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14 October 2020

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

Dear Andrew,

RAIB Report: Runaway and collision at Bryn station, Wigan on 27 November 2014

I write to provide an update[1] on the action taken in respect of recommendations 1, 2 & 5 addressed to ORR in the above report, published on 9 May 2016.

The annex to this letter provides details of actions taken in response to the recommendation and the status decided by ORR. The status of recommendations 1, 2 & 5 is **'Implemented'.**

We do not propose to take any further action in respect of the recommendations, 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 on 15 October 2020.

Yours sincerely,

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 for Balfour Beatty to better identify and mitigate the hazards associated with the introduction and operation of railborne plant.

Balfour Beatty should undertake a review of its processes for risk assessment and implement any measures necessary to ensure the identification of reasonably foreseeable hazards relevant to the design (including modification), operation and maintenance of railborne plant, while always taking into account the consequences of human error. This may include consideration of methods and guidance in technical standards and related documents, relevant accident and near-miss data, information in established safety risk models, and the competence and expertise of those involved

ORR decision

1. BBR has carried out a review of its engineering change procedure, including risk assessment processes and inclusion of a conformance check against relevant standards. The revised procedure aligns with the relevant RSSB standards and guidance and the CSM-Risk Assessment. Documentation setting out the engineering change procedure for the reintroduction of the wiring train following the Bryn incident was provided by BBR as an example of the new process.

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

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

Status: Implemented.

Previously reported to RAIB

3. On 13 April 2017 ORR reported the following:

BBR have reported that the have introduced a new engineering change process, based on the CSM-Risk Assessment. However it is not clear what informed the revision to the engineering change process. To understand how and why they have taken the action that they have done, we have asked BBR for more detailed information about the process for reviewing the engineering change documentation, what the findings were and how they were acted upon.

Update

4. On 9 September 2020 Balfour Beatty provided the following update:

Our approach to undertaking the review of our existing Engineering Change process involved a complete re-write of our existing process based upon what was the new RSSB Standard RIS-2700-RST - Rail Industry Standard for Verification of Conformity of Engineering Change to Rail Vehicles – published in March 2016.

As a output from our detailed review, we did identify some key areas for improvement within our existing process, which included:

- *How we undertook the HAZID/HAZOP process (using CSM and the PUWER guidance)*
- *How we ensured we had the right people/skills involved in participating within our HAZID/HAZOP workshops, including Engineers, Operators, Fitters, Health and Safety experts, and other key operational roles.*
- *The importance of having an independent review. We contracted an independent Rail Safety Specialist to chair and organise the HAZOPS (Ricardo Rail - Ken Mee) to ensure we had a level of independence.*
- *We also enhanced our Standards Mapping and Risk Assessment process, again using the guidance from the aforementioned RSSB procedure.*

***Evidence attached**:*

- *Please see the attached e-mail which provides an overview of the issues identified as part of the Engineering Change process review.*

Engineering Change process.msg

- *Attached is a copy of our current Engineering Change procedure (**OPS-PR-6504-RAIL)** together with a copy of what were our previous and now superseded Engineering change processes (**MPRPSAF10 2 04.doc & MPRPSAF10 r3.00**) which demonstrates what we had in place at the time and how we have developed and enhanced our current process into our current procedure.*

OPS-PR-6504-RAIL Engineering Change

MPRPSAF10 2_04.pdf

MPRPSAF10 r3.00 Engineering Change

- *Attached is the Wiring Train return to service presentation that BBR delivered to the Network Rail Safety Review Panel which explains our end to end process, and slide 31 specifically details our Engineering Change Process.*

BBR Wiring Train SRP presentation.pdf

- *Attached is a report from Ricardo Rail who undertook an Independent Safety Assessment in relation to our engineering change process for managing the Wiring Train modifications against our Engineering Change procedure.*

ISA Wiring Train 591734-LAM-Interim

Recommendation 2

The intent of this recommendation is for Balfour Beatty to properly assess and manage the risk implications of proposed changes to the design and use of products and equipment.

Taking into account any changes that it has recently introduced, Balfour Beatty should review its processes for change management and how they are being implemented. It should make any necessary enhancements to align them with a system-based design approach so that when railborne plant is modified, or where changes are made to its operation or maintenance (paragraphs 201b, 201c.i, 201c.ii, 202a and 202b):

- all changes to the design, operation and maintenance of the complete plant system are identified, irrespective of whether any vehicle or equipment has been used before in a different application;
- the impact and significance of the identified changes are systematically and objectively assessed using suitable expertise and criteria, such as those in the common safety method for risk evaluation and assessment (CSM RA);
- all significant risks are robustly assessed, using suitable expertise, in accordance with a structured and systematic process, such as one that follows the risk management process in the CSM RA (or at least its essential elements);
- safety requirements that are necessary to mitigate the significant risks to an acceptable level are determined, this may include adopting requirements in relevant technical standards;
- the safety measures needed to comply with the safety requirements, such as any design and procedural enhancements, are implemented; and
- supporting conclusions, justifications and evidence of compliance with safety requirements (including those in any adopted technical standards), are suitably recorded and documented.

ORR decision

5. BBR have reviewed and made changes to its change management process. BBR has illustrated the changes using the reintroduction of the wiring train as an example, setting out all potential unbraked situations and the mitigations.

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

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

Status: Implemented.

Previously reported to RAIB

7. On 13 April 2017 ORR reported the following:

Similarly to recommendation 1, ORR has asked BBR for more detailed information on whether their review of on-track plant and machinery included a review of change management processes. This was because the vehicle that ran away had originally been designed and used as a Dynamic Track Stabiliser (DTS), was subsequently repurposed by BBR and was at the time of the accident being used as part of a wiring train installing overhead line equipment (OLE).

Update

8. On 9 September 2020 Balfour Beatty provided the following update:

Our review process involved close liaison between our Business Unit Reliability Engineers and our Operators/Fitters in order to determine all unbraked conditions across our fleet within their Business Units.

This review included the analysis of Close Calls and Near Misses and all other relevant data, and as an output from this review our Reliability Engineer's then implemented specific engineering changes in order to mitigate the risk of these situations occurring.

***Evidence attached**:*

- *Please find attached a copy of our assessment which details our fleet and describes the unbraked situations identified – together with the associated action we took in terms of engineering modifications (Modification & EC reference) in order to mitigate the risk.*

Unbraked
OTP-OTM assessmer

- *Please find attached is the Wiring Train return to service presentation that BBR delivered to the Network Rail Safety Review Panel which illustrates what engineering changes were made as a result of our review of unbraked situations. Slide 20 refers to the specific changes made.*

BBR Wiring Train
SRP presentation.pc

Recommendation 5

The intent of this recommendation is for Balfour Beatty to improve the quality of alterations made to the electrical systems of its equipment.

Balfour Beatty should undertake a review of its procedures for the modification of electrical equipment of railborne plant, and their implementation, and make any changes necessary in order to ensure that work is correctly documented and is carried out in accordance with recognised good practice

ORR decision

9. As set out in the response to recommendation 1, BBR has revised its change management process taking account of recognised good practice. The changes made should ensure that engineering change (including modification of railborne plant electrical equipment) will be correctly documented.

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

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

Status: Implemented.

Previously reported to RAIB

11. On 13 April 2017 ORR reported the following:

As referred to in recommendation 3, RSSB have updated their guidance on engineering change processes to align it with the requirements of the CSM-Risk Assessment. BBR have used this process to inform their own engineering change processes which they have applied to the wiring trains. ORR has asked for a clearer explanation about how the RSSB process was used and the benefits it offered over previous processes.

Update

12. On 9 September 2020 Balfour Beatty provided the following update:

As per our response to Recommendation 1, we have fully aligned our Engineering Change process to the RSSB standard and the attached return to service presentation document explains the benefits of the new process.

Evidence attached:

- *Attached is the Wiring Train return to service presentation that BBR delivered to the Network Rail Safety Review Panel which explains our end to end process.*

BBR Wiring Train SRP presentation.pc

- *Attached Engineering Change procedures (Current and historical) to demonstrate the changes made in line with the RSSB standard.*

OPS-PR-6504-RAIL Engineering Change

Previously reported to RAIB

Recommendation 1

The intent of this recommendation is for Balfour Beatty to better identify and mitigate the hazards associated with the introduction and operation of railborne plant.

Balfour Beatty should undertake a review of its processes for risk assessment and implement any measures necessary to ensure the identification of reasonably foreseeable hazards relevant to the design (including modification), operation and maintenance of railborne plant, while always taking into account the consequences of human error. This may include consideration of methods and guidance in technical standards and related documents, relevant accident and near-miss data, information in established safety risk models, and the competence and expertise of those involved

ORR decision

1. BBR have reported that the have introduced a new engineering change process, based on the CSM-Risk Assessment. However it is not clear what informed the revision to the engineering change process. To understand how and why they have taken the action that they have done, we have asked BBR for more detailed information about the process for reviewing the engineering change documentation, what the findings were and how they were acted upon.

2. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Balfour Beatty Rail has:
   - taken the recommendation into consideration; and
   - is taking action to implement it, but ORR has yet to be provided with a time-bound plan.

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

Information in support of ORR decision

3. On 17 October 2016 Balfour Beatty Rail provided the following initial response:

   Balfour Beatty Rail issued a revised engineering change procedure in January 2015 in relation to findings derived from the joint Network Rail and Balfour Beatty Rail investigation report. It recognised that during a review of the engineering change documentation and process that was applied to the wiring train, the engineering change process that had been followed and adopted as part of the accreditation for the wiring train by all parties could be improved.

   The new procedure strongly references the Common Safety Method approach and stipulates a more robust sign-off process when considering whether the change is required to be externally certified.

4. On 6 March 2017, ORR wrote back to BBR asking for information about the process for reviewing the engineering change documentation, what the findings were and what was being done to address them.

Recommendation 2

The intent of this recommendation is for Balfour Beatty to properly assess and manage the risk implications of proposed changes to the design and use of products and equipment.

Taking into account any changes that it has recently introduced, Balfour Beatty should review its processes for change management and how they are being implemented. It should make any necessary enhancements to align them with a system-based design approach so that when railborne plant is modified, or where changes are made to its operation or maintenance (paragraphs 201b, 201c.i, 201c.ii, 202a and 202b):

- all changes to the design, operation and maintenance of the complete plant system are identified, irrespective of whether any vehicle or equipment has been used before in a different application;
- the impact and significance of the identified changes are systematically and objectively assessed using suitable expertise and criteria, such as those in the common safety method for risk evaluation and assessment (CSM RA);
- all significant risks are robustly assessed, using suitable expertise, in accordance with a structured and systematic process, such as one that follows the risk management process in the CSM RA (or at least its essential elements);
- safety requirements that are necessary to mitigate the significant risks to an acceptable level are determined, this may include adopting requirements in relevant technical standards;
- the safety measures needed to comply with the safety requirements, such as any design and procedural enhancements, are implemented; and
- supporting conclusions, justifications and evidence of compliance with safety requirements (including those in any adopted technical standards), are suitably recorded and documented.

ORR decision

5. Similarly to recommendation 1, ORR has asked BBR for more detailed information on whether their review of on-track plant and machinery included a review of change management processes. This was because the vehicle that ran away had originally been designed and used as a Dynamic Track Stabiliser (DTS), was subsequently repurposed by BBR and was at the time of the accident being used as part of a wiring train installing overhead line equipment (OLE).

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

- taken the recommendation into consideration; and

- is taking action to implement it, but ORR has yet to be provided with a time-bound plan.

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

Information in support of ORR decision

7. On 17 October 2016 Balfour Beatty Rail provided the following initial response:

> *Balfour Beatty Rail has implemented a review of all its on-track plant (OTP), OTMs and any hybrid equipment (usable on-track and off) to be assessed in order to identify any similar potentially "unbraked situations" and then provide an engineering solution. Balfour Beatty Rail also embarked on a comprehensive, "ground-up" operational risk assessment on all of its OTM, OTP and hybrid machines to identify significant risks and provide mitigation measures where, by the nature of the work conducted and operational requirements of conducting works on the railway with such OTMs, OTP and hybrid machines, such risks could not be eliminated.*
>
> *This risk assessment now forms the basis of the review process for all machinery (on-track and off-track) safe systems of work or operational instructions for plant used by Balfour Beatty Rail. This was an immediate output from Balfour Beatty Rail's internal investigation and on-going results and feedback from the testing conducted as part of the RAIB investigation.*

8. Although BBR's response referred to a review of plant equipment to identify "unbraked situations" and possible engineering solutions, ORR responded on 6 March 2017, asking if the review covered BBR's change management process; and if so, what the findings were and what changes have been made.

Recommendation 5

The intent of this recommendation is for Balfour Beatty to improve the quality of alterations made to the electrical systems of its equipment.

Balfour Beatty should undertake a review of its procedures for the modification of electrical equipment of railborne plant, and their implementation, and make any changes necessary in order to ensure that work is correctly documented and is carried out in accordance with recognised good practice

ORR decision

9. As referred to in recommendation 3, RSSB have updated their guidance on engineering change processes to align it with the requirements of the CSM-Risk Assessment. BBR have used this process to inform their own engineering change processes which they have applied to the wiring trains. ORR has asked for a clearer explanation about how the RSSB process was used and the benefits it offered over previous processes.

10. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, Balfour Beatty Rail has:
    - taken the recommendation into consideration; and
    - is taking action to implement it, but ORR has yet to be provided with a time-bound plan.

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

Information in support of ORR decision

11. On 17 October 2016 Balfour Beatty Rail provided the following initial response:

    In March 2016 an enhanced engineering change process was issued by the RSSB which included additional points identified during the wiring train project, and this aligns with the requirements of recent EU regulations with designation (EU) 402/2013 (a clarifying EU regulation as to the approval process for rail vehicles and criteria to be fulfilled by EU members' assessment bodies in doing so).

    All wiring train modifications have also been subject to this revised engineering change process. The main additions/enhancements are;

    - *Comprehensive documented "Preliminary System Definition" and Significance Assessment*
    - *Standards mapping to identify all applicable standards*
    - *Comprehensive Risk Assessment to identify hazards associated with change*
    - *Design pack for configuration control – drawings, data sheets etc.*
    - *Maintenance updates*
    - *Operational instruction and Training plan updates*
    - *Clause by clause compliance demonstration*
    - *Mimics scrutiny process applied by VAB.*

12. ORR wrote back to BBR on 6 March 2017 asking for an explanation of how the RSSB change management process was used and how what benefits it offered the previous process.