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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: Tram running with doors open on London Tramlink, Croydon

I write to provide an update¹ on the action taken in respect of recommendations 3, 6, 7 and 8 addressed to ORR in the above report, published on 6 March 2014.

The annex to this letter provides details of the action taken regarding recommendation 3, 6, 7 and 8. The status of recommendation 3 is '**implemented by other means**'. The status of recommendations 6, 7 and 8 are now all '**Implemented**'. We do not propose to take any further action in respect of this 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 4 December 2015.

Yours sincerely,

Oliver Stewart

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

1. All 8 recommendations were addressed to ORR when the report was published on 6 March 2014.
2. We wrote to you on 3 March 2015 to report that recommendations 1 and 4 had been implemented; on 15 May 2015 to report that recommendation 5 had been implemented; and again on 5 October 2015 to report that recommendation 2 had been implemented.

Recommendation 3

The intention of this recommendation is for improvements to be made to the driver's cab displays and labelling to minimise the chance of the driver not noticing that the doors are open and of misunderstanding the operation of override switches.

London Tramlink, in conjunction with Tram Operations Ltd, should improve cab displays and labelling in all of its trams. This should include, but not be limited to:

- a prominent indication of the status of the doors (for example, by changes to the cab panel indicator light, or by introducing an audible warning); and
- information provided to the driver about the fault override function and other safety-critical overrides (such as the emergency door release), including the switch label and the associated alert on the message display, to clarify its purpose and effects of its operation.

ORR decision

3. London Tram has argued, that it is not reasonably practicable to modify the BISS display messages on their trams due to the 'time, money and engineering effort required'. However, they have introduced an audible warning, are changing the in-cab switch labelling and are training staff to use the new equipment. The need for the changes to the BISS display is therefore minimal, as the safety improvement is achieved through other means.

4. The recommendation can thus be considered to be 'implemented by alternative means' as, although London Tram have not implemented it exactly as laid out by RAIB, they have addressed the risk and achieved a sufficiently safe outcome by a combination of other means.

5. ORR in reviewing the responses provided by London Trams and First Tram Operations Ltd has concluded that in accordance with the Railway (Accident Investigation and Reporting) Regulations 2005, it has:

- taken the recommendation into consideration; and
- taken appropriate action to address the risk identified in the recommendation

Status: Implemented by alternative means.

Brief Summary on what was previously reported to RAIB

6. On 3 March 2015 ORR formally responded to the RAIB report that proposals for a joint human factors review, to understand what improvements could be made to improve cab displays and labelling were expected in September 2014. Some opportunities had already been identified to improve labelling for some controls within the CR4000 and Stadler SVT cabs.

Update

7. In their joint response on 10 July 2015, London Trams and First Tram Operations Ltd provided the following information:

As a result of a human factors review we agreed to introduce an additional audible warning to alert the driver if an inadvertent attempt is made to move a tram when the passenger's doors are open after the fault override switch has been operated (on the CR4000 tram). The alarm has now been tested and installation on the remaining units has begun. We estimate that this modification will be complete on all CR4000 units by the 31st August 2015.

Other improvements to the labelling of some switches and buttons in the driver's cab are interdependent with changing the messages on the BISS display on the CR4000 tram. We are working with the OEM to deliver these improvements but do not have any timescales for completing these changes at the moment.

8. London Trams wrote to ORR on 5 October detailing their work to provide in-cab indicators to reduce the risk of tram drivers not noticing that doors are open during operation. Following a series of meetings between ORR and London Trams, on 13 November they wrote to ORR to confirm the action they had taken:

...new labelling will be introduced (white writing on red background) to highlight the importance of the all brakes release and the fault override switches. We have decided not to introduce any other new labelling. We consider that the time, money and engineering effort required (which would include programme changes to the BISS display) does not justify any further changes. This is particularly the case when consideration is given to the overall changes we have made which now prevent safety critical switches being inadvertently activated. I can confirm that operational staff have received a number of briefings since the incident occurred and control room staff in particular have been briefed on the arrangements for activating safety critical switches.

Recommendation 6

The intention of this recommendation is to improve the design of passenger controls and displays (emergency alarms, intercoms etc.), through shape, colour, symbols and/or signage, so as to make their operation more obvious and intuitive to the user in the event of an emergency.

Tram Operations Ltd should take steps to improve the clarity and consistency of passenger controls and displays on its trams, taking into account the findings of RSSB project T052c as appropriate.

ORR decision

9. ORR in reviewing the responses and provided by First Tram Operations Ltd has concluded that in accordance with the Railway (Accident Investigation and Reporting) Regulations 2005, it has:

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

Status: Implemented

Brief Summary on what was previously reported to RAIB

10. On 3 March 2015 ORR formally responded to the RAIB report that London Tramlink had confirmed that new passenger control signage was planned to be fitted by the end of March 2015 and the repainting of the Emergency Door release on both the CR4000 and Stadler SVT trams completed by the end July 2015. It was also planned to fit a new flap over the Emergency Door release on the CR4000 tram by the end March 2015.

11. London Trams also reported that they are planning to paint the intercom units on the CR4000 trams red, as part of the fleet refresh in 2016. As an interim measure red vinyl is being applied to the fascia of the intercom units, which was completed in July 2015.

12. In their joint response on 10 July 2015, London Trams and First Tram Operations Ltd provided ORR with a summary of the programme of work to improve the design of passenger controls and displays:

A flap has been fitted to cover the Emergency Door Release (EDR) handles on the CR4000 trams; this has now been painted green. On the Stadler trams we are in the process of painting the EDR handles green – this should be complete by 21st August 2015. The associated symbols and signage (instructions on use) have been redesigned and are on a green background and have now been installed on both trams.

The intercom units on the CR4000 trams are to be painted red – this will be done during the refresh of the fleet in 2016. As an interim measure red vinyl is being applied to the fascia of the intercom units – this will be completed by the end of July.

Update

13. London Trams wrote to ORR on 5 October 2015 to confirm the necessary work had been completed.

Recommendation 7

The intention of this recommendation is to minimise the potential for miscommunications on London Tramlink by enhancing the quality of the radio system.

London Tramlink should develop and implement a programme to prioritise and expedite the planned upgrade of the radio system, to achieve an improvement in signal coverage and strength across the whole network (including tunnels) and reliable operation in adverse weather conditions (paragraph 102b).

ORR decision

14. ORR in reviewing the responses and provided by London Trams Ltd has concluded that in accordance with the Railway (Accident Investigation and Reporting) Regulations 2005, it has:

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

Status: Implemented.

Brief Summary on what was previously reported to RAIB

15. On 3 March 2015 ORR formally responded to RAIB, stating that London Trams had confirmed that it had placed an order for the provision of a new radio system with Simoco at the beginning of September 2014. This system was expected to be ready for use by August 2015.

Update

16. London Trams wrote to ORR on 5 October 2015 to conform that the new radio system was operational.

Recommendation 8

The intention of this recommendation is to enhance fault reporting between the operator, the infrastructure manager and the maintainer so that reported faults that could impact on safe running of the network are recorded properly and followed up within appropriate timescales.

Tram Operations Ltd should improve its fault reporting processes to ensure that faults are properly logged and tracked to resolution.

ORR decision

17. ORR in reviewing the responses and provided by London Trams has concluded that in accordance with the Railway (Accident Investigation and Reporting) Regulations 2005, it has:

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

Status: Implemented.

Brief Summary on what was previously reported to RAIB

18. On 3 March 2015 ORR formally responded to RAIB, stating that enhancements to the process by which First Tram Operations report infrastructure faults to London Tramlink, to enable First Tram Operations to receive feedback relating to such faults which would then be reviewed, were in place. It noted, however, that a more specific report needed to be generated on the asset management system. At this stage, the new report was not yet live.

19. In their joint response on 10 July 2015, London Trams and First Tram Operations Ltd provided the following information:

This recommendation related to enhancing the fault reporting between the operator, the infrastructure manager and the maintainer. In our last update we said that we were developing a SAP report but it was locked into a (TfL) centrally controlled 12 week development and issue cycle. The report has now been developed. It has gone through user acceptance testing and two updates have been requested. TfL Information Management is currently updating the report with an aim to deliver by the end of July.

Update

20. London Trams wrote to ORR on 23 October 2015 providing the following additional information regarding the use of a shared spreadsheet rather than a SAP report for the purpose of fault reporting:

The spread sheet approach is not an interim measure – we are using that successfully to monitor faults. The introduction of the SAP report was the solution we were previously pursuing but the report was not easy to use. Tram Operations Ltd & London Trams met for the first periodic review of infrastructure faults on 14 October 2015, using the spreadsheet derived from LT's SAP reporting system. The reporting format will no doubt be modified as experience is gained.