

**Oliver Stewart**  
**Senior Executive, RAIB Relationship and**  
**Recommendation Handling**  
Telephone: 020 7282 3864  
E-mail: oliver.stewart@orr.gsi.gov.uk



13 October 2015

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

Dear Andrew,

**RAIB Report: Derailment at Primrose Hill/Camden West Junction, 15 October 2013**

I write to report<sup>1</sup> on the consideration given and action taken in respect of recommendations 1, 2 and 3 addressed to ORR in the above report, published on 14 October 2014.

The annex to this letter provides details in respect of each recommendation. The status of recommendations 1 and 2 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.

The status of recommendation 3 is '**In Progress**'. ORR will advise RAIB when further information is available regarding actions being taken to address these recommendations.

We will publish this response on the ORR website on 16 October 2015.

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

### Initial consideration by ORR

1. All 3 recommendations were addressed to ORR when the report was published on 14 October 2014.
2. ORR passed recommendation 1 to Network Rail; recommendation 2 jointly to Network Rail and Freightliner; and recommendation 3 to RSSB 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 to reduce the probability of track geometry defects remaining undetected in the event that operation of a track geometry measurement train does not take place as scheduled.*

Network Rail should provide specific guidance to managers with responsibility for track maintenance on the action to be taken to confirm that track quality remains acceptable should a planned run of a track geometry measurement train over a section of line be cancelled. This should include the criteria for whether it is necessary to conduct additional track geometry measurements, as well as the timescales for any such measurements to be completed.

#### Steps taken or being taken to address the recommendation

3. Network Rail submitted a closure statement to ORR on 1 June 2015 containing the following information:

*Network Rail, Professional Head [Track], has considered the intent of this recommendation by reviewing the adequacy of current guidance within Network Rail standards. This review has been undertaken within Technical Services, part of the Safety, Technical & Engineering Directorate and involved subject matter engineering experts.*

*Consideration has focused on two specific issues:*

- a) *Current guidance within NR/L2ffRK/001/mod11, Track geometry - Inspections and minimum actions*
- b) *Reporting of missed planned train recording runs*

*Consideration of NRIL21TRK/001/mod11. Track geometry – inspections and minimum actions*

*NR/L2rrRKI001/mod11, Track geometry - Inspections and minimum actions, specifies, in relation to track geometry, the requirements for its measurement. Clause 4, Track geometry measurement, addresses the frequency of measurement and in particular describes the associated nominal planning interval frequencies within Table 1 (see below).*

Table 1- Frequency of Track Geometry Measurement		
Track Category	Frequency (Nominal planning interval)	Maximum interval between measurement
1A	4 weekly	10 weeks
1	8 weekly	18 weeks
2	12 weekly	26 weeks
3	16 weekly	36 weeks
4	24 weekly	52 weeks
5	24 weekly	52 weeks
6	24 weekly	52 weeks

Notes:

1. Additional measurement may be required on routes containing sections of track which deteriorate rapidly (e.g. embankment settlement, slips or mining subsidence).
2. If a planned track recording run has been missed, the TME should consider whether additional measurement is needed for the whole, or part, of the route before the next scheduled recording.

*Note 2 within Table 1 specifically states that 'If a planned track recording run has been missed, the Track Maintenance Engineer (TME) should consider whether additional measurement is needed for the whole, or part, of the route before the next scheduled recording.'*

*This requirement sufficiently prompts the consideration of any mitigating actions should a planned run of a track geometry measurement train over a section of line be cancelled; a responsibility owned by the Track Maintenance Engineer. The timescales for such actions need to be compliant with Table 1, 'maximum interval between measurement', and would be defined against the individual circumstances pertinent to the non-recorded track section.*

*The management of track geometry recording and remedial actions is addressed within Network Rail standard NRIL3rrRKJ3202. This procedure details how the Maintenance Organisation is to manage its responsibility for measurement of track geometry and for identifying and undertaking work arising. This process applies to all Maintenance Staff whose duties include the identification, analysis, planning and rectification of track geometry issues.*

*Reporting of missed planned train recording runs*

*Each planned track recording run has an associated 'Run Log'. The run log is a spreadsheet based document which details:*

- i. Run Log- Route, Route Setting Tape (RST), limits of the run (recording to/from), Engineers Line Reference (ELR), Miles (Planned / Actual / Lost)*
- ii. Lost Data - Route, RST, location (ELR, from / to), Route/Line taken by train, comments*
- iii. Infrastructure Faults – details of Immediate Action Limit faults recorded and reported by the Track Recording Vehicle (TRV) to Integrated Control Centre (ICC)*
- iv. Invalid Infrastructure Faults- details of Immediate Action Limit faults invalidated during recording.*

*Within 2 working days of the recording run the 'Run Log' is issued (in the form of a spreadsheet) with other documentation relevant to the recording run e.g. Track Geometry fault report, trace information etc. This is issued from Network Rail (Asset Information) to designated roles within the organisation e.g. TME and Track Section Managers (SM[T]).*

*This information allows for the recipient to immediately identify lost recording mileage and the nature of that loss.*

### Summary

*The considered response of the Professional Head [Track] is that the current provision for the management of track geometry measurement shortfall is sufficiently addressed within Network Rail Standards; NR/L2/TRK/001/mod11 and NR/L3/TRK/3202.*

### **ORR decision**

4. ORR met with the Network Rail Professional Head [Track] on 21 July 2015 to discuss the closure statement. Following the meeting, Network Rail wrote to ORR with an annex to the closure statement containing additional information.

5. The intent of this recommendation is to reduce the probability of a track geometry defect remaining undetected if a track geometry measurement train does not run as scheduled; through the provision of specific guidance. Network Rail has concluded that their existing arrangements are adequate to address this intent.

6. These arrangements are summarised on the bow tie loss event “*loss of track geometry (excluding gauge) beyond safety limits*” as nine means of control (MOC), of which four are the responsibility of the Track Maintenance Engineer (TME): two of which relate to track geometry measurement, one to cab rides, and one to preparing and

maintaining asset management plans. The MOCs set out the action that should be taken if a track geometry measurement train does not run as scheduled, and the relevant timescales for taking that action. The Business Critical Rules (BCR) programme that applied the existing track standard requirements into the bow tie analysis and MOCs has made these requirements clearer by (1) the use of the 'means of control' (MOC) process maps that provide direction if additional recording is required; and (2) the responsible role.

7. In determining whether action is required, the TME requires to take account of the nominal and maximum frequencies; the former is a baseline limit, the latter a critical limit. To amend baseline limits requires the RAM(T) to assess and approve a risk based argument prepared by the TME. Critical limits cannot be altered. The TME should also take account of his asset management inspection and maintenance plan and the information used to prepare and monitor its effectiveness. The relevant MOC and supporting standard provides guidance in this area.

8. The underlying principle of BCR is that responsible roles are competent to operate within the framework. Whilst the current BCR role based manual for a TME contains much information on how to manage track, and guidance on factors to consider when managing track, NR is developing a TME course to enhance the capability of its engineers. Course content is linked to the output of the BCR bow tie and MOC process to ensure that roles are equipped with the correct underlying understanding of risk and underpinning knowledge. The first of the three modules commences in October 2015 and is mandatory for all TMEs. It will cover safety of the line responsibilities, and include an assessment element to identify areas for development.

9. ORR accepts NR's conclusion that the current arrangements meet the intent of the recommendation and are capable of managing the risk arising from missed track geometry run; and that the introduction of BCR, the role based manual, and means of control enhances the guidance provided to staff. The new TME training courses will reinforce the importance of managing risk from track geometry and assist engineers apply the identified risk control measures more consistently.

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

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

***Status: Implemented***

## **Recommendation 2**

*The intent of this recommendation is for the key stakeholders in the railway industry to work together to assess the risk from asymmetric loading and to identify and adopt reasonably practicable control measures to mitigate that risk.*

Freightliner and Network Rail should jointly request that RSSB:

- a) researches the factors that may increase the probability of derailment when container wagons are asymmetrically loaded, and in particular:
  - i. sensitivity to combinations of longitudinal and lateral offsets in loads that can reasonably be encountered in service;
  - ii. the predicted performance of wagons with high torsional stiffness along their length (using the FEA type as an example); and
  - iii. the effect of multiple twist faults, track twist over distances other than 3 metres (as commonly specified and measured by Network Rail) and lateral track irregularities.
- b) updates and amends as necessary the risk assessment contained within the RSSB and Transport Research Laboratory joint report ('Potential risks to road and rail transport associated with asymmetric loading of containers'); this should take into account the results from the research referred to in a) and additional evidence presented in this investigation report; and
- c) works with industry stakeholders to use the outputs of a) and b) to identify, evaluate and promote adoption of any additional reasonably practicable mitigations capable of reducing the risk from asymmetric loading of wagons.

### **Steps taken or being taken to address the recommendation**

11. As per the recommendation, both Network Rail and Freightliner formally approached RSSB to coordinate industry work into the examination of the issue of asymmetrically loaded wagons derailing.

12. In its response to ORR of 22 December 2014, Freightliner Ltd provided the following information:

*Freightliner as a member of the RSSB Rolling Stock Standards Committee has requested that the RSSB undertake this work. The Standards Committee meeting held on 5th December supported Freightliner's request. The RSSB accepted an action to facilitate a cross industry working group to undertake an exercise to satisfy the requirements of the recommendation above. Freightliner will of course actively support and participate in this working group.*

*In addition Freightliner has requested via the Non Passenger Operator Representative on the RSSB Infrastructure Standards Committee for the recommendation to be discussed with a view to co-ordinating the response of both Standards Committees.*

*You will of course also be aware of Ian Prosser's recent letter to the industry relating to freight train derailments. Freightliner is currently developing our response to this letter and any action arising from this initiative will no doubt support the work being undertaken above.*

*Please be assured that Freightliner will play a full and active role in supporting the industry work to satisfy the requirements of the RAIB recommendation.*

13. In their initial response to ORR on 9 June 2015, Network Rail also expressed their support for the establishment of a cross industry working group to consider issues around asymmetrically loaded wagons:

*A cross-industry group has been formed and is being led by RSSB to review whether anything has changed in the infrastructure, vehicles or operating environment to increase the risk of derailments of freight trains with particular reference to track twist and offset loading of vehicles; and whether the existing standards should be revised.*

*The group consists of representatives from Network Rail, freight operators, RSSB and experts on vehicle dynamics and derailments including representation from the University of Huddersfield.*

*The group have met 4 times (as of 9 June 2015) to date and have scoped out packages of work to provide analysis of the historical trend of derailments, with particular reference to container wagons; more detailed analysis of current traffic consists to understand the changes in the proportion of container wagons; analysis of the sensitivity of vehicles to different track twist wavelengths; analysis of the population of track twists and their frequency on the network.*

*A series of simulations are also planned to test the sensitivity to combinations of longitudinal and lateral offsets in loads that can reasonably be encountered in service; the predicted performance of wagons with high torsional stiffness along their length; and the effect of multiple twist faults, and lateral track irregularities.*

*The results of this analysis will be used to inform the need for any standards changes which if required will be promoted by the group.*

14. RSSB wrote to ORR on 27 May 2015 (in response to the Gloucester derailment RAIB report) confirming the establishment of the cross industry working group and ORR's participation:

*With regard to both the Gloucester and Camden Road RAIB report recommendations, RSSB has facilitated the formation of a cross-industry working group specifically to work on freight vehicle / track condition derailments. The group includes representatives from Network Rail, freight operators, academia, technical experts, ORR and RSSB. It will analyse in great detail the entire problem from a whole system perspective and any changes necessary to Railway Group Standards will form one of its recommendations.*

*The group's work is reported to the Infrastructure, Rolling Stock and Plant standards committees, who have indicated that they will accept any proposed standards changes from the group. The group is due to report back to the ORR in six months (although, as noted above, ORR is also member of the group).*

*This means, therefore, that no change will be made until the group completes its initial deliberations, which are expected later this year.*

15. As noted in the response from RSSB, the cross industry working group is planning to report progress to ORR September / October 2015. The next meeting of the group is on 24 September 2015.

### **ORR decision**

16. ORR considers that Freightliner and Network Rail have taken action to request that RSSB undertake the work required by this recommendation and notes the industry's commitment toward achieving delivery.

17. ORR, in reviewing the information received from Network Rail and Freightliner has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, both end implementers have:

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

**Status: *Implemented***

### **Recommendation 3**

*The intent of this recommendation is to clarify the requirements for the design and acceptance of freight wagons, taking account of the possibility of asymmetric loading.*

RSSB should amend Railway Group Standard 'Resistance of Railway Vehicles to Derailment and Roll-Over', GM/RT2141 to refer specifically to asymmetric loading, including possible combinations of longitudinal and lateral load imbalance.

### **Steps taken or being taken to address the recommendation**

18. As detailed in the response to recommendation 2, RSSB has established a cross industry working group to consider issues around freight vehicle/ track condition derailments. The work of the group will include deliberating the changes that will need to be made to the Railway Group Standard GM/Rt 2141 to accommodate longitudinal and lateral asymmetric loading. The ORR representative produced the following update following the cross industry working group held on 23 July 2015:

*With respect to recommendation 3 and the amendment of GM/Rt 2141 to accommodate longitudinal and lateral asymmetric loading, the XIWG will deliberate what they believe will be the elements that will contribute to closing out this requirement.*

*GM/Rt 2141 also applies to passenger vehicles and other vehicles such as MPV and plant in travelling mode and the amendments of GM Rt 2141 will be extended to those types of vehicles to a wider consulted audience via rolling stock standards. We also*



*know that the Gloucester recs make similar demands and these will be needed to be consulted on as well.*

*ORR's understanding is that the GM Rt 2141 will go to version/issue 4 in due course and part of that is harmonising the requirements and methodologies of some of the contents of 2141 to be more compatible with the Euro Norm EN 14363.*

*EN14363 uses a different 'assault course' as to the typical track geometry components (curve radii, over speed etc) needed to be negotiated to enable safe traverse. One of the functions that the consultation will look at to ensure that any requirements don't impose any additional burden to GB practise. Conversely ORR should also ensure that any non GB wagon entering into UK should be subject to sufficient scrutiny so that it can negotiate GB track without risks that we wouldn't expect from domestic wagons.*

*ORR suggested RSSB publish interim guidance to supplement the intended changes to GM/Rt 2141 to ensure new entrants are aware of the issues raised and can be mindful of them when undertaking compatibility.*

#### **ORR decision**

19. The implementation of recommendation 3 is being taken forward by the RSSB cross industry working group, although they have not yet produced a time-bound plan for amending GM/Rt 2141.

20. ORR, in attending the RSSB cross industry working group has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, RSSB have:

- taken the recommendation into consideration; and
- is taking action to implement it, although a timebound plan has yet to be provided.

**Status: *In progress*. ORR will advise RAIB when actions to address this recommendation have been completed.**