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OFFICE OF RAIL AND ROAD

11 December 2017

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

Dear Andrew,

RAIB Report: Class investigation into rail breaks on the East Coast Main Line

I write to provide an update[1] on the action taken in respect of recommendation 4 addressed to ORR in the above report, published on 13 November 2014.

The annex to this letter provides details of the action taken regarding this recommendation, the status of which is now '**Implemented**'. We do not propose to take any further action in respect of the recommendation, unless we become aware that any of the information provided becomes inaccurate, in which case I will write to you again.

We will publish this response on the ORR website on 11 December 2017.

Yours sincerely,

Oliver Stewart

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

Recommendation 4

This recommendation is intended to reduce the risk of rail breaks by improving the ability of existing Ultrasonic Testing Unit (UTU) equipment to detect initiator cracks and other defects in the lower part of the rail.

Network Rail should complete the current test programme to establish the practicability of extending current UTU testing and analysis to identify defects throughout the full depth of a rail and/or defects on the underside of a rail. If the test programme shows that this offers a reasonably practicable means of improving the detection of initiator cracks and other defects associated with potential rail breaks, Network Rail should introduce equipment and processes to implement this improved testing and analysis

ORR decision

1. Network Rail have carried out trials using he a UTU probe to detect cracks in the rail foot but have concluded it was not the most appropriate method for carrying out that task. Instead, Network Rail have concluded that targeted rerailing and repadding at specific locations, based on risk assessment of rail foot failure, is a more suitable procedure for addressing rail foot failures.

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

- taken the recommendation into consideration; and
- has taken action to address the risk identified by RAIB, but using an alternative method to that proposed in the recommednation.

Status: Implemented by alternative means.

Previously reported to RAIB

3. On 19 February 2015, Network Rail provided the following information:

Initial trials have been undertaken with the UTU using 'deep 37' degree probe measurements to look at the potential to detect transverse cracks in the middle of the rail foot. Trials on ECML have been carried out, suspects have been verified and samples were removed for further laboratory analysis. This laboratory testing will confirm (or otherwise) if significant pits or defects are present at the suspect locations identified by the 'deep 37' testing.

Initial trials have utilised the existing 37 degree forward and rear facing probes on the UTU at long range to cover the rail foot beneath the web.

The ultrasonic responses from the middle of the foot may also provide an indication of the level of pitting / roughness of the rail foot which may help prioritise re-railing.

Changes to Sperry analysis software will be needed to enable analysis of the raw data which will provide a new list of potential suspects (including possible defects in the rail foot).

Procedures will need to be updated to include this new test process and provide minimum action codes specifying actions (including timescales).

Network Rail will also look at the feasibility of using new pedestrian equipment and procedures to test rails not included in the UTU test programme. The results of this feasibility study will be implemented.

Timescale: 15 December 2015

4. ORR met with Network Rail on 6 October 2015 to review progress and agree further information required to demonstrate that Network Rail has addressed this recommendation. Network Rail stated the trials in LNE and LNW are complete and whilst the findings are inconclusive, they demonstrate there is potential in the system to be of some benefit. Network Rail to fomally write to ORR setting out their conclusions from the trials and planned action in light of those findings.

Update

5. Following timescale extensions, Network Rail provided a closure statement on 31 May 2017 which concluded:

The considered response of the Chief Track & Lineside Engineer is that there is no significant correlation with UTU suspects identified using the modified ultrasonic procedure and potential rail foot defects that could lead to broken rails caused by small cracks in the rail foot. Therefore, it is considered that there is little value in extending the current equipment and processes of UTU testing and analysis to identify defects throughout the full depth of a rail and/or defects on the underside of a rail.

Furthermore, the trial has concluded that the risk of broken rails are better addressed by targeted re-railing (including re-padding) of specific sites following a risk assessment of rail foot failure, using the wider range of factors identified by the more detailed analysis of recent rail foot failures around the network.

Network Rail will continue to look for opportunities to improve the detection and prevention of defects that could lead to a broken rail.

Therefore, it is considered that the intent of this recommendation has been addressed and can therefore be CLOSED.