

Chris O'Doherty
RAIB Relationship & Recommendations Handling Manager
Telephone 0845 301 3356
E-mail chris.o'doherty@orr.gsi.gov.uk



28 September 2011

Ms Carolyn Griffiths
Chief Inspector of Rail Accidents
Rail Accident Investigation Branch
Block A 2nd Floor
Dukes Court
Dukes Street
Woking
GU21 5BH

Dear Carolyn

Derailment of a freight train at Carrbridge, Badenoch and Strathspey

I write to report¹ and update on the consideration given and the action taken in respect of the recommendations addressed to ORR in the above report published on 19 March 2010.

The annex to this letter provides full details of the consideration given/action taken in respect of recommendations 1, 2, 3 and 4 where:

- recommendation 1 has been implemented² and;
- recommendations 2, 3 and 4 are in the process of being implemented³

We do not propose to take any further action in respect of recommendation 1 unless we become aware that any of the information is inaccurate in which case we will write to you again⁴. We expect to provide an update to recommendation 2, 3 and 4 in December 2011. We expect to publish this report on the ORR website on 14 October 2011.

Yours Sincerely

Chris O'Doherty

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

² In accordance with Regulation 12(2)(b)(i)

³ In accordance with Regulation 12(2)(b)(ii)

⁴ In accordance with Regulation 12(2)(c)





Initial Consideration by ORR

All 4 recommendations contained in the report were addressed to ORR when RAIB published its report on 24 February 2011.

After considering the report / recommendations, on 15 March 2011, ORR passed:

Recommendation 1 to Freight Operating Companies, asking them to consider and where appropriate act upon them.

Recommendations 2, 3 and 4 to Network Rail asking it to consider and where appropriate act upon them.

ORR also brought the report and recommendations, specifically recommendation 2, to the attention of: London Underground Ltd and Nexus (Tyne & Wear Metro) as it was concluded that there are equally important lessons for other rail infrastructure owners.

Details of consideration given and any action taken, in respect of these recommendations are provided below.

Recommendation 1

The purpose of this recommendation is to improve the effectiveness of the existing running brake test undertaken in snow in detecting or preventing any reduction in the brake forces available to a train when it is climbing steep gradients.

Freight operating companies, in conjunction with the Rail Safety and Standards Board, should make a proposal to review module TW1 of the Rule Book in order to establish if additional measures (such as bringing trains to a stand when starting to descend from summits) are required for trains working on steep gradients when snow is falling or being disturbed.

The requirements and guidance within DB Schenker's special operating advice notices for working in extreme weather conditions and the Rail Freight Operations Group's code of practice for operating freight services in winter should be examined for their suitability as a basis for these additional requirements.

(Paragraphs 211a, 211b, 212c and 216a)

Details of steps taken or being taken to implement the recommendation

British American Railway Services (BARS) in its response on 10 May 2011 advised:

British American Railway Services is not yet in a position to operate Freight trains under its DCR subsidiary, this situation is likely to change by June 2011.



When DCR moves to operating trains and has got the structure in place then we will take active steps to join in the discussions and actions to brief drivers and their managers to ensure we actively promote the change being advised.

The writer was involved in the work with the Rail Freight Operators group as the RSSB Delegate and will re-join that group or ensure the relevant manager joins so that BARS is involved.

ORR will direct future relevant recommendations to BARS for information and consideration. We will formally direct recommendations to BARS

GB Railfreight Ltd in its response on 14 April 2011, advised:

The RFOG [Rail Freight Operations Group] (which includes GBRf) met with the RSSB on 16 February and discussed the recommendation

An agreement was reached as to how these Rule Book clauses could be modified to improve the risk control afforded by them. As a consequence of this, the RSSB drafted the proposed amendments and these were presented and approved for industry consultation at TOMSC [Traffic Operation and Management Standards Committee] (30 March).

The amendments will come into force in December 2011.

GBRf provided ORR with a copy of RSSB documentation supporting this work including the draft Rule Book amendments.

The RFOG undertook a great deal of work in relation to both the Carstairs and Carrbridge incident throughout 2010, the end product being an RFOG Approved Code of Practice.

GBRf provided ORR with copies of:

GBRf General Operating Appendix, Module A5 'Operation of Freight Services in Winter Conditions'; and

The RFOG Approved Code of Practice with its response to the RAIB report on the Carstairs incident, 22 December 2009, published on 31 January 2011.

DB Schenker Rail (UK) Ltd in its response on 3 May 2011, advised:

A similar recommendation was made by the RAIB in its report into an incident at Carstairs on the 22nd December 2009.

DB Schenker Rail (UK), in co operation with the other members of the Rail Freight Operators Group has worked together with RSSB on amendments to the respective rules, as proposed in the recommendation, which will be issued in June 2011. [ORR has confirmed that the rule book changes will come into force in December 2011].



Colas Rail in its response on 4 May 2011, advised:

The Colas Rail National Delivery Manager Freight is a member of the Freight Operating Group and the incident at Carrbridge, Badenoch and Strathspey has been discussed within the group.

Colas Rail will actively participate with the RSSB through the group and review the practicalities of carrying out running brake tests.

Colas Rail is aware of the issue of undertaking running brake tests during snow and poor weather conditions.

Colas Rail provided ORR with a copy of two communications it forwarded to its driving staff reminding them of module TWI 18.1 and 18.2; one communication was a reminder notice and the other formed part of the monthly driver's safety bulletin.

Colas Rail also provided ORR with its winterisation procedure TO4-252 "Class 66/8 Locomotive Vehicle Maintenance and Overhaul Instruction" It is the intention of Colas Rail to add Class 47s to the T04-252 procedure.

The ORR, through its attendance at the Rail Freight Operations Group (RFOG), is satisfied that Colas Rail is implementing the RFOG Approved Code of Practice 001 'Operation of Freight Services in Winter Conditions'.

Direct Rail Services in its response on 4 May 2011, advised:

DRS has participated in the joint RSSB / RFOG [Rail Freight Operations Group] workshop to review module TW1 of the rule book.

The new requirements of TW1 will be implemented upon the reissue of module TW1 of the rule book.

Freightliner Group Ltd in its response on 10 May 2011, advised:

Freightliner provided the project plan for the development of Rule Book modules TW1 - TW3, which has been devised by the Rail Freight Operators Group after discussion with all its members. Included is a timetable for consultation, authorisation and implementation.

Freightliner trusts this will illustrate its acceptance of the recommendation and the progress being made to close out by making changes to the Rule Book collectively as Freight Operating Companies.

Draft rule book amendments (in bold)

Module TW1:

18.2 Working trains during snow conditions

You must carryout running brake tests as frequently as necessary to make sure that the automatic brake is operating effectively.

You must also carryout any additional train operating instructions.

Module TW3:

You must test that the automatic brake is working properly. You must do this by carrying out a



running brake test at the first opportunity after the beginning of the journey

You must also carry out a running brake test in good time before approaching:

- The first stopping place
- A crossing place on a single line where the train has to stop
- A steep falling gradient
- A terminus or dead end platform line

When you carry out a running brake test, you must do so from a speed that is high enough for you to be sure that :

- The brake is operating effectively, and

The speed of the train is being reduced.

ORR Decision

The ORR through its participation, as an observer, at the RSSB Traffic Operation and Management Standards Committee, has confirmed that the amendments to rule book modules TW1 and TW3 will come into force December 2011.

The ORR, through its attendance at the Rail Freight Operations Group (RFOG), is satisfied that freight operating companies are implementing the RFOG Approved Code of Practice 001 'Operation of Freight Services in Winter Conditions'.

The ORR notes that British American Railways is not yet in a position to operate Freight trains under its Devon & Cornwall Railway (DCR) subsidiary.

After reviewing all the information received from freight operating companies, ORR concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, freight operating companies have:

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

ORR does not therefore propose to take any further action unless it becomes aware that the information above is inaccurate, in which case ORR will write to RAIB again.

Status: *Implemented*

Recommendation 2

The purpose of this recommendation is to ensure that risks to safety on steep gradients during periods of falling or disturbed snow are assessed and that appropriate control measures are considered in advance of adverse weather. It is also intended to extend the current use of line-side snow signs to other sites assessed as requiring such additional risk control measures.

Network Rail, in consultation with train operators, should assess any lines which include steep gradients in order to establish if additional risk control measures (such as bringing trains to a stand prior to descending from summits) may be required during periods when snow is falling or being disturbed by the passage of trains.

Any steep gradients assessed as requiring additional risk control measures in these conditions should be designated in the appropriate sectional appendix and marked by the use of lineside snow signs.

(Paragraphs 211a, 211b, 212c and 216a)

Details of steps taken or being taken to implement the recommendation

Network Rail in its response on 21 April 2011 advised:

This recommendation will be addressed as follows:

- 1) Define steep gradient, making sure that it is consistent with the definition (1 in 75) in the workstream on RRVs [Road Rail vehicle] currently being led by Professional Head [Plant & T+RS].
- 2) Obtain details of all locations where gradient exceeds that gradient (from Asset Knowledge).
- 3) ORA [Operations Risk Advisor] teams to review their respective locations along with train operators, including;

Type of stock (and crash worthiness, passenger loading)

Braking characteristics of stock

Degree and length of falling gradient

Layout – possible conflict points, signals etc.

Conclude whether further action during snow is required e.g. use of GSMR as a mitigation to advise drivers versus more clutter through line side signs.

- 4) Report findings to their respective OPSRAMs. [Operations Safety Risk and Mitigation]

Given that OPSRAMs only meet every 8 weeks, it is estimated that 4 months should be allowed for closure.

Timescale: 30 September 2011



ORR Decision

ORR concluded that Network Rail's initial response did not adequately address the recommendation and therefore wrote to Network Rail on 7 June 2011 asking for details of the outcome of its review, when available, and any actions it will be taking to address this recommendation.

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

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

ORR has requested further information from Network Rail and will update RAIB on receipt of that response.

Status: *In-progress* – RAIB to be updated in December 2011

Recommendation 3

The purpose of this recommendation is to ensure that the potential risks involved in the prolonged use of stock equipped with miniature snow ploughs to clear snow from lines are understood and that Network Rail staff involved in the management of extreme weather are made aware of any risk control measures identified.

Network Rail, in consultation with train operators, should assess the risks of an accumulation of snow being left on or close to the line as a result of the prolonged use of miniature snow ploughs to clear lines of snow.

Any appropriate risk control measures (such as additional instructions within route winter working arrangements) that are identified should be implemented.

(Paragraphs 213a, 214a and 217a)

Details of steps taken or being taken to implement the recommendation

Network Rail in its response on 21 April 2011 advised:

Network Rail, in consultation with train operators, will assess the risks of an accumulation of snow being left on or close to the line as a result of the prolonged use of miniature snow ploughs to clear lines of snow.

A review of the Winter 365 Weather Management Module will be undertaken with a view to including an entry in there, highlighting consideration to be afforded by Route Control of Independent snow plough utilisation during extended periods of severe weather.

Complete review 31 July 2011

Implementation of any changes 1 October 2011



ORR Decision

ORR concluded that Network Rail's initial response did not adequately address the recommendation and therefore wrote to Network Rail 7 June 2011 asking for details of the outcome of its review, when available, and any actions it will be taking to address this recommendation.

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

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

ORR has requested further information from Network Rail and will update RAIB on receipt of that response.

Status: *In-progress* – RAIB to be updated in December 2011

Recommendation 4

The purpose of this recommendation is to ensure that the risk of an overrun of signal AC336 is reviewed in line with existing industry requirements to ensure that it is acceptably low. It is also intended to ensure that the secondary risk introduced by trap points at other similar locations is considered.

Network Rail should consider if there are additional measures which could reduce the overrun risk at signal AC336 and implement those measures found to be reasonably practicable to introduce.

This consideration should include the undertaking of a detailed assessment as required by Network Rail standard NR/L2/SIG/14201.

Network Rail should have regard to the guidance and requirements regarding trap points within Railway Group Guidance Note GI/GN 7606 and Railway Group Standard GK/RT 0064 and should specifically consider the risks to the public of an overrun at this signal.

Network Rail should also review where trap points have been used to control overrun risk at similar locations in order to establish that any secondary risks introduced by their use have been adequately assessed and mitigated.

(Paragraph 219)

Details of steps taken or being taken to implement the recommendation

Network Rail in its response on 21 April 2011 advised:

Part a) -Network Rail does have regard to the guidance and requirements regarding trap points within Railway Group Guidance Note GI/GN/7606 [Prevention and mitigation of overruns - Risk Assessment] and Railway Group Standard GK/RT 0064 [Provision of



overlaps, flank protection and trapping] and at a detailed assessment workshop held on 4 March 2011 at Buchanan House, it specifically considered the risks to the public of an overrun at signal AC336 at Carrbridge.

Attendees at the workshop were First ScotRail, DB Schenker (directly involved in the actual incident on 4 January 2010) the Operations Risk Advisor Scotland and the Operations Risk Control Co-ordinator (facilitator of the workshop).

The SAT [Signal Assessment Tool] score prior to the detailed assessment was 2 and following the workshop this score was reduced to 0.

The signal is fitted with TPWS [Train Protection Warning System] and in most cases, it would stop a SPADing train before it arrived at the catch points.

It was felt that under the 4 January 2010 circumstances, that the outcome was the preferred option rather than the train being allowed to runaway beyond Carrbridge and potentially colliding head on with another train travelling in the opposite direction.

One single action to come out of the workshop was for Network Rail Infrastructure Maintenance to cut back all vegetation from the AWS [Automatic Warning System] magnet for the signal up to and including AC336. This work was planned to be complete the week ending 26 March 2011. However, due to snow this has been delayed, although, it is expected to be complete in early April 2011.

Part b)-Network Rail has risk assessed all of its trap points including secondary risks. A paper is being presented to TSG [Tactical Safety Group] 18 April 2011 by the Operations Principles & Standards Manager entitled "Trap Points", requesting that TSG Note the contents of the paper, the work previously undertaken and agree whether further work is required with regard to the fitment of trap points, bearing in mind the updated analyses of trap point performance.

Timescales:

- a) 15 May 2011
- b) N/A

Network Rail in its response of 4 July 2011 advised ORR that:

Signal AC336 at Carrbridge is fitted with TPWS. The detailed assessment panel identified that under normal circumstances any SPADing train would be stopped before the train reached the run-off.

However, this would not be effective if an uncontrolled runaway was to occur and a train would become derailed and travel some distance



beyond the point it became derailed, possibly entering third party property.

It was felt by the panel that this would be preferable to allowing the train to run uncontrolled further down the single line, with the potential to collide head on with a train travelling in the opposite direction.

Furthermore, it is not considered that there is an engineering solution capable of retarding a heavily loaded freight train without a potential fatal injury to the driver (e.g. concrete wall) but it would still be unlikely to stop the train.

It was felt that the risk needed to be controlled further back along the line from Carrbridge, at Slochd summit, where during heavy snow and icy conditions freight trains are brought to a complete standstill before descending the gradient .

A similar instruction already applies for Class 158s which has proved successful, thus proving the operability of the train braking. If this proves to be successful then further risk assessment could be undertaken to consider the total removal of the catchpoint at Carrbridge.

All vegetation from the AWS magnet for the signal up to and including AC336 has now been cut back. The work was planned to be completed the week ending 26 March 2011, however due to snow this was delayed until early April 2011.

Network Rail provided ORR with photographs of the area around signal AC336 before and after the vegetation had been cut back.

ORR Decision

ORR concluded that Network Rail's initial response did not adequately address the recommendation and therefore wrote to Network Rail on 7 June 2011 asking if it considered action to reduce the risk to the public from any rolling stock that enters the run out at Carrbridge, after passing signal AC336, and to provide clarification and details of why it believes that modifications to the run out are not required.

Network Rail responded on 4 July 2011 with the information provided above.

The further response shows some consideration of the difficulty in arresting a fully loaded freight train that enters the run-out. But it does not provide any clarification on the extent to which the risk from any other train or section of a train, that either passes AC336 at danger or breaks/runs away from a northbound train has been assessed and controlled by engineering means in the design of the run out.

Network Rail do not confirm that the design of the run-out meets current best practice, so far as is reasonably practicable. Therefore ORR is unable to conclude that the recommendation has been adequately addressed insofar as Network Rail is yet to show that it has considered whether there are additional



Annex A

measures which could reduce the **overrun risk** associated with signal AC336, or from trains entering the run-out, for whatever reason, as opposed to the risk of overrun occurring.

ORR is taking further action to establish whether further engineering controls in the design of the run out are reasonably practicable and if so secure their implementation.

Stat Status: *In-progress* – *RAIB to be updated in December 2011*