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Ms Carolyn Griffiths
Chief Inspector of Rail Accidents
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Hampshire GU11 2HP

Dear Carolyn,

**RAIB Report: Near miss incident at Ufton Automatic Half Barrier Crossing,
Berkshire, 4 September 2011**

I write to provide an update¹ on the action being taken in respect of recommendations 1, 3 and 7 addressed to ORR in the above report, published on 20 December 2012.

The annex to this letter provides details of the action taken. The status of these recommendations is now 'Implemented'.

We will publish this response on the ORR website on 17 April 2015.

Yours sincerely,

Russell J Keir

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 ensure that signallers can see appropriate information on the VDU screen when considering whether to remove reminders from signals and points using controls on IECC workstation VDUs. These include reminders on signals that are used to protect an automatic crossing under local control.

Network Rail should identify, and provide a time bound plan to eliminate, all IECC VDU controls which permit a signal or point reminder to be removed in situations where the signaller cannot see sufficient on-screen messages and indications to inform the decision whether to remove the reminder.

Brief Summary on what was previously reported to RAIB on 17 June 2013

A study will be carried out in order to identify all of the cases of IECC signal/point reminder controls being applied to protect access to level crossings, track sections etc. where the requirement to protect the section is shown by an on-screen message or indication. This will then feed into a survey of all current IECC maps to identify where the item of infrastructure and the protecting signal (or set of points) are presented on different screen maps.

With the number of maps identified, the cost of modifying the maps to ensure that the signal is on the same map can then be estimated, allowing for any opportunities afforded by planned infrastructure upgrades or re-controls. To quantify the benefits, this cost of making the change will then be compared against the potential safety benefits. This will form part of the same work programme and risk assessment study as Recommendation 2 and the results will be presented in a single consolidated cost-benefit risk assessment report.

Update

1. On 23 June 2014, Network Rail provided ORR with an update:

A risk assessment was completed to compare selected mitigation(s) for potential human errors caused by shortcomings in the information presented on the signallers' screens. This examined all occasions when reminders are used, but focused on those occasions where reminders are used to protect infrastructure that has a status displayed, but are not interlocked with the signalling system (as those that are interlocked are already protected).

A survey of all IECC maps was undertaken to identify all cases where an item of infrastructure and the protecting signal (or set of points) are presented on different screens. This identified that the only cases where this risk is relevant on IECC maps is for Automatic Half Barrier Crossings (AHBCs).

Four mitigation options were identified and assessed in response to this recommendation:

1.1 *Modifying maps such that the crossing is on the same map as its protecting signals;*

1.2 *More extensive modification of the maps such that the crossing is on the same map as its protecting signals and also the signal prior to the protecting signals (to eliminate use of isolated exits to set a route over the crossing);*

1.3 A change to the software for isolated exits such that they cannot be used to remove reminders from a protecting signal on another map;

1.4 Replicating the level crossing status text ('failed/local control') where the protecting signal is on another map.

The cost of modifying the maps for each of these options was estimated using data provided by the IECC supplier, Delta Rail. A risk assessment model was then constructed to estimate the risk of the current situation and the revised risk for each of the above mitigating options. This utilised level crossing specific data and calculated human error probabilities were used to derive a risk based on fatality weighted injuries. The monetary value of preventing a fatality was then compared with the cost of implementing each mitigation to determine cost versus benefit over a range of pay-back periods. To be considered for implementation, the value of preventing a fatality (benefit) was required to be at least twice the cost of implementation in accordance with Network Rail investment rules).

The conclusions resulted from the risk assessment for implementation as a result of the assessment:

1. The most effective option was found to be mitigation 1.4 - a 'failed/local control' message provided on both screens in order to provide appropriate information for signallers on both screens when considering whether to remove reminders.
2. The value of implementing this mitigation is heavily dependent on the usage characteristics of the level crossing and when it is operated under local control/failed conditions in a typical year. For one workstation, investing in mitigation 1.4 could be justified based on a pay-back period of seven years, for another workstation the minimum pay-back period was calculated to be fifteen years.

The risk assessment recommends that:

1. Mitigation 1.4 should be implemented on existing IECC workstations where the residual life provides a positive business case. A risk assessment model is available to assist the Routes in carrying out this assessment.
2. A requirement to address this risk should be raised with Infrastructure Project teams based on either screen layout changes (mitigation 1.2) or repeated status indications (mitigation 1.4). This would then be applied to all new schemes that modify workstations for all types of VSCS.

Following the risk assessment, the Professional Head of Signalling instructed the affected Route Asset Managers to derive plans for implementing recommendation 1 above. The resulting plans for implementation are included in a time-based plan document (attached). The plans vary according to the specific risks posed by each level crossing and the opportunities presented to remove the risk through planned infrastructure schemes.

The requirement to address this risk on new schemes has been instructed via publication of a Signal Engineering Noticeboard item (attached).

Supporting evidence:

Recommendations arising from the Investigation into near-miss at Ufton AHB Crossing, 04/09/2011: Risk Assessment Report, Ref: TS-T00129-REP-01, Revision 1 April 2014.

Ufton RAIB Recommendation 1: Time-Based Plan for Modifications to IECC Workstations, Ref: TS-T00127-DOC-03, Issue 1.1, 16 June 2014.

Signalling Control System Design to Mitigate Risks Highlighted by Ufton Level Crossing Incident, Network Rail, Signal Engineering Noticeboard, NB 133, 29/05/2014, Issue 1.



2. On 1 September 2014, Network Rail provided ORR with an update:

In June 2014 the following actions had been completed:

1. *A risk assessment was carried out to evaluate a number of options to modify IECC signalling control systems and the cost/risk reduction benefit of implementation;*
2. *It was determined that there could be a positive cost/risk benefit for making changes to IECCs, assuming that other means did not exist to address the hazard (e.g. level crossing closure). Hence, a policy paper was issued to the relevant Route Asset Managers requesting that they determine what action to take on their IECCs;*
3. *The resulting action plans from the Routes were compiled into a single time-bound plan for implementation. It should be noted that dependent on the specific risk at the level crossing, some remedial plans were based on up to a ten year time frame for completion.*

This was deemed to have addressed the intent of the RAIB recommendation and hence a closure statement was issued. However, it has now been determined that this action should be kept open until the following steps have been taken:

1. *Interim mitigating actions have been applied to control the risk where the implementation period is extensive. This is expected to involve some form of awareness briefing or training for affected staff (AMS [Asset Management Services] activity in collaboration with Network Operations);*
2. *Responsibility for completion of the time-bound plan and hence final closure of this action is transferred to Network Operations from AMS (S&SD [Safety & Sustainable Development] activity to propose and agree arrangements).*

A further extension to this timescale for the closure or transfer of this action is therefore requested to complete item 1 and 2 above. It is proposed that the closure date is extended to 31 December 2014 to give adequate time to implement the mitigating actions (develop, agree and implement) and to complete the transfer of a new or extended action to Network Operations.

ORR Decision

3. Network Rail has put in place a time bound plan to address this recommendation.

4. After reviewing all the information received ORR 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 3

The intent of this recommendation is to ensure that, when automatic half barrier level crossings are under local control, IECC displays provide conspicuous warnings compatible with Network Rail's IECC control and indication specification.

Network Rail should review the local control indications displayed in respect of automatic half barrier level crossings on the Thames Valley Signalling Centre (TVSC) VDUs to identify any inconsistencies with the associated Network Rail specification requirements. If any of these inconsistencies have the potential to have a significant adverse effect on safety, Network Rail should amend the indications displayed at TVSC and/or the Network Rail IECC control and indication specification so that appropriately positioned conspicuous indications are displayed on all IECC VDUs.

Brief Summary on what was previously reported to RAIB on 14 February 2013

Ufton Crossing is the only AHBC currently under the control of Thames Valley Signalling Centre. A review of the nature of the position and message provided and the risk that this poses for the operation took place on 7 March 2013. The review took into account the prominence of the indication and (given that it is recognised that the indication does not conform to section 23.2.2 of NR/SP/SIG/17504 [IECC Operating Specification for Signalling Control and Indications Purposes]) the wording.

At the review it was agreed that there is an opportunity to make alterations to the signallers display when the relocking works take place for this section of line in September 2014. Making alterations at this point would have minimal impact on the other works in this area.

Update

5. On 9 December 2014 Network Rail provided ORR with copy of its 'closure form' which states that:

The review of the nature of the position and message provided and the risk that this poses for the operation took place on 7 March 2013. The review took into account the prominence of the indication and (given that it is recognised that the indication does not conform to section 23.2.2 of NR/SP/SIG/17504) the wording.

At the review it was agreed that there was an opportunity to make alterations to the signallers display when the Reading Outer Relock & immunise (Berks & Hants) (RORI B&H) relocking works were due to take place for this section of line in September 2014. It was agreed that making alterations at this point would have minimal impact on the other works in this area.

As part of the RORI B&H scheme, the screen layouts were re-worked to reflect the layout changes, rationalisation and provision of axle counters on the signallers' display. This resulted in the opportunity to provide the crossing on the screen in a position where the signal reading over the crossing was on the same detailed screen as the crossing itself. The wording of the fault messages were made compliant with the standard and placed closer to the position where the crossing is shown.

The RORI B&H Commissioning commenced as planned at the end of October 2014 and the new VDU screen layout was brought into use on 3 November 2014.

Since the review of Ufton a further AHBC has now migrated to TVSC; Purton Collins Lane AHBC. The VDU screen layouts for this crossing have taken account of the recommendations from the Ufton incident, and any further AHBs that migrate to TVSC in the future will be consistent with the recommendation. Network Rail has issued Notice Board 133 which codifies the design guidance in light of the Ufton incident for all AHBs, which is now followed as a matter of course.

It should be noted that Western Route has committed to close Ufton crossing and this is in the early stages of development and the timescale is yet to be confirmed.

ORR Decision

6. After reviewing all the information received ORR 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 7

The intent of this recommendation is to correct a misunderstanding among some engineering supervisors concerning the requirement for red lights or flags to be displayed at level crossings at all times when they are under local control unless the barriers are lowered.

Network Rail should re-brief staff that level crossing attendants' red lamps/ flags must never be removed when level crossings are under local control and the barriers are raised or the gates are open.

Brief Summary on what was previously reported to RAIB on 14 February 2013

A Briefing event is to be cascaded through NCCA Sentinel to all those holding ES [Engineering Supervisor] or AUX LXA [Auxiliary Operating Duties - Level Crossing Attendant] Competences – to provide details of the above incident and act as a reminder of the requirements for red lamps/flags at level crossings under local control.

This will be distributed via an email alert to all sponsors in June 2013, with a timescale of three months to complete the briefing process. Briefing events are to be logged on NCCA Sentinel website.

Timescale: 30 September 2013.

Update

7. On 19 March 2013 Network Rail stated why the timescale had been extended to 1 June 2014:

The briefing was issued as planned and agreed, however in mandating the recording of the briefing, we have identified that not everyone who should have the briefing has been captured. The extension is required to follow up those that have not had the briefing and where necessary, remove their competencies as a result.

Revised timescale: 1 June 2014

8. On 18 July 2014, Network Rail advised an extension to the timescale:

All work was completed on time. However, business uptake has been patchy with 2565 people in Network Rail not yet recorded as being briefed as well as 1850 sponsored by external sponsors. A reminder will be sent and those not briefed by 14 September 2014 will have their competence removed.

Revised timescale: 30 September 2014.

9. On 4 November 2014, Network Rail advised that in order to remove the relevant competency from the affected individuals, it is necessary to write a complicated software update. It was projected that this would take until 30 November 2014 to complete. A progress update has been requested and a response is awaited.

10. The script was run on 3 December 2014 to remove the competences of those who had not been briefed. In response to a further ORR query, Network Rail also reported that:

As the majority of such individuals are in the supply chain Network Rail does not contact individuals directly. However, sponsors have been notified via the Sentinel database that such individual's competences have been removed. Network Rail also sent out communications to Sponsors and line managers prior to removing competences.

A number of individuals, approximately 100 off, who have attended 'initial level crossing attendant training' since the briefing was issued, had not been briefed during the training course. This is being followed up with a separate action plan to contact the line managers / sponsors of individuals giving them until the end of April 2015 to complete the briefing.

All Engineering Supervisors (ES) and Persons in Charge of a Possession (PICOP) have been briefed.

ORR Decision

11. The actions to address this recommendation have been substantially completed. ORR will monitor Network Rail's commitment to brief the 100 approx. staff who have yet to be given the briefing.

12. After reviewing all the information received ORR 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*