

Oliver Stewart
RAIB Recommendation Handling Manager



4 January 2024

Mr Andy Lewis
Deputy Chief Inspector of Rail Accidents

Dear Andy,

RAIB Report: Freight train derailment near Gloucester on 15 October 2013

I write to provide an update¹ on the action taken in respect of recommendation 6 addressed to ORR in the above report, published on 9 October 2014.

The annex to this letter provides details of actions taken in response to the recommendation and the status decided by ORR. The status of recommendation 6 is '**Closed**'.

We do not propose to take any further action in respect of the recommendation, 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.

Yours sincerely,

Oliver Stewart

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

Recommendation 6

The intent of the recommendation is to remove or reduce the susceptibility of the IDA wagon's ride performance to dips in the track when in its tare or a partially laden condition.

Direct Rail Services should implement measures to reduce the susceptibility of the IDA wagon's ride performance to changes in vertical track geometry when in tare or a partially laden condition. This could be by means of either the introduction of operating restrictions or modifications to the wagon's suspension.

ORR decision

1. Following the derailment at Gloucester, DRS continued to operate IDA wagons, but at a reduced speed in order to control the risk of derailment. In the meantime, to operate the wagons at their design speed, DRS worked on developing an engineering modification.
2. The modification was provision of a primary vertical damper and change of wheel profile. In order to be satisfied that the modification and associated approvals meet the intention of the recommendations we asked DRS to provide a description of the modification, proof of concept and to demonstrate compliance.
3. ORR has authorised two tranches of the IDA wagons, in 2010 and 2013 under the 2011 Interoperability Regulations. At the time of the first authorisation, the assessment of dynamic ride behaviour was subject to a previous version of GM/RT 2141, which did not require an assessment against cyclic top or jointed track. Our second authorisation (2013) was for a new fleet of IDA wagons and was materially the same as our first authorisation (2010) as the applicable standards had not changed. The differences between the two fleets are minimal and are only separated by minor production techniques.
4. Our second authorisation of the IDA wagon provided a condition to verify the equivalent conicity of the wheels through its lifetime, to demonstrate stability through wear. As the profile is changed (P5 to P8), we would seek a further condition that this Equivalent Conicity be rechecked, albeit as the ride has now proved to be stable it should not reveal anything untoward. The original conicity checked didn't reveal anything untoward. DRS are content with this proposal.
5. To prove the concept of an engineering solution, compliance to the latest version of GM/RT 2141 (now at version 4.1) would need to be demonstrated. There are some anomalies within GM/RT 2141, so DRS has applied both GM/RT 2141 and EN 14363, which address the performance requirements of cyclic top assessments. The graph in Appendix A of the document marked reference 4 shows that the vertical accelerations are within the tolerance band, which demonstrates stability and thus resistance to bogie excitation which was the problem that caused the derailment at Gloucester.
6. The anomalies within GM/RT 2141 are that it requires some asymmetric loading calculations, but following the standards in fact puts some of the wheel

loading into overload of the permitted loads. Deviation was sought and consequently the standard has, or will be, amended to reflect this work.

7. As it was an engineering change, the modification work was permitted under ROGS rather than the interoperability regulations. As the engineering change was not done under the Interoperability Regulations, it could be authorised by an independent person, rather than a Designated Body. Modification of the complete wagon fleet will take approximately 18 months. DRS will not lift the operational restriction until all wagons have been modified. The project has demonstrated good collaboration between DRS, Wabtec and WH Davies

8. In conclusion, on the basis of the information provided by DRS, followed up with a discussion on 19 April 2023, ORR consider the risk of derailment to have been mitigated through engineering means.

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

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

Status: Closed.

Previously reported to RAIB

10. On 7 October 2015, ORR reported the following:

ORR has written to DRS seeking an update on progress with the implementation of this recommendation.

Update

11. On 20 April 2023, following a visit from ORR, DRS provided the following:

Thank you for your time today. Please note I have attached the following documents to support our discussion today on the IDA modification we have tested and intend to put into manufacture with Wabtec mid July 2023.

1. *The Design technical file which outlines*
 - a. *the description of the modification*
 - b. *standards the modification was assessed against*
 - c. *shows we sought 2 separate independent checks of the modification*
2. *Ref 4 – Serco ride testing please see slide 11 for conclusion on testing*
3. *Presentations we shared with you in the meeting*

I will today write to RAIB recommendation for the next Board to consider closure of the action.



IDA Bogie

Modification(s) - DescModification(s) 05.10.TS-VA2067 Issue A DI



IDA Bogie



Reference 4 -



IDA001-DTF-RR-300

123.pdf

12. Later on 20 April 2023, DRS provided the following:

DRS (NTS) Position

I now consider that DRS is in a position to formally close this action out and would ask you consider the following information below in support of this.

Since 2013 DRS has continued to operate the IDA wagons under significant restrictions

- 1. Control of the weights railed*
- 2. Limiting routes to ensure quality of track conditions*
- 3. Limiting speed*

Continued engineering performance data and incident data has shown the above controls to have been effective and no incidents have occurred as a result of ride performance under the restrictions.

In response to recommendation 6 from the RAIB investigation, DRS (NTS), WH Davis & Wabtec Rail have carried out a detailed investigation into the ride performance of the IDA wagons. This investigation has identified a number of modifications to bring the ride performance of the IDA wagons into compliance when subject to the original operational conditions the wagon was designed for.

Applicable Vehicles

DRS IDA-P & IDA-Q "low liner" container flats (39 70 4901 000-2 & 39 70 4901 075-4). This comprises a total fleet of 70

Modification Scope

- Fitment of primary vertical hydraulic dampers*
- Changing the wheel profile from P6 to P10*
- Addition of primary spring retention rings to the axle box & suspension friction wedges*
- Reducing the diameter of the wagon mounted bogie centre casting*

Common Safety Method for Risk Evaluation and Assessment

In compliance with CSM RA we have assessed the change as not significant and managed through our Engineering Change Process. In addition we have sought a 2nd independent assessment of the solution. On 19.04.23 we invited ORR's Paul Fray and Karen Barnes to Crewe depot where we walked through the work, calculations and proposal for manufacture and assurance which DRS are preparing for with Wabtec Rail. Please note we have submitted via email the technical data presented to Paul Fray also.

Modification Process

We have begun contract placement with Wabtec and provisionally have secured from 18.07.23 slots spanning a period of 18 months to complete the modifications.

This will be done in batches to ensure Wabtec ability to deliver and continued safe, secure and reliable delivery of DRS' committed contractual obligations

Introduction into Service & Assurance

Assurance activities with Wabtec have commenced to ensure delivery against contractual and quality standards. Furthermore we are proposing undertaking on-site inspections during modifications and are agreeing as part of contract award (anticipated 01.06.23) the handover documentation required prior to and upon receipt of any modified vehicles. Our engineering team at DRS are preparing for a 2 year period post modification of engineering monitoring to ensure oversight of ride and overall performance.

The operational team are preparing to conduct a risk assessment to review and control the introduction of the modified fleet to ensure we continue to operate in compliance with our internal IDA controls on unmodified fleet and those which have been modified and in compliance with any recommendations from engineering as a result of monitoring.

DRS (NTS) Explanation

In 2020 it was announced by the Nuclear Decommissioning Authority (NDA) as owner of DRS and sister company INS that the two organisations would be brought together. An umbrella organisation was set up called Nuclear Transport Solutions (NTS) however the legal entities DRS and INS still exist and all statutory accounts and reporting still take place for the two legal entities.

Previously reported to RAIB

Recommendation 6

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Steps taken or being taken to address the recommendation

1. On 18 December 2014, Direct Rail Services provided the following information:

As a short term control measure DRS has introduced operating restrictions for IDA wagons to control their ride performance, as detailed paragraph 209 of the RAIB report.

DRS is currently progressing (in conjunction with the wagon manufacturer and bogie supplier) the design and testing of a modification to the IDA wagon's suspension. The aim of this modification is to improve the wagons' ride performance on changes in vertical track geometry to allow the current operating restriction to be lifted.

Preliminary timescales for this work (which have been discussed with the O.R.R.) are:

	<i>Activity</i>	<i>Estimated Timescales</i>	<i>Status</i>
1	<i>Review IDA wagon loading patterns and determine any 'critical' loading conditions (i.e. those that place the suspension at the tare/laden spring changeover point) with a variety of load units.</i>	<i>August 2014</i>	<i>Complete</i>
2	<i>Carry out a series of simulations on agreed track file(s) (to include jointed track & cyclic top) modifying the wagon/suspension parameters to determine if acceptable ride performance in the tare, part laden (suspension changeover) and laden conditions can be demonstrated. This simulation would also include any other 'critical' loading conditions identified.</i>	<i>September 2014</i>	<i>Complete</i>

3	<i>Carry out concept/detailed engineering design to produce a modification that can be retrofitted to an IDA" wagon to achieve the suspension parameters identified in steps 1 & 2.</i>	<i>November/ December 2014</i>	<i>In Progress</i>
4	<i>Manufacture the components and modify an IDA wagon with the selected solution. (Note that these timescales are governed by damper availability).</i>	<i>April 2015</i>	<i>To Start</i>
5	<i>Test the modified wagon in accordance with GM/RT 2141 Issue 3 and any other applicable standards (methodology to be discussed with O.R.R. in advance).</i>	<i>June 2015</i>	<i>To Start</i>
6	<i>Certificate & approve the modified wagon (methodology to be discussed with O.R.R. in advance).</i>	<i>August 2015</i>	<i>To Start</i>
7	<i>Modification of the /DA wagon fleet.</i>	<i>Timescales to be agreed</i>	<i>To Start</i>

ORR decision

2. ORR has written to DRS seeking an update on progress with the implementation of this recommendation.
3. ORR, in reviewing the information received from DRS has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, it has:

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