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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: Passenger trapped in a train door and dragged a short distance
at Newcastle Central station, 5 June 2013**

I write to provide an update¹ on the action taken in respect of recommendations 3 and 6 addressed to ORR in the above report, published on 18 September 2014. The annex to this letter provides details of the action taken regarding these recommendations, the status of which is now **'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 27 April 2017.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Oliver Stewart', written in a cursive style.

Oliver Stewart

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

Recommendation 3

The intent of this recommendation is to reduce the risk to passengers due to hazards from trains supplied by Siemens which are either discovered at the design stage, or that subsequently emerge during service.

Siemens should review and, where appropriate, improve their design processes to ensure that they fully identify record and assess hazards associated with the design of their trains.

The train operator, or those with operational experience, should be involved in the hazard identification and review process to ensure that this is considered in any design decisions.

Any hazards identified following the design phase should be fully assessed, including consideration of the potential for redesign to manage the residual risk. Where this is not practicable, the operator of the train and/or the maintainer should be made aware of the hazard and the residual risk so that suitable mitigation measures and monitoring arrangements can be put in place.

Siemens should also seek to ensure that it is kept aware of problems that emerge during service so that the need for subsequent design modifications can be assessed as necessary.

ORR decision

1. Siemens has in place processes to identify, record and assess hazards identified during the design of new trains and provided examples of improvements to the design of a train have been made following identification of hazards. Siemens has systems in place to include hazards identified thereafter to enable redesign where appropriate. In the case of the doors on the class 185, Siemens and the operators are aware of the hazard and it is controlled through operational means, thereby mitigating the immediate need for a redesign of the door system. ORR intend to monitor the mitigation measures and monitoring arrangements when suitable examples present.

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

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

Status: Implemented.

Previously reported to RAIB

3. ORR met with Siemens and FTPE on 20 July 2015 to discuss recommendation 3, and wrote to Siemens on 27 July 2015 seeking confirmation that its design processes do consider the engineering out of hazards identified during the

build / delivery of new trains. They stated that they will provide an update to ORR by the end of September 2015.

Update

4. On 10 December 2015 Siemens wrote to ORR as follows:

Following our previous correspondence on the matter and a subsequent face to face meeting with Mr Phil Sharpe and representatives of TransPennine Express, Siemens has been requested to provide further evidence in support of Recommendation 3 of the above Rail Accident Report.

The open issue seems to concern the apparent “focus on the combination of standards compliance and operational controls as the means to close down an identified issue without reference to considering engineering the issue out.”, on which basis we have been requested to provide further assurance “that, as part of the learning resulting from Newcastle, Siemens processes do consider engineering out any hazards identified during the build / delivery of new trains (which inevitably will consider the implications on standards compliance and what risks remain that need operational control)”

Further to this enquiry, I have again consulted with my colleagues involved in this process in Siemens AG to understand the manner in which this situation is approached.

In general, Siemens products are designed and evolve around a developed knowledge of their associated hazards and, as such, many of these will be dealt with by design and will not emerge as open issues in the Hazard Management and Risk Acceptance Process.

This process states that the Safety Requirements Specification for each product containing the Operational Requirements, Maintenance Requirements and Infrastructure Constraints records the measures required “to mitigate hazards which cannot be controlled by the design process.” and, as previously indicated, the options for hazard mitigation do, if necessary, include consideration of redesign.

There are a number of examples of where improvements to the design have been undertaken in recognition of the opportunity to close out hazards in this way, including:

- *Installation of Reed Monitors on Class 360 Desiro in response to interference hazards;*
- *Modifications to underfloor cabling and busbar installations in response to fire hazards;*
- *Number of current collector shoes and 50Hz monitor in Class 450 in response to interference hazards;*

- *Interlaced IGBT clocking and associated filters on Class 333 in response to potential excitation of overvoltages.*

Following these responses, all such items become part of the initial considerations for future designs, some of which can still be found incorporated into the latest Desiro City Class 700 platform.

In the case of Class 185 passenger doors and their use of the electric sensitive edge over the earlier pneumatic variant, this represented improvements to both the obstacle detection performance of the door system and its availability through introduction of continuous health monitoring. However, the Safety Requirements Specification continued to state the requirement for platform safety checks during the dispatch process and it was on this basis that the product improvement was introduced. The documentary evidence presented during the RAIB's investigation suggests that the specific Causal Mechanism and operational requirements in respect of managing residual hazards of the doors system were well understood and accepted by the parties involved, thus no further need for redesign was established.

I believe that the changes to our processes which have been previously advised address the intention of Recommendation 3, and that the examples described above confirm Siemens ongoing commitment to continuous improvement and consideration of opportunities for redesign in order to remove hazards as part of our Hazard Management and Risk Acceptance Process.

I would be grateful of your consideration of the above response, which I hope addresses your remaining concerns. If there is any further query, please do not hesitate to contact me.

Recommendation 6

The intent of this recommendation is for RSSB to consider what additional data needs to be captured within its Safety Management Information System (SMIS) to allow a more complete evaluation of the risk of trapping and dragging events on the national network.

RSSB should identify any additional data that should be captured within SMIS from incidents of persons trapped by train doors, who are outside the train which subsequently moves, whether this results in injury or not. This data should be collected and used by railway undertakings to monitor such events and inform decisions to reduce this risk.

ORR decision

5. RSSB has made changes to how it records 'trap and drag' incidents as part of the introduction of SMIS+. These changes will allow more detailed monitoring and a more complete evaluation of the risks of trapping and dragging events. The recommendation highlighted that SMIS did not identify whether the person trapped in

external train doors, was outside the train at the time. The new SMIS can therefore differentiate between persons on a train or on the platform (A1049).

6. 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

7. RSSB has taken this recommendation along with others (such as Southend and Whyteleafe recommendation 4) to inform and develop their PTI strategy. On 13 August 2015, RSSB wrote to ORR outlining their PTI strategy approach:

RSSB's intended approach is to merge all these requirements to become part of the PTI Strategy. The PTI Strategy Implementation Group reviewed a paper containing all these proposed changes in June 2015.

Furthermore RSSB will, as part of its upgrade to the SMIS system, review all of the data requirements for accidents, incidents and close calls. This will include identifying the data requirements for trap and drag events and ensuring the new system will be able to collect and analyse the data. The detailed data design phase for the upgraded SMIS will be completed in early 2016.

Update

8. RSSB have provided ORR with regular updates on this recommendation since the last report to RAIB. On 8 March 2017 RSSB provided the following closure evidence:

We accepted the recommendation and, in the first instance, merged its requirements with those for Recommendation 4 of the Southend & Whyteleafe report:

Network Rail, in consultation with Station Facility Operators and RSSB, should implement a process to improve the investigation and recording of roll-off incidents and the way in which data is shared. Particular attention should be paid to the following areas:

- *improvements in capturing and recording incidents involving roll-off type events, including the identification of the key factors that caused the roll-off such as the presence of a slope towards the railway on the platform;*

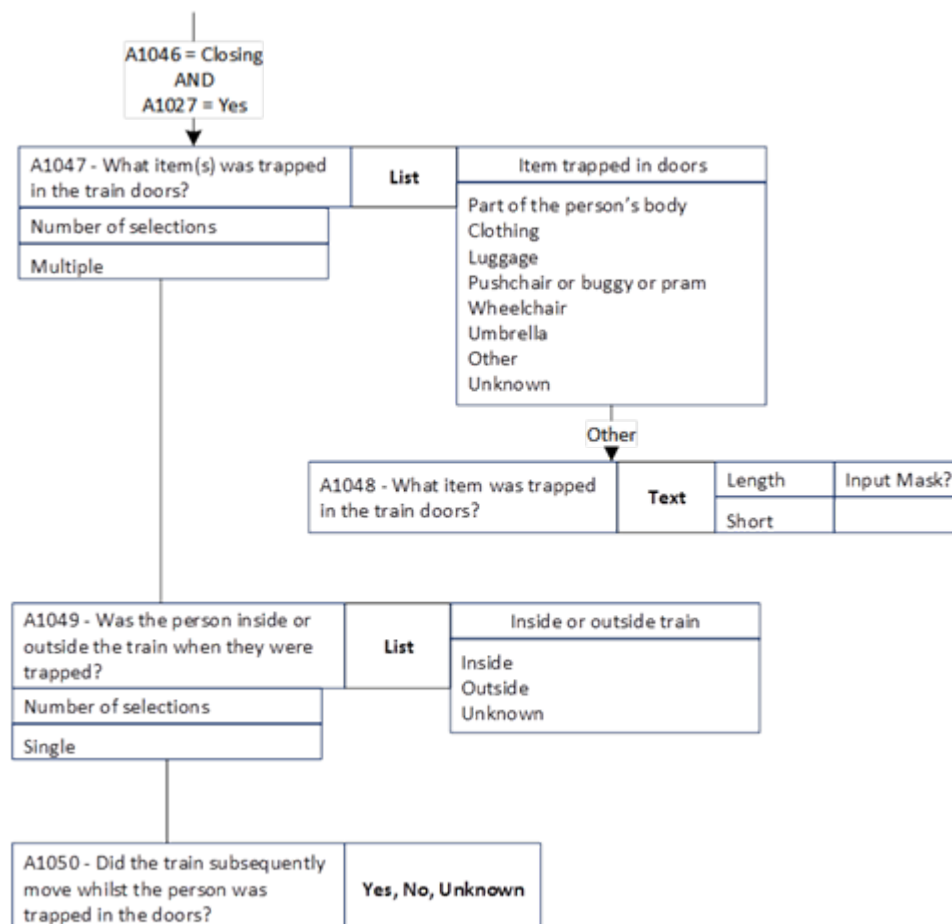
- a review of previous roll-off incidents and accidents (covering at least the last five years) to identify those that may have been solely attributed to ‘user error’ or ‘trespass’, including establishing whether there may have been other causal factors such as a slope at the location concerned; and
- a review of how intelligence on roll-off incidents should be shared within and between SFOs and Network Rail as an input to decisions on the nature and content of improvement works at stations.

Said requirements became part of the [Platform Train Interface Strategy](#), which is overseen by a cross-industry PTI Strategy Implementation Group.

With specific reference to the data, however, RSSB reviewed all the data requirements for accidents, incidents and close calls as part of its upgrade of the Safety Management Information System (SMIS). This included identifying the data requirements for ‘trap and drag’ events and ensuring that the new system would be able to collect and analyse it.

In the original SMIS, RSSB could capture events in which a member of the public was trapped in train doors. However, the recommendation highlighted that it did not identify whether the person trapped in external train doors, **was outside the train at the time**. The new SMIS can therefore differentiate between persons **on a train** or **on the platform** (A1049).

The flowchart below clarifies this, and also shows how the ‘drag’ aspect is captured (A1050):



The upgraded version of SMIS went live on 6 March 2017. This means that – going forward – RSSB's analyses will be able to be used to monitor the 'trap and drag' situation more closely on behalf of the industry than hitherto. We therefore consider the recommendation to be closed.