

**Oliver Stewart**  
**Senior Executive, RAIB Relationship and**  
**Recommendation Handling**

Telephone 020 7282 3864

E-mail [oliver.stewart@orr.gov.uk](mailto:oliver.stewart@orr.gov.uk)

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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: Train fire at South Gosforth on 8 January 2013**

I write to provide an update<sup>1</sup> on the action taken in respect of recommendations 2 & 3 addressed to ORR in the above report, published on 25 September 2013.

The annex to this letter provides details of the action taken regarding the recommendations. The status of recommendations 2 & 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 15 June 2020.

Yours sincerely,

Oliver Stewart

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

## Recommendation 2

*The objective of this recommendation is to facilitate passenger evacuation from trains using the emergency handles to release doors by identifying a maximum level of force required to operate them and then periodically checking that handles comply with the identified maximum.*

DBTW, supported by Nexus, should establish the maximum level of force required to enable a diverse range (such as 5th percentile female to 95<sup>th</sup> percentile male) of passengers to easily operate the emergency door release handles on the Metro car fleet, and implement the necessary inspection and maintenance processes to achieve it in practice, taking account of the need to balance the ease of operation in emergency with the risk of undesired door releases.

### ORR decision

1. At the time of the incident the Tyne & Wear Metro was operated by DB Regio Tyne & Wear. This arrangement ended on 1 April 2017 and operation of the system is now done in-house by Nexus.
2. DBT&W made changes to the emergency door release mechanism to reduce the force needed to operate it to within the mean grip strength of 5th percentile females (250-290N). Nexus have confirmed completion of the overhaul work.
3. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Nexus has:
  - taken the recommendation into consideration; and
  - is has taken action to implement it

**Status: *Implemented.***

### Previously reported to RAIB

4. On 3 December 2015 ORR reported the following:

*ORR notes that 37 of the 86 Metro car fleet have had their emergency door release mechanisms overhauled and that the full programme is due to be completed by July 2016.*

### Update

5. On 26 November 2019 Nexus provided the following update:

*Overhaul of the emergency door release handles has been completed across the whole Metrocar fleet.*

## Recommendation 3

*The objective of this recommendation is to improve the reliability of the radio communication system used on the Metro network.*

Nexus should review the communication systems used on the Metro network, establish an appropriate level of reliability/availability for them, and implement, in a defined timescale, the introduction of suitable improvements.

### **ORR decision**

6. Nexus carried out a review of the communication systems used on the Tyne & Wear Metro network and identified the need for an improved radio system. The project to fit a new radio communication system was completed in summer 2018.

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

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

***Status: Implemented.***

### **Previously reported to RAIB**

8. On 3 December 2015 ORR reported that Nexus and DBTW were taking action to implement the recommendation by October 2016.

### **Update**

9. On 26 November 2019 Nexus provided the following update:

*The radio replacement project was completed in summer 2018.*

## Previously reported to RAIB on 3 December 2015

### Recommendation 2

*The objective of this recommendation is to facilitate passenger evacuation from trains using the emergency handles to release doors by identifying a maximum level of force required to operate them and then periodically checking that handles comply with the identified maximum.*

DBTW, supported by Nexus, should establish the maximum level of force required to enable a diverse range (such as 5<sup>th</sup> percentile female to 95<sup>th</sup> percentile male) of passengers to easily operate the emergency door release handles on the Metro car fleet, and implement the necessary inspection and maintenance processes to achieve it in practice, taking account of the need to balance the ease of operation in emergency with the risk of undesired door releases.

### ORR Decision

1. ORR notes that 37 of the 86 Metro car fleet have had their emergency door release mechanisms overhauled and that the full programme is due to be completed by July 2016.
2. After reviewing information received ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Nexus and DBTW have:
  - taken the recommendation into consideration; and
  - are taking action to implement it by July 2016.

**Status: *Implementation On-going.* ORR will advise RAIB when further information is available regarding actions being taken to address this recommendation.**

### Brief summary of progress previously reported to RAIB

3. On 9 June 2014 ORR reported to RAIB that an initial investigation had taken place which has established the forces required to operate the levers, and forces which might be realistically applied by 5<sup>th</sup> percentile females. The report outlined the further work necessary to scope the problem and make reasonable adjustments.

### Update

4. On 5 June 2015 DBTW provided the following update:

*DBTW confirmed that a detailed study was conducted as part of her dissertation / thesis for a Bachelor's qualification in Engineering on the subject.*

*The report highlights that the current emergency door release mechanism requires forces of around 300N to operate, which is double the specified Railway Group Standard. With regards to 'establishing the maximum level of force required to enable a diverse range (such as 5<sup>th</sup>*

*percentile female to 95<sup>th</sup> percentile male) of passengers to easily operate the emergency door release handles' the report specifically estimates that the force / mean grip strength of 5<sup>th</sup> percentile females ranges between 250-290N. There was no mention of the grip strength of 95<sup>th</sup> percentile males (i.e. the far right end of the scale). However, DBTW can only assume that if 5<sup>th</sup> percentile females are estimated to have a grip strength of 250-290N then the vast majority of people above this percentile will be capable of far exceeding the 300N required to operate the current emergency release handle, especially 95<sup>th</sup> percentile males.*

*With regards to the second element of the RAIB's recommendation, 'implement the necessary inspection and maintenance processes to achieve it in practice', my understanding from speaking with Fleet is that there is an ongoing door modification programme which introduces a low friction cable into the mechanism and removes the emergency release mechanism protection plate. Both of these minor modifications culminate in a slight reduction of the force required to operate the mechanism (brings it down to approximately 231-250N) and therefore within the capabilities of a 5<sup>th</sup> percentile female. The obvious point is that this still does not meet the Railway Group Standard of 150N; however, any such modification will require a greater level of re-design and modification most likely suited to an upgrade programme / new fleet.*

*On a related note, we have also recently re-designed the emergency door release sign so that it is easier and more practical to follow. Once our Media and Marketing people have given it the 'green light' from a standards perspective it will be coming through the Concession Offices for Nexus consideration and, hopefully, approval prior to embodiment. In short, it includes direction that anyone wishing to operate the handle should pull it down slightly until they hear and feel all of the air and pressure has been released. The importance of this step cannot be underestimated as once the air has exhausted from the system the handle can be pulled down and locked in place with relative ease. Without waiting for the air to release, the person is in effect pulling against the air pressure and therefore making the task a lot more difficult.*

5. In response to a request from ORR for further information DBTW providing the following update on 12 November 2015:

*As of 6 November 2015, 37 of 86 Metro cars have had their emergency door release mechanism overhauled. The current programme for door overhaul is projected to complete on the 19<sup>th</sup> July 2016. Additionally, DBTW can confirm that a newly designed Emergency Door Release Sign was created within DBTW, and submitted through the Key Metro Document procedure for approval by Nexus, in an attempt to make the instructions for operating the door release mechanism more easy to follow for members of the public. However, it has been decided that, prior to embodying this sign, further work is required within DBTW in order to determine whether a set of 'pictograms' or a mix of pictures and wording would be more appropriate as a replacement for the existing signs. This work is still ongoing.*

### Recommendation 3

*The objective of this recommendation is to improve the reliability of the radio communication system used on the Metro network.*

Nexus should review the communication systems used on the Metro network, establish an appropriate level of reliability/availability for them, and implement, in a defined timescale, the introduction of suitable improvements.

### ORR Decision

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

- taken the recommendation into consideration; and
- are taking action to implement it by October 2016.

**Status: *Implementation ongoing.* ORR will advise RAIB when further information is available regarding actions being taken to address this recommendation.**

### Brief summary of progress previously reported to RAIB

7. On 9 June 2014 ORR reported to RAIB that, at the time of the incident, Nexus was already in the process of procuring a new radio system which was scheduled for introduction in mid-2015. In the interim, work was on-going to ensure that the current radio system continues to operate within acceptable parameters. Interim measures include a survey of radio black spots and an additional radio mast at Tyne Dock.

### Update

8. On 28 May 2015 Nexus provided the following update:

*As you are hopefully aware, Nexus had begun to plan for a renewal of the radio communication system prior to the SGF train fire in January 2013. The update below goes some way to evidencing the progress of the 'radio project'.*

- *Design – Has been completed, form A's, B's and AB's are continuing to be submitted for each part of the system*
- *Field Strength testing has been carried out for planning purposes*
- *Leaky Feeder – Installation of all main tunnel sections has been completed*
- *Core sites – Installation of the core sites has been completed – testing is on going*
- *Core sites – Have been connected to the Nexus IP Network*
- *BTS Sites – Main BTS site at Regent Centre has been completed – antenna are to be connected*
- *First test call over the new system has been completed*
- *BTS – Sites will commence installation in June – this will allow the installation of repeater sites*

- *Voice/Data logging solution – installation to be confirmed after CMT sign off*
  - *Training – expected to start in June*
  - *LDSR – installation within the control rooms is expected to commence in June*
  - *Cab Radio's – FAT tests are scheduled to start in June*
  - *Reliability Testing - due at the end of October*
  - *Rolling stock install – Due to start at the end of November*
  - *Health and Safety File – Completion due at the end of January*
  - *Equipment Recovery – Due to be completed at the end of February*
  - *Project Completed – April 2016*
9. Nexus provided following further information on 5 November 2015:  
*This is being addressed through the Nexus Radio replacement project.*  
*The latest dates from the project team are as follows:*
- *Radio Network Accepted into Service date (Linked to End of Radio Reliability Period) – 24 March 2016*
  - *New Radio System Available for Use (All Metro Trains and Support Vehicles Converted & Tested) – 4 August 2016*
  - *Project Complete (Incl Recoveries, H&S File etc) – 5 October 2016*
- This project is discussed at length at the regular Control, Command & Signalling Engineering technical liaison meetings.*

## Previously reported to RAIB on 9 June 2014

### Recommendation 2

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#### Details of steps taken or being taken to implement the recommendation

3. Nexus and DBTW in their joint initial response on 25 November 2013 advised that:

*An initial investigation has taken place which has established the forces required to operate the levers, and forces which might be realistically applied by 5th percentile females: [ORR was provided with this document]. The report outlines the further work necessary to scope the problem and make reasonable adjustments. It is planned to conclude the investigation by the end of March 2014 and make reasonable adjustments to reduce the forces required to operate the levers by September 2014.*

*Timescale: September 2014.*

### ORR Decision

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

- taken the recommendation into consideration and
- are taking action to implement it.

**Status: *Implementation On-going***; completion date 31 December 2014. ORR will continue to engage with Nexus and DBTW to assure all actions are completed.

### Recommendation 3

*The objective of this recommendation is to improve the reliability of the radio communication system used on the Metro network.*

Nexus should review the communication systems used on the Metro network, establish an appropriate level of reliability/availability for them, and implement, in a defined timescale, the introduction of suitable improvements.

#### Details of steps taken or being taken to implement the recommendation

5. Nexus and DBTW in their joint initial response on 25 November 2013 advised that:



*At the time of the incident, Nexus was already in the process of procuring a new radio system which is scheduled for introduction in mid-2015. In the interim, work is on-going to ensure that the current radio system continues to operate within acceptable parameters. Interim measures include a survey of radio black spots and an additional radio mast at Tyne Dock.*

*DBTW has been involved in development of the specification for the new system which contains an option for portable radio handsets.*

*Timescale: Mid-2015.*

### **ORR Decision**

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

- taken the recommendation into consideration and
- are taking action to implement it.

**Status: *In-progress.*** *ORR is monitoring interim arrangement to assure that they are adequate and will provide RAIB with an update on progress by 19 December 2014.*