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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: Locomotive derailment at Ordsall Lane Junction, Salford, 23 January 2013

I write to provide an update¹ on the action taken in respect of recommendation 1 addressed to ORR in the above report, published on 31 March 2014. The annex to this letter provides details of the action taken regarding this recommendation, 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 16 February 2017.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Oliver Stewart', with a stylized flourish at the end.

Oliver Stewart

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

Recommendation 1

The intent of this recommendation is to reduce the risk of derailment on small radius curves by ensuring that non-compliances with currently prescribed requirements for check rails are identified and mitigated.

Network Rail should identify all curves that are non-compliant with Railway Group standard GC/RT5021 and Network Rail standard NR/L2/TRK/2102 in respect of the need to fit a check rail. For each identified curve, Network Rail should implement measures to adequately mitigate the risk of derailment. These may include one or both of the following methods, although other means of mitigation may also be appropriate (paragraph 110a, 111a and 111b):

- installing a check rail on the curve; and
- managing rail lubrication on the curve to a suitable level of availability.

Implementation of this recommendation may require Network Rail to review curvature information recorded on track geometry measurement train runs.

ORR decision

1. Network Rail report they have identified curves with sub 200m radii that are not fitted with check rails (68% of the 422 curves identified with sub 200m radii), assessed the risk at each curve taking account of local factors and identified appropriate corrective actions. These include measures such as providing or enhancing lubrication, and fitting of check rails as necessary.

2. Network Rail's closure statement refers to the cost challenges being presented by the current business plan reforecasting exercise that requires all track renewals to be considered as part of the annual prioritised assessment process, and confirms that interim controls will be an on-going maintenance cost. This risk based approach is sufficient to manage the flange climb risk so long as the interim controls (largely lubrication) are maintained in the interim. Positively, action has been taken to increase awareness in routes of the risk and suitable controls, and to ensure new designs properly consider this risk. The CETL has committed to monitoring of processes as part of on-going inspections, verification, and policy reviews.

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

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

Status: Implemented.

Previously reported to RAIB

4. We wrote to RAIB on 31 March 2015 reporting details of the review Network Rail was doing to identify curves that were not compliant with GC/RT5021 (track system requirements) and NR/L2/TRK/2102 (design and construction of track).

Update

5. On 6 July 2016, Network Rail provided a closure statement containing the following information:

Summary:

Network Rail, Chief Track & Lineside Engineer, has addressed the intent of RAIB Recommendation 1 by issuing a Special Inspection Notice NR/SIN/139 (SIN 139) 'Assessment and control of flange climb risks on sub-250 metre radius plain line curves', which included the requirement for identification of all curves that are non-compliant with GC/RT5021 'Track system requirements' and NR/L2/TRK/2102 'Design and construction of track' in respect of the need to fit a check rail and implementation of measures to mitigate the risk of derailment. SIN 139 was closed on 17/03/2016 by the issue of a SIN Closure Form to confirm that all actions have been completed (see Appendix A).

Relevant Standards:

GC/RT5021 and NR/L2/TRK/2102 mandate check rails on all passenger lines (and running lines close to passenger lines) where the track radius is less than 200 metres, extending at least 9 metres into adjoining sections of straighter track (see Appendix B). Publication of NR/L2/TRK/2102 issue 7 on 05/12/2015 introduced further guidance on factors to consider when assessing the need for a check rail on curves with radii in the range of 201 metres to 300 metres where high volumes of traffic can be expected.

Special Inspection Notice NR/SIN/139:

SIN 139 was issued on 09/02/2015 for compliance by 06/07/2015 and required Route Asset Managers [Track] RAM[T] to:

- *identify all small radius curves (200 metres or less) and confirm whether or not check rails are fitted;*
- *confirm the nature of any risk controls which are in place where no check rail exists;*
- *view existing risk controls at all sites to confirm their adequacy or the need for upgrade;*
- *identify curves with radii in the range of 201 metres to 250 metres to enable risk assessment and mitigation plans to be proposed based on track construction type, usage and business case development ;*
- *implement the following corrective actions for all curves of radius of 200 metres or less without a check rail:*
 - *inspect and define implementation plan within 16 weeks (i.e. by 01/06/2015) ;*
 - o *record details of risks and control measures implemented ;*

- *implement corrective action as soon as possible according to the risk presented (implementation timescale should seek to achieve installation within 52 weeks i.e. by 08/02/20 16);*
- *review control measures until the identified condition is resolved; and*
- *record the curve details, specification of the action plan and control measures on the 'Register of tight curves' (see Appendix C for template).*

The above approach informed the development of a co-ordinated approach to compliance and risk reduction for each site in accordance with SFAIRP principles.

Inspections:

Inspections of all small radius curves (200 metres or less) and curves with radii in the range of 201m to 250m were carried out. The inspections confirmed the condition and construction of the track on each curve and the extent to which lubrication was present on the curve to minimise the risk of derailment.

Consideration was given to the enhancement of lubrication regimes to reduce the risk of flange climb pending the fitment of check rails where applicable.

When inspecting these locations the following factors were taken into account:

- *the requirements of NR/L3/TRK/3510/A01 'Lubrication of plain line running rails, check rails and S&C';*
- *current and future operations and usage of the route;*
- *deterioration history for the curve;*
- *likely consequences of any derailment ; and*
- *surrounding environment.*

The results were compiled by the RAM[T] and proposed actions identified locally, ranging from:

- *block to traffic;*
- *fit check rails - prioritised according to site specific risk and the relative risk compared to other sites at which the funds might be spent;*
- *install lubrication regime;*
- *amend lubrication regime; or*
- *confirm no action to be taken .*

The database headings and some extracted returns are attached as Appendix D.

Inspection Findings:

422 curves of radius 200 metres or less were identified, of which 289 were acknowledged as non-compliant to GC/RT5021 and NRIL2/TRK/2102 in respect of the need to fit a check rail. The non-compliant sites were risk assessed, control measures reviewed, corrective actions planned and data recorded on the 'Register of tight curves'.

Conclusion

The Chief Track & Uneside Engineer has considered the returns from the Routes and in doing so determines that the exercise has enabled the Routes to:

- *consider their sites comprising tight radius plain line curves ;*
- *reemphasise the purpose and value of curve registers as the basis of robust asset maintenance ;*
- *reaffirm knowledge and understanding of the asset condition;*
- *identify shortfalls against the relevant Railway Group Standards and Network Rail standards;*
- *risk assess and define intervention actions appropriate to the risks identified;*
- *prioritise and plan delivery of the interventions; and*
- *prioritise the interventions based on comparison of risks and situations across the Delivery Units and Route.*

The availability of appropriate funding has been considered, especially in the light of RF8 reviews. At the Track Leadership Group meeting held on 2nd December 2015 in Milton Keynes Quadrant, all RAM[T]s or their representatives confirmed that where intervention works had been identified for the current financial year, this would be funded through medium refurbishment budgets which they direct.

Where renewals or more significant long-term improvements are identified, these would be considered in line with the prevailing year's priorities and the available funds. The sustainability of any intervention works is considered to be an ongoing maintenance cost.

The Chief Track and Lineside Engineer is also cogniscent of the following linked developments which have occurred through and during this exercise:

- *renewal related designs for tight radius curves are being reviewed and the provision of check rails reaffirmed;*
- *less than desirable design practice which has developed to reduce costs by designing a ruling radius of 201m is in the process of being eradicated ;*
- *specifications for new works are proactively considering the fitment of check rails for curves of radius under 225m; and*
- *the Track Maintenance Engineers' course is using examples of residual risks to encourage new and incumbent Engineers to review their assets with "fresh" eyes.*

The Chief Track and Lineside Engineer will continue to monitor the implementation of these processes and practices as appropriate during future inspections, verifications and policy reviews.

Review of the original incident gives a significant opportunity for risk evaluation. Two locomotives of the same type were at either end of the train but only the hauled locomotive with the newly worn tyres derailed. Consideration of the volume and type of traffic over the route indicate that the incident was in excess of a 1 in 30 million event.

With the information gained by the exercise and the prioritisation of risks, it is considered that

the intent of RAIB Recommendation 1 has been met and therefore can be considered CLOSED .