously reported, the recommendation was addressed to RSSB as ORR considered it to be the organisation best placed to act upon it.

2. RSSB has reviewed options for improving the process for providing drivers with a warning of emergency speed restrictions, with findings presented in *T1251: Review of technological interventions to mitigate train over-speeding risk*.

3. The European Train Control System (ETCS) and similar, modern train control systems are considered to be the medium- and long-term solutions to controlling the train overspeeding risk. The aim of project T1251 was to identify technological interventions that could be applied in the short term, which was defined as until 2031, when ETCS and RBLS are expected to be in widespread use across the network.

4. The report concluded that the majority of currently poor risk controls for overspeeding could be strengthened with technology. The report made 13 recommendations around using existing technology more effectively, further investigation of certain new technologies and improved sharing of research and findings into overspeeding between organisations.

5. 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: Closed.

Previously reported to RAIB

6. On 31 July 2020 ORR reported the following:

Following exchanges with RDG, Network Rail and RAIB ORR considered that RSSB was best placed to lead cross-industry work around this recommendation but this should be framed in the wider context of securing engineering controls to manage such speed controls, reliably. RSSB accepted this and wrote to us in June 2020 setting out the two-stage approach they have planned to address recommendations 2 and 3.

Update

7. On 9 May 2022 RSSB provided the following update for Recs 2 & 3:

Both recommendations were combined and readdressed to RSSB.

Once this was agreed, a presentation was made to the Train Accident Risk Group (TARG), proposing a two-part approach to managing this recommendation to conclusion. The first phase would be a 'Task and Finish (T&F)' group and the second an R&D project. The presentation described RSSB's intention to ask TARG to lead the 'T&F' group and to sponsor the R&D funding request. TARG accepted this proposal.

The following work packages were scoped for the T&F group:

1. Defining overspeeding and identifying the data sources needed to improve understanding of over-speeding and its significance
2. Reviewing the recommendations and mitigations proposed to Train Operations Risk Group (TORG, the predecessor to TARG) in December, 2014 within the T1044 report '*A review of compliance with permanent, temporary, and emergency speed restrictions*' details of which can be found in Annex A
3. Reviewing the content of an existing proposal on over-speeding to TARG in February 2020
4. Evaluating current hazards and controls and identification of gaps through the use of 'bow tie' methodology
5. Evaluating interim measures i.e. '*the use of miniature ESI boards and the conspicuity of the flashing lights'*
6. Supporting and linking into the research work on T1171 in terms of the driver case studies on overspeeding.
7. Quantification of safety benefit of controlling the risk of over-speeding
8. Understanding underlying causation factors around train over-speeds
9. Research and evaluation of technological solutions, both current and future linking to work currently underway within Network Rail solutions

Industry workshops were held to cover different aspects of the process around designing setting up and stalling and driving through speed restricted areas. A BowTie representing the hazards, risks and controls around overspeeding, was also developed. In its final form, it fed into the aforementioned R&D project. That project – T1251 (Review of technological innovations to mitigate train overspeeding risk) incorporated items 5, 7 and 9. It has now been completed. It investigated a number of technological solutions, evaluated them against the categorisation in the BowTie and shortlisted those that should be taken forward.

With the publication of T1251, RSSB considers recommendations 2 and 3 closed.

Recommendation 3

The intent of this recommendation is to review the design and use of the emergency speed indicator board in order that the flashing lights are clearly visible for as long as possible even when the board is in shadow or bright sunlight.

Network Rail should:
a) issue clear instructions to its staff about when it is permissible to deploy a miniature emergency speed indicator board; and
b) determine whether the lamp fittings in emergency speed indicator boards are adequate for the purpose for which they are designed, bearing in mind the difficulty of ensuring the optimum alignment when deploying these boards

ORR decision

8. The recommendation was originally addressed to Network Rail, but following discussion with RAIB, was redirected to RSSB as the organisation best placed to act upon it, as part of the wider consideration of technological interventions to mitigate the risk of trains over speeding. Consequently, the conspicuity of an emergency speed indicator (ESI) board was considered as part of the work associated with recommendation 2, to review technological interventions to mitigate train over-speeding risk, the outcome of which was project 1251.

9. The 1251 project considered train-activated ESR indicators with increased luminosity or full LED speed signage that could be triggered by detecting an approaching train. The idea was not progressed as the 1251 steering group concluded train detection could be unreliable, the system would be over-complicated and the same aim could be met by ensuring correct use of the existing larger emergency indicator whenever possible.

10. With regard to the conclusion of the 1251 project, we asked Network Rail to explain the circumstances in which miniature ESI boards are used. Network Rail explained that miniature ESI boards must only be used in areas with limited clearance where it is not practicable to use the larger board. Briefing to explain this was provided to Network Rail staff in 2017.

11. ORR consider that the RAIB report does not provide robust evidence the ESI board was not clearly visible to the driver, either due to the brightness of the flashing lights, nor that the board was incorrectly aligned. We therefore consider the recommendation closed on the basis of existing measures in place and being taken into account as part of the review of technological interventions to mitigate train over-speeding risk.

12. 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 taking action to close it

Status: Closed.

Previously reported to RAIB

13. On 31 July 2020 ORR reported the following:

As per recommendation 2, ORR agreed that the issue of ensuring speed restriction implementation was important but proposed that measures to implement recommendation 3 should be framed in the wider context of securing engineering controls to manage such speed controls. We agreed with RAIB that interim reliance would continue to be placed on existing mitigations so short term improvements should also be considered, in particular, the use of miniature ESI boards and the conspicuity of the flashing lights. Following exchanges with Network Rail and RAIB we considered that RSSB was best placed to lead cross industry work. RSSB accepted this and wrote to us in June 2020 setting out the two-stage approach they have planned to address recommendations 2 and 3.

Update

14. On 9 May 2022 RSSB provided the update at paragraph 5 for Recs 2 & 3.

15. On 5 October 2023, Network Rail provided the following update:

Our Chief Technology Officer has provided the attached and below:

Analysis was done on this in 2016 and a briefing cascaded to all DU's in Routes around 2017.
This provided information about the use of standard size speed boards and where reduced sized boards for limited clearance areas.

This is included in the briefing material that was added to TR01 (copy attached) – refer to slides 11 to 13 for speed boards.

0 - Briefing_Tr01 - Speed Boards.pdf

Previously reported to RAIB

Recommendation 2

The intent of this recommendation is to provide drivers with early warnings of emergency speed restrictions en route.

Rail Delivery Group, in consultation with Network Rail, should consider and review options for a safe and suitable means of providing drivers with warning of emergency speed restrictions on the route ahead through the use of available technologies

ORR decision

1. As outlined above, following exchanges with RDG, Network Rail and RAIB ORR considered that RSSB was best placed to lead cross-industry work around this recommendation but this should be framed in the wider context of securing engineering controls to manage such speed controls, reliably. RSSB accepted this and wrote to us in June 2020 setting out the two-stage approach they have planned to address recommendations 2 and 3.

2. After reviewing the information provided to date ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, RSSB is the correct owner for the recommendation (in the wider context) and has:

- taken the recommendation into consideration; and
- is taking action to implement it, but a time-bound plan is not yet in place

Status: Progressing

Information in support of ORR decision

3. On 6 September 2019 the Rail Delivery Group provided the following initial response:

We believe that this recommendation is better allocated to Network Rail (NR) as the duty holder and wish to formally reject this recommendation on this basis. We however intend to work with NR and RSSB on how the intent of this recommendation is most suitably addressed.

4. On 12 October 2019 Network Rail provided the following initial response:

The ORR have requested we consider recommendation 2, RDG have rejected rec 2 and saying it should be directed to Network Rail instead.

Network Rail do not believe they are the appropriate owners for Rec 2, and as such will not be accepting the recommendation.

The recommendation requires a large proportion of work to be done by the train operating companies, Network Rail will of course assist with any working group and

actions arising from Rec 2 if a decision is made on the future use of technologies but we believe that RDG should lead on this work.

5. On 24 June 2020 RSSB provided the following response to recommendations 2&3:

With reference to Recommendations 2 and 3, a presentation was made to TARG on the 3rd June proposing a two-part approach to managing this recommendation to conclusion. The first phase would be a 'Task and Finish (T&F)' group and the second an R&D project. The presentation described RSSB's intention to ask TARG to lead the 'T&F' group and to sponsor the R&D funding request. TARG have accepted this proposal and Paul Ashton, Professional Head of Operations at Network Rail, has agreed to Chair the 'T&F' group. Keith Shepherd, ORR, has also volunteered to be part of this group and further industry resource is being secured.

The next step is for Philippa Murphy, the Principal Strategy Implementation Manager for TARG, to specify the work, agree resources and create a workplan for the 'T&F' group which will be presented to TARG, and to define and submit the R&D Ideas Request Form. The content of these work packages may include, but not be limited to:

1. *Defining over-speeding and identifying the data sources needed to improve understanding of over-speeding and its significance*
2. *Reviewing the recommendations and mitigations proposed to Train Operations Risk Group (TORG, the predecessor to TARG) in December, 2014 within the T1044 report 'A review of compliance with permanent, temporary, and emergency speed restrictions' details of which can be found in Annex A*
3. *Reviewing the content of an existing proposal on over-speeding to TARG in February 2020*
4. *Evaluating current hazards and controls and identification of gaps through the use of 'bow tie' methodology*
5. *Evaluating interim measures i.e. 'the use of miniature ESI boards and the conspicuity of the flashing lights'*
6. *Supporting and linking into the research work on T1171 in terms of the driver case studies on overspeeding.*
7. *Quantification of safety benefit of controlling the risk of over-speeding*
8. *Understanding underlying causation factors around train over-speeds*
9. *Research and evaluation of technological solutions, both current and future linking to work currently underway within Network Rail solutions*

It is currently proposed that the bullets 1-6 will be achieved by June 2021 through TARG and the T&F group and that bullets 7-9 will be achieved by March 2022 through the R&D work. These dates will be confirmed once the work packages have been specified resourced and agreed by TARG.

The outputs of these workstreams will also support and be informed by industry's work on achieving strategic challenge 4 in the re-launched Train Operations area of the LHSBR[2] where the measure of success is 'Production of an industrywide strategy to improve the management of trains overspeeding'.

Recommendation 3

The intent of this recommendation is to review the design and use of the emergency speed indicator board in order that the flashing lights are clearly visible for as long as possible even when the board is in shadow or bright sunlight.

Network Rail should:
a) issue clear instructions to its staff about when it is permissible to deploy a miniature emergency speed indicator board; and
b) determine whether the lamp fittings in emergency speed indicator boards are adequate for the purpose for which they are designed, bearing in mind the difficulty of ensuring the optimum alignment when deploying these boards

ORR decision

6. As per recommendation 2, ORR agreed that the issue of ensuring speed restriction implementation was important but proposed that measures to implement recommendation 3 should be framed in the wider context of securing engineering controls to manage such speed controls. We agreed with RAIB that interim reliance would continue to be placed on existing mitigations so short term improvements should also be considered, in particular, the use of miniature ESI boards and the conspicuity of the flashing lights. Following exchanges with Network Rail and RAIB we considered that RSSB was best placed to lead cross industry work. RSSB accepted this and wrote to us in June 2020 setting out the two-stage approach they have planned to address recommendations 2 and 3.

7. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, RSSB is the correct owner for the recommendation (in the wider context) and has:

- taken the recommendation into consideration; and
- are taking action to implement it, but have yet to confirm a completion date

Status: Progressing

Information in support of ORR decision

8. On 12 October 2019 Network Rail provided the following initial response:

The recommendation made is not considered appropriate given the application of emergency speed indications and their visibility requirements.

The RSSB publication "sign AF01 – Emergency Indicator" gives information on size, reflectivity of the sign (RA2) and the colour, flash rate and beam width maxima for

the lights, but does not specify the visibility or readability requirements and the absence of a beam width minima does not enable definition of alignment criteria. Similarly, the RSSB publication "sign AF02m – Temporary Speed Restriction Warning Board" does not specify the visibility or readability requirements. The same is true of the other associated temporary speed restriction sign publications.

Note permanent speed restriction signage visibility requirements defined in the signal sighting assessment set out in RIS-0737-CCS

The requirements for erecting temporary or permanent structures are controlled by the requirements for structural clearances (gauging) set out in RSSB and NR standards, however the RSSB publications and NR standards omit general guidance on placement, other than in TR/D/S/006 which specifies the signs applicable to "cess (or other areas with suitable clearance)" or "anywhere".

NR propose the requirements for visibility and readability of emergency and temporary speed signage is not clearly agreed with industry partners and a more suitable action would be to form a cross industry working group. NR propose this is led by the RSSB. In particular this group should consider the applicability of the RIS-0737-CCS clause 4.8 in association with the signs for emergency, temporary and permanent speed restrictions published in the RSSB signs catalogue.

9. On 24 June 2020 RSSB wrote to us setting out the actions being taken to address recommendations 2 and 3 (see para 18).