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

Dear Andrew,

**RAIB Report: Unauthorised entry of a train onto a single line at Greenford**

I write to report<sup>1</sup> on the consideration given and action taken in respect of the recommendations addressed to ORR in the above report, published on 22 December 2014.

Annex A to this letter provides details of the consideration given/action taken in respect of these recommendations. The status of recommendations 1, 2 and 3 is **'Implemented'**.

We do not propose to take any further action in respect of these recommendations 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 2015.

Yours sincerely,

**Andrew Eyles**

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

### **Initial consideration by ORR**

1. All 3 recommendations were addressed to ORR when the report was published on 22 December 2014.
2. After considering the recommendations ORR passed recommendation 1 to Chiltern Railways and recommendations 2 and 3 to Network Rail asking them to consider and where appropriate act upon them and advise ORR of its conclusions. The consideration given to each recommendation is included below.

#### **Recommendation 1**

*The intent of this recommendation is that Chiltern Railways should improve the way in which its drivers are trained and managed, to reduce the risk that they will not respond appropriately to unusual events.*

Chiltern Railways should conduct a review of its driver management processes to confirm that the training and briefing given to drivers is comprehensive as regards the equipment and systems that drivers use, and that assessment of drivers covers the identification of, and response to, TPWS fault warnings as well as drivers' response to other unusual or emergency situations, and make changes in accordance with the findings of the review. As part of its review, Chiltern Railways should consider whether there is a role for more regular use of its driving cab simulator in the assessment of its drivers' competence, to achieve a more systematic approach, and whether it has adequate systems in place for periodically reviewing and revising its competence management processes and training material.

#### **ORR decision**

3. ORR is content that Chiltern Railways has reviewed its driver management process in a way that satisfies the intent and requirements of this recommendation.
4. After reviewing the information provided by Chiltern Railways ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, it has:
  - taken the recommendation into consideration; and
  - taken action to implement it.

***Status: Implemented.***

#### **Information in support of ORR decision**

5. On 6 March 2015 Chiltern Railways provided ORR with the following information:

*Chiltern Railways confirms that with regard to the training of new drivers, through the re-establishment of Chiltern's driver training school in 2014, and with the assistance of the company RPD, we are confident that we have a state of the art training package for all new drivers. Meanwhile, Chiltern's new drivers make use of the simulator for both training and, in particular, for assessment. Trainees are confronted with both traction and infrastructure scenarios over their qualifying assessments.*

*For existing drivers, Chiltern confirms that its briefing processes are being reviewed for consideration by our Operations Safety and Standards Group, and this will ultimately be endorsed by our HSE Exec. This is currently in progress and is expected to be completed by the end of June 2014. This workstream is also remitted to include a review of assessment activity, methods and effectiveness. The scope of the review is not confined to TPWS and covers all unusual and degraded scenarios.*

*With regard to the simulator itself, Chiltern Railways is currently in the process of significantly upgrading the simulator software and hardware. One key benefit will be the replacement of the low-tech generic route display with modern high quality CGI display of the entire route from Princes Risborough to Oxford. This is planned for completion prior to the route opening to Oxford, and provides the added benefit of introducing simulator assessment to drivers in a non-threatening way.*

*Chiltern is also evaluating the purchase of additional simulator resource(s) but, given the significant investment required, this requires further development on the business case. However, Chiltern can give assurance that whatever the outcome of this investment, it will be ensuring that existing drivers are able to make greater use of the simulator resource.*

6. On 8 June 2015, in response to an ORR request dated 18 May 2015 for further detail and assurance that the specific elements of the recommendation were being implemented, Chiltern Railways provided the following additional information:

*Chiltern Railways has completed an internal review which was undertaken by the Operational Standards Manager in conjunction with the driver management team; it have also been recently audited by the ORR as part of the RM3 audit structure and the following items were identified or noted which we consider provide suitable granularity in response to the four areas outlined in your letter:*

#### ***Training and Briefing***

- A newly structured course was instigated in 2014 for the then new driver intake; this was further enhanced with some minor improvements for our 2015 intake.*
- For existing drivers, as would be expected within our dynamic industry, all have been trained, but at different times to different levels. For example all relevant drivers have recently undergone intense training on Chiltern's new Class 68 fleet (including, for instance, TPWS Mk4 that is fitted to the fleet); for Chiltern's existing 168s ongoing training is addressing specific TPWS*

risks; and, for example, novel systems such as the alignment of and driver response to HADB activations on our Class 172 fleet have been specifically focussed upon. Furthermore, Chiltern's driver training is developed from any HAZIDs that we undertake.

- *Following the Greenford incident, Chiltern has covered the lessons learnt in its driver safety days and issued bulletins and notice case releases on the TPWS system as core briefing items. RED 41, which covers the scenario generated from the incident, has also been used in its driver briefing process; Chiltern co-operated strongly on the content of this release, with its Operations Director also being interviewed.*
- *Finally, we have proposed a national change to RSSB RS-522 TPWS Handbook to ensure that weaknesses identified from the incident are more effectively covered in the TPWS instructions. This proposal has been approved by TOMSC and, Chiltern believes, demonstrates its commitment to provide benefit across the industry on TPWS management.*

ORR notes that, in respect of this final point a proposal was submitted to RSSB's CCS Standards Committee on 14 May 2015 for a minor amendment to the TPWS handbook that highlights the issue that resulted in the driver isolating the TPWS at Paddington.



Proposed change to  
TPWS handbook.docx

### **Assessment of drivers**

- *Post Greenford Chiltern identified an assessor knowledge gap in TPWS assessment. The system does receive coverage (in module 5.1) but assessors have been briefed to pay more attention to this critical sub-system through our assessor Standardisation Days.*
- *All assessors are being up-skilled in assessing non-technical skills (known as behavioural attributes in our CMS) and we have been working closely with RSSB to ensure we are at the leading edge in this area of assessment. To this end, we invited its Human Factors team to come in and review this area; no significant omissions were noted by them.*
- *Assessors have also been briefed to look for competence assessment patterns similar to those seen in the history of the driver involved in the Greenford incident.*

### **More regular use of the simulator**

- *The potential for the further use of driver simulators has been readily acknowledged at a senior level within the company and it is the chosen method of training for our soon to be opened Bicester to Oxford route.*

- *The business is currently awaiting a quotation for a second simulator resource at a location in the West Midlands. The Capex requirement for this investment has been submitted.*
- *Once Chiltern has commissioned this additional simulator resource its plan is for every driver to attend a simulator day annually.*
- *An independent external review is being undertaken to capture best practice in simulator capability and utilisation and we have reviewed how other operators in the group have delivered this.*
- *Also, desktop simulator options have been reviewed as part of the scope. However, early on Chiltern has identified that these will only be effective for degraded working and infrastructure defects and of limited use for traction and rolling stock system faults.*

#### **Adequate systems for Periodic review**

- *A new Competency Management System (CMS) was implemented in 2012 / 13. Chiltern has completed a review of the system since it was introduced and made necessary changes that it determined appropriate to keep the system fit for purpose.*
- *Since the CMS was introduced, significant effort has been directed at ensuring consistent understanding, interpretation and delivery by the assessors through a series of Standardisation Days.*

## **Recommendation 2**

*The intent of this recommendation is that Network Rail should improve the robustness of the GSM-R radio system, in respect of signallers' ability to contact train drivers in an emergency.*

Network Rail should conduct a review of its implementation of GSM-R, particularly in respect of its configuration where signal boxes which have no GSM-R train describer feed adjoin signal boxes that automatically send train description data to GSM-R, and in areas of enhanced risk such as the entrances to single lines. The review should cover the visibility of trains on signallers' terminals as trains traverse signalling boundaries. Changes should be implemented where necessary so that signallers are able to directly contact all trains that are within, or leaving, their area of control, and are aware that although trains may no longer be shown on the terminal, it may still be possible to contact them by use of a railway emergency call.

## **ORR decision**

7. Having discussed Network Rail's response with RAIB ORR is content that Network Rail has satisfied the intent recommendation 2 on the grounds that;

- its response had demonstrated that it had reviewed the implementation of GSM-R in a way that satisfied the intent of the recommendation;

- it had confirmed that the GSM-R system operated in accordance with its design, supplemented by ORR's confirmation that a Railway Emergency Call (REC) is always broadcast to the adjacent cells either side of the issuing signal box, so that a train either leaving or entering a cell is aware of any incident; and
- it had confirmed that changes identified – the updating of signaller instructions to confirm that a train driver will receive a REC call and as long as the train is within the same or adjacent cell even though the train may not be shown on the Fixed Terminal System (FTS) – was planned to be addressed as part of the implementation of recommendation 3.

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

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

**Status: Implemented.**

#### **Information in support of ORR decision**

9. On 17 April 2015 Network Rail provided the following information to ORR:

1. *The GSM-R system operated in accordance within the principles of operation and design requirements. The train was correctly shown on the signaller GSM-R Fixed Terminal System (FTS) when the train entered and traversed through the area under the control of the signal box.*
2. *As the train left the area of control the train correctly was removed from the list of trains on the FTS.*
3. *The signaller followed the correct procedure in contacting the signaller at the controlling signal box and requested they make a Railway Emergency Call (REC).*

*It is acknowledged that an interim solution was implemented to the GSM-R system datafill (for Greenford) to allow the train to show for a longer period of time on the FTS (after it has left the area of control), however this solution causes a separate issue in that it creates potential for confusion if a REC call is made and who would be the lead signaller (as it would be received by Greenford and Marylebone). This interim solution is in the process of being removed by Telecoms Senior Engineer and the Senior Operations Manager (GSM-R), with a target date for removal by 30 June 2015.*

*It is further acknowledged that the Greenford signaller could have established a REC with the train, even though the train was no longer showing on the GSM-R FTS, as it would have been within the geographical mobile cell or adjacent mobile cell and therefore including within the Group Call Area for a REC.*

*Recommendation 3 will include signaller instructions to state that even though the train may not be shown on the FTS, it would be possible to instigate a REC call, and as long as the train is within the same cell or adjacent cell, this would be received by the train driver.*

### **Recommendation 3**

*The intent of this recommendation is that Network Rail should improve the training given to signallers on the use of GSM-R, so that they are able to use it effectively in an emergency situation.*

Network Rail should review and modify as necessary the training given to signallers in the use of GSM-R, so that signallers are given adequate opportunity to become familiar with the use of railway emergency calls, by practice, simulation or any other appropriate means.

### **ORR decision**

10. ORR is satisfied that Network Rail has demonstrated that it has reviewed its signaller training programme, and is in the process of rolling out a new national GSMR refresher training programme.

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

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

***Status: Implemented.***

### **Information in support of ORR decision**

12. On 17 April 2015 Network Rail provided the following information to ORR:

#### ***Initial Training***

*The current GSM-R training delivered as part of the Initial Signaller Training Programme (IST) already includes making emergency calls and trainees have the opportunity to practice this at other times throughout the training programme. Therefore, the main focus will be on improving training for existing signallers through the Operations Safety Brief (OSB), an operational refresher training and development day for frontline staff.*

*There is also an opportunity to make minor amendments to the IST as part of a series of changes that will take effect from April 2015. The trainee workbook will be enhanced to include additional exercises around making emergency calls and the revised version will be issued for use by 30 April 2015.*

*This recommendation has been recorded in the Professional Development & Training (PD&T) recommendations tracker for training reviews. The initial GSMR training will be reviewed as part of the review cycle for the IST, which will be undertaken in December 2015.*

### **Refresher Training**

*A refresher GSM-R training course is currently being developed for the Operations Safety Briefers to deliver within their Routes, which will be available from 1 June 2015.*

*The Operations Safety Brief cycle will now include GSM-R use as a standard agenda item. The OSB cycle which starts in June 2015 mandates a rules refresher session on emergency regulations, therefore attendees will practice making emergency calls on GSM-R as part of the training.*

*The competence management standards in the Operations Manual will be revised in order to formalise the requirement for GSM-R to be included as an OSB agenda item and to review whether enhancements need to be made to the competence assessment arrangements, such that there is a specific requirement to make an emergency call on a regular basis. The standards are currently under review and are planned for re-issue by 30 September 2015.*

13. On 20 May 2015 ORR wrote to Network Rail seeking additional clarification in respect of:

- the enhanced trainee workbook and the changes made to it;
- whether the timescale for closure of the recommendation (30 September 2015) should be realigned to the review of the initial GSMR training;
- clarifying whether refresher training for emergency calls will be mandatory; and
- the changes proposed to the Operations Safety Brief.

14. In response to this request Network Rail provided the following information on 14 July 2015:

### **Trainee Workbook**

*When Network Rail started drafting the trainee workbook it turned into a very big document that was unmanageable as a hard copy and so instead we have created a SharePoint site for new trainees. This contains documents to support their learning and information which might signpost them to other resources. In the case of GSMR we have sign posted them to training materials hosted on our intranet, Connect, and the external GSMR website.*



GSMR information  
gif.doc



**The timescale for completion of the recommendation is Sept 2015. However, the review of the initial training being delivered is scheduled for Dec 2015.**

*This was an oversight. The IST is regularly reviewed to ensure it reflects changes in the Rule Book and other relevant operations instructions. This will happen in Sept 2015 in time for the December Rule Book changes. So, the review will have taken place by the time the recommendation is due to close.*

### **Refresher Training**

*Practice on the GSMR equipment has been included in the OSB (now known as Operational Development (OD) Days) running June - Dec 2015. Below is a copy of the scenario being used for the training and the end of day assessment which includes a question about GSMR use.*



OSB 3 Session Plans



ODDay 3 Post

dangerous goods spac Assessment paper wi

*In addition Network Rail is putting together a national GSMR refresher training programme which will be available for signallers to attend in addition to their OD days. This will be more comprehensive in terms of covering all of the functionality of the GSMR kit whereas the OD Day focuses specifically on making an emergency REC call. The refresher training programme is being developed now and is due to be piloted in Sept 2015 and rolled out after that.*

*The requirement to have undertaken, or practiced undertaking, at least one emergency call in using GSMR has been included in the competence standard which is currently being revised. Signallers who have not had to make an emergency call real time should be able to meet this requirement either through attendance on an OD day where making emergency calls is part of the operational refresher training element or through attendance on the GSMR refresher training. Below is an extract from the relevant section of the standard currently being drafted and consulted:*

*“Line Managers are required to make a decision about communications competence once per year.*

*The decision about communications competence will be based on evidence from:*

- *the communications monitoring as outlined in Operations Manual NR/L3/OCS/041/3-08 Voice Recording Checks – Messages Concerning Safety which is to monitor and rate a sufficient number of safety critical communications, focussing on the on-going performance of the candidate and any associated risk.*
- *the NTS assessments*
- *the standard of communications observed/heard during site visits*

- *any self-generated evidence*
- *refresher training and any simulations of other operational activities that involve communications*
- *an emergency communications assessment. Evidence of this may come from on the job or simulations undertaken as part of the Operational Development Day. Attendance at the GSMR refresher training or the Safety Critical Communications refresher training will also fulfil the requirement to undertake an emergency communication.”*

15. On 10 November 2015 Network Rail provided the following update:

*Network Rail has piloted the GSMR refresher course and has run two Train the Trainer sessions to upskill the Route Briefers to deliver the training. An additional two Train the Trainer sessions are scheduled to take place in York/Peterborough in December 2015.*

*Network Rail’s Operations Managers have all been briefed about the availability of this training so it will be up to each Route to make sure it is rolled out for their Route. The Route Briefers have one “spare” quarter a year when they are not required to deliver Operational Development days and it is envisaged that the GSMR refresher training will be delivered then.*