

Oliver Stewart
Senior Executive, RAIB Relationship and
Recommendation Handling

Telephone 020 7282 3864

E-mail oliver.stewart@orr.gsi.gov.uk

3 April 2019



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

Dear Andrew,

**RAIB Report: Train driver receiving a severe electric shock at
Sutton Weaver, Cheshire on 23 September 2014**

I write to provide an update¹ on the action taken in respect of recommendation 2 addressed to ORR in the above report, published on 24 June 2015.

The annex to this letter provides details of the action taken regarding the recommendations. The status of recommendation 2 is '**implemented**'.

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 on 4 April 2019.

Yours sincerely,

Oliver Stewart

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

Recommendation 2

The intent of this recommendation is to minimise the risk to train crew following an incident involving the OLE.

RSSB should review Module AC of the Rule Book (GE/RT8000/AC) and appropriately clarify the actions that train crew should take if they are required to leave their train in situations where the OLE is electrically live, and may possibly be damaged.

ORR decision

1. RSSB have reviewed Module AC of the Rule Book (GE/RT8000/AC) and clarified in sections 12.4-12.7 the actions drivers should take in the event of having to leave the cab when the OLE is live and may be damaged.
2. After reviewing the information provided ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, RSSB has:
 - taken the recommendation into consideration; and
 - has taken action to not taking action to implement it.

Status: Implemented.

Previously reported to RAIB

1. On 21 April 2016 ORR reported that although RSSB's response indicated that work had commenced to address this recommendation and amend the Rule Book (GE/RT8000/AC), RSSB had not yet provided an indication of when this work would be completed.

Update

2. RSSB provided the following update on 24 September 2018:
Sections 12.4, 12.5, 12.6 and 12.7 of Rule Book module AC (AC electrified lines) specify that:

Except in an emergency, [drivers] must not attempt to leave the cab to inspect any damage or gather information unless the signaller has told you that the OLE has been made safe to approach, but not touch.

12.4 Examining the train

If you have stopped your train because the line light has gone out, the ADD has operated, or you have observed damage to the OLE, you must visually examine all the pantographs and tell the signaller whether there appears to be any damage to any of them. If you have stopped your train as a result of the line light going out or

the ADD operating, but at any stage you find a fault on the train other than damage to a pantograph, you must tell the signaller so that normal working can be resumed.

12.5 Providing electric train supply when the train cannot proceed

If the train cannot proceed because of damage to the pantograph but the damage is not severe, the pantograph may be raised to supply electrical power. This is so that equipment such as train heating and lighting will be available while waiting for an assisting train. Immediately after raising the pantograph, you must check that it is correctly in contact with the OLE and that there is no arcing. No movement of the train is allowed with the pantograph raised. You must make sure the pantograph is lowered before the assisting train is attached.

12.6 Telling the signaller about problems or incidents with the OLE

In all cases when you have stopped the train, you must tell the signaller:

- *what has happened*
- *where the incident happened*
- *the location where the train has stopped*
- *the nearest overhead line structure number*
- *the extent of any damage to the OLE*
- *if there is any damage to a pantograph*
- *whether the primary means of support of the OLE is by headspan or not.*

12.7 Sequential tripping

If you have been told by the signaller that your train has caused sequential tripping, you must visually examine all the pantographs on your train and the OLE for signs of damage. If there is evidence that something other than a pantograph has been in contact with the OLE or a pantograph is damaged, you must tell the signaller.

Section 3.2 also notes the following:

You must treat broken or displaced wires and anything attached to, or near to, the OLE as live and dangerous to life.

Issue 5 of Module AC was published on 1 September 2018 and will come into force on 1 December. RSSB thus considers the recommendation to be closed.

3. Summary of previous updates from RSSB:

Email to ORR, 13 August 2015:

The recommendation was discussed at the November 2014 meeting of the TOM Standards Committee, after which RSSB produced a paper to consider the recommendation and its implications. This was presented to the TOM SC on 22 July 2015. The paper presented the background to the incident and suggested options for how the Rule Book might be changed. TOM SC decided that RSSB should liaise with Network Rail, amending the paper accordingly and presenting back to TOM SC as soon as practicable. Though the ORR is present at TOM SC in an observer capacity, we will keep ORR informed of progress.

Period 11 update:

RSSB met with Network Rail on 11 November 2015, the results of the discussion being presented to TOM SC on 17 November 2015.

Network Rail's latest amendments to NR/SP/ELP/29987 (the 'Green Book'), coming into force in January 2016, would allow for an energy emergency switch-off to be effected either from neutral section to neutral section (as currently) or over a part-section via the use of a remotely operated earthing device. Only newly electrified lines, like the Great Western route, would have this latter facility.

However, it is understood that drivers can initiate an earthing device from on-train equipment on some rolling stock. Accepting the need for more research to ascertain which classes have this function, AC module, section 4.1 could be amended to stipulate that drivers should not detrain unless they have been assured that the electricity has been switched off, either by the signaller or in combination with their own actions. Consideration also needs to be given – from an operational perspective – to the fact that if isolating 'neutral section to neutral section', all lines are switched off but using an earthing device meant that only the section on which the train sits would be isolated.

The ensuing discussion at TOM SC resulted in an action on RSSB to produce a 'proposal to change' for the committee to consider.

This proposal has been drafted and shared with Network Rail for comment. Once received, it will be submitted to TOM SC.

Email to ORR, 16 February 2016:

As noted above, RSSB met with Network Rail on 11 November 2015, the results of the discussion being presented to TOM SC on 17 November 2015. This led to an action on RSSB to produce a 'proposal to change' for the committee to consider. This proposal was duly drafted and shared with Network Rail for comment. A revised version was then submitted to TOM SC.

In brief, it is suggested that clause 12.6 of Module AC be amended to stipulate that drivers should not detrain unless they have been assured that the electricity has been switched off, either by the signaller or in combination with their own actions. In taking this proposal forward, however, consideration will be given to issues including differences between new electrification schemes and old, and the possibilities around in-cab earthing devices on some traction types.

On 2 February 2016, TOM SC approved said proposal and the continuation of the work therein. The timescales for completion are to be confirmed, pending an update from Network Rail as to the timescales of a risk assessment that must be carried out before changes can be made to the relevant documentation.

Period 1 update:

Following discussion between RSSB technical experts, and Network Rail technical experts, the following amendments to Rule Book module AC HB 16 are proposed:

These address the following issues that have been raised at Standards Committees:

- a. *Changing the diagram.*
- b. *Removal of all references to 2.75m (inconsistent rule).*
- c. *Actions as a result of the accident at Sutton Weaver (staff not to leave train unless electrically safe to do so).*
- d. *Changes to rescue of persons in contact with OHL (in conflict with Electricity at Work Regulations - EAWR).*

This will be raised at the TOM SC. Further updates will be provided in due course.

Period 3 update:

On 5 April 2016, RSSB presented to TOM SC an update on project 15-014 (revision of the 2.75 metre rule) and 16-001, which covers the amendments to Rule Book module AC regarding leaving the driving cab to inspect damage to the overhead line.

Industry review indicated that the only safe approach in the circumstances highlighted by Sutton Weaver is for staff to remain inside the train until the Network Rail Electrical Control Room can confirm that the overhead line has been switched off. In addition, this stream of work would also address a proposal to review the instructions concerning rescue of a person in danger from live OLE, and to change the module title to refer to 'overhead electrified lines' so that it was clear that the instructions would apply to DC OLE as already in existence in the Tyne and Wear area, to be provided for the Sheffield tram-train scheme and potentially elsewhere.

TOM SC approved continuation of work on proposal 16-001 and for it to become a sub-project of proposal 15-014. It also approved the project plan for 15-014.

Period 10 update:

Project 15-014 is currently in its drafting phase. It was requested by TOM SC that a Risk Assessment be carried out to capture any risks surrounding the changes to the rules in the AC Module and Hand Book 16. A Risk Assessment Workshop took place at RSSB on 10 June 2016. The outputs are to be captured in a Risk Report by the Risk Analyst assigned to the project. The Risk Analyst has been assigned to SMIS+ and will be able to work on 15-014 once the SMIS+ work is complete. This has resulted in a delay to the publication for 15-014. On 12 July 2016, TOM SC approved the publication date be moved from March 2017 to September 2017.

Period 11 update:

The project schedule for 15-014 is currently under review. It was presented to the Project Review Group in January, at which it was agreed that the route to resolution will need to be finalised by the sponsor, the TOM SC chair, the Decision Support Specialist and the Project Manager. A meeting is to be held during February 2017. Publication is currently scheduled for March 2018.

Period 13 update:

The RSSB Project Team has reviewed the schedule via collaborative planning. The legal framework for the rule has been completed. A workshop with industry partners is to be scheduled. Publication still on course for March 2018.

Period 1 update:

The Project Schedule remains under review. The project status will be presented to the Project Review Group in May.

Period 3 update:

The afore-mentioned workshop with industry partners is now scheduled for 27 July 2017. The project team is currently contacting attendees to ensure the aim and purpose of the workshop is properly understood.

Period 4 update:

Following the workshop on 27 July 2017, the team will meet to discuss next steps and the way forward.

Period 5 update:

The project will progress to address RAIB recommendation for the Sutton Weaver incident. A new request for help will need to be submitted for the risk assessment RIS. A meeting has been arranged for 1 September 2017 to discuss the way forward.

Period 6 update:

A paper is to be presented to ENE SC and TOM SC to agree the way forward. It is proposed to close 16/001 by publishing changes regarding the Sutton Weaver incident in the December PON. A new request for help will then need to be submitted for the risk assessment RIS to replace project 15-014 (subject to approval).

Period 7 update:

11/10/2017 - A paper was presented to ENE SC and TOM SC to agree way forward. It was proposed to close sub-project 16/001 by publishing changes regarding the Sutton Weaver incident. A new request for help will need to be submitted for the risk assessment RIS replacing project 15-014 (subject to approval).

Period 9 update:

05/12/2017 - Project 15-014 closed and was replaced with new proposals. Sub-project 16-001 was agreed to be processed separately, regarding the Sutton Weaver incident amendments. The amendments were not supported by ENE SC and TOM SC and a decision was deferred to the next meeting.

Period 13 update:

16/02/2018 - 15-014 is in the process of closure as it has been superseded by project 17-036. 15-014 had one sub-project (16-001) which is progressing separately. 09/03/2018 – the AC Module was approved by TOM-SC on 6 March and ENE-SC on 8 March. However, TOM-SC asked that consultation should be 'dove-tailed' with bimodal work which is being finalised for next TOM-SC meeting in early May 2018. Hence consultation has been delayed until after the April meeting.

Period 2 (2018) update:

30/05/2018 Bimodal work has been endorsed by TOM-SC too. AC Module was approved by TOM-SC on 6 March and ENE-SC on 8 March. However, TOM-SC asked that consultation should be 'dove-tailed' with Bimodal work which is being finalised for next TOM-SC meeting

in early May 2018. Hence out for consultation till 8 June and resubmitted at the July meeting with publication date of September 2018.

Period 3 (2018) update:

28/06/2018 - Post-Consultation activities were completed and submitted for publication approval by (TOM SC) and support by (ENE SC) at the July 2018 meetings. Publication is still scheduled for September 2018.

Previously reported to RAIB

Recommendation 2

The intent of this recommendation is to minimise the risk to train crew following an incident involving the OLE.

RSSB should review Module AC of the Rule Book (GE/RT8000/AC) and appropriately clarify the actions that train crew should take if they are required to leave their train in situations where the OLE is electrically live, and may possibly be damaged.

ORR decision

1. Although RSSB's response indicates that work has commenced to address this recommendation and amend the Rule Book (GE/RT8000/AC), RSSB has not yet provide an indication of when this work will be completed.
2. After reviewing all the information received from RSSB, ORR has concluded that, in accordance with the Railways (Accident Investigation and Reporting) Regulations 2005, it has:
 - taken the recommendation into consideration; and
 - is taking action to implement it but has yet to provide an indication of when this will be complete.

Status: Progressing. ORR will provide a further update to RAIB when the status of this recommendation changes.

Information in support of ORR decision

3. On 13 August 2015 RSSB provided the following information in respect of this recommendation:

The recommendation was discussed at the November 2014 meeting of the TOM Standards Committee (TOM SC), after which RSSB produced a paper to consider the recommendation and its implications. This was presented to the TOM SC on 22 July 2015. The paper presented the background to the incident and suggested options for how the Rule Book might be changed. TOM SC decided that RSSB should liaise with Network Rail, amending the paper accordingly and presenting back to TOM SC as soon as practicable. The discussion process has begun. Though the ORR is present at TOM SC in an observer capacity, we will keep ORR informed of progress.

4. On 16 February 2016 RSSB provided the following update:

RSSB met with Network Rail on 11 November 2015, the results of the discussion being presented to TOM SC on 17 November 2015. This led to an action on RSSB to produce a 'proposal to change' for the committee to

consider. This proposal was duly drafted and shared with Network Rail for comment. A revised version was then submitted to TOM SC.

In brief, it is suggested that clause 12. 6 of Module AC be amended to stipulate that drivers should not detrain unless they have been assured that the electricity has been switched off, either by the signaller or in combination with their own actions. In taking this proposal forward, however, consideration will be given to issues including differences between new electrification schemes and old, and the possibilities around in-cab earthing devices on some traction types.

On 2 February 2016, TOM SC approved said proposal and the continuation of the work therein. The timescales for completion are to be confirmed, pending an update from Network Rail as to the timescales of a risk assessment that must be carried out before changes can be made to the relevant documentation.

5. On 11 April 2016 RSSB provided the following further update:

Following general discussion between RSSB technical experts and Network Rail technical experts, a number of amendments to Rule Book module AC HB 16 have been proposed, including the stipulation that staff should not leave a train unless it is electrically safe to do so. This will be raised at the TOM SC.

Page