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OFFICE OF RAIL REGULATION

26 September 2012

Ms Carolyn Griffiths
Chief Inspector of Rail Accidents
Rail Accident Investigation Branch
Block A, 2nd Floor
Dukes Court
Dukes St
Woking GU21 5BH

Dear Carolyn

RAIB report: Runaway and collision of Road-Rail vehicle near Raigmore, Inverness

I write to provide an update[1] on the consideration given and actions taken in respect of recommendations 3 and 4, addressed to ORR, contained in the above report published on July 2011.

The annex to this letter provides details of the consideration given /action taken where recommendation 3 is in progress and recommendation 4 has been implemented[2].

We do not intend to take any further action in respect of recommendation 4 unless we become aware that any information we have provided becomes inaccurate in which case I will write to you again[3]. We expect to update you on progress with recommendation 3 by April 2013.

We intend to publish this information on our website on 10 October 2012

Yours Sincerely

Chris O'Doherty

INVESTOR IN PEOPLE

[1] In accordance with Regulation 12(2)(b) of the Railways (Accident Investigation and Reporting) Regulations 2005
[2] In accordance with Regulation 12(2)(b)(i)
[3] In accordance with Regulation 12(2)(c)

Update

Recommendation 3

The intention of this recommendation is that an appropriate safety integrity level (SIL) for the control systems of RRV machines should be established and implemented on future builds.

Network Rail should undertake a review of the safety requirements that it specifies for RRVs, with the objective of determining appropriate safety integrity level (SIL) for any safety functions that are required within the control systems of the machine, and implementing verification and approval arrangements that are appropriate for this SIL.

This should, among other things, provide assurance that potential failure modes of interlocks, and similar safety systems, have been identified and suitably mitigated (with reference to actions taken following the RAIB's RRV Class Investigation recommendations 1 & 2.

Brief Summary on what was previously reported to RAIB on 3 April 2010

1. ORR did not consider that the initial response from Network Rail adequately addressed the recommendation. ORR therefore wrote to Network Rail on 17 October 2011 asking it to provide a better understanding of how it is giving consideration to specifying Safety Integrity Levels for Road Rail Vehicles (RRVs,) and therefore asked that it provided ORR with more information detailing the review process it will be carrying out with RSSB including the aims, objectives and milestones for the review.

2. Network Rail provided a further response on 21 November 2011 explaining its reasoning and proposed actions to address the recommendation and that ORR had committed to arranging a meeting with the Health and Safety Laboratory to make sure that Network Rail's desired result can be achieved.

Update

3. Network Rail provided further information on 4 July 2012 advising that:

Closure Statement (31 May 2012)

Network Rail has undertaken reviews of the safety requirements specified for RRV's and has determined appropriate performance levels for safety functions that are required within the control systems of the machine. The requirements have been written into RIS 1530 Issue 4: Rail Industry Standard for Engineering Acceptance of On-Track Plant and associated Equipment. This standard is currently out for industry consultation and scheduled for issue by end of 2012 after which the standard will be mandated by Network Rail in March 2013.

The requirements are supported by the following statements included in RIS 1530 Issue 4:

- *Clause 5.10.6*

All control systems shall meet the requirements of BS EN ISO 13849-1:2008. The combined effect of correct use by an operator, the control system, the operating system and the safety system shall be to achieve a performance level as shown in Table 4.

The validation of the safety functions and categories in above clause is given in BS EN ISO 13849-2:2008.

To 'demonstrate' compliance with 5.10.6 the manufacturer should present an analysis that has been made, for example using failure modes and effect analysis (FMEA), failure modes, effects and critical analysis (FMECA), safety integrity level (SIL), decision tree etc., which also could be supported by physical testing.

The VAB (Vehicle Acceptance Body) should check that such analysis has been undertaken and documented and take a professional view to be satisfied that the assessment is sensible, but not intended that the VAB would need to carryout additional analysis to verify completeness.

Mitigation of Current Risk

In addition to the above, work is continuing on SIL / required performance levels in relation to specific system elements , i.e. Adjacent Line Open (ALO), working under live & On / Off tracking. A draft report that determines the appropriate SIL/Performance levels has been completed by Network Rail Engineers; this is scheduled for the review with Health & Safety Laboratories (HSL) and the ORR on 3rd July 2012.

In respect of RRV's working under live OLE [Overhead Line Equipment], the project plan is targeting prohibition of machinery that does not meet the agreed SIL/Performance level requirements in September 2012.

This is over and beyond the original intent of the original recommendation as it will deal with the current equipment as well as the future equipment which is dealt with by RIS-1530.

Furthermore, RIS-1530 Issue 4 comments on movement limiting devices for working under live OLE. The statements included are as follows:

- *5.7.2 Design of movement limiting devices*

  5.7.2.1 Movement limiting devices shall either permit the lateral and vertical limits to be variable or have one or more pre-set positions. Pre-set positions shall be shown as a limitation on the Engineering Acceptance Certificate and included in the instruction handbook.

  5.7.2.2 All movement limiting devices shall comply with the requirements of 5.10.6

Conclusion

Network Rail considers that through the determination of appropriate performance levels for safety functions that are required within the control systems of RRV's and the establishment of these within the committed publication of a revised RIS-1530 in early 2013, the intent of this recommendation has been met.

ORR Decision

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

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

ORR will monitor progress with the revised RIS-1530 and notify RAIB when this has been published.

Status: ***In progress, ORR will update RAIB in April 2013.***

Recommendation 4

The intention of this recommendation is that the role of the machine controller, in respect of the deployment of the rail wheels of an RRV, should be clarified.

Network Rail should undertake a review of the role of the machine controller for all types of RRV during on and off-tracking, with particular emphasis on whether it is necessary for the controller to advise the machine operator on whether the rail wheels of the RRV are fully deployed (with reference to the RAIB's RRV Class Investigation recommendation 2).

This review should take into account the potential for operator error and/or the malfunction of the machine (paragraph 205).

Brief Summary on what was previously reported to RAIB on 3 April 2010

5. The governing standard NR/L2/CTM/025 - machine operator competence, is being re-written into NR/L2/CTM/224, which covers Machine Operator, Machine / Crane Controller and lift planners, and will address the competence elements of these personnel. This is scheduled for a compliance date of September 2012.

Out of this standard, training modules will and are being reviewed through biannual reviews and the interface and communication between the Machine Controller and Machine Operator for on tracking machines and the deployment of rail axles is part of this process.

Update

6. Network Rail provided further information on 3 August 2012 advising that:

Network Rail has undertaken a thorough review of the role of the Machine Controller (MC) to determine the necessity of this role for all On Track Plant (OTP) related tasks.

The review concluded that an MC is required for deployment for all OTP activities for the purpose of safety and overall consistency. It is feared that if an MC were not to be a defined requirement for all tasks, then the requirement for this role may be considered as being non-essential and could therefore lead to further incidents or accidents.

Role of the Machine Controller & Associated Competencies

Based on the findings above, the review group considered that the role of the MC required further focus. This led to a review of the competencies required by an MC to

ensure he/she is able to perform the role with an increased level of knowledge from a plant / attachment and safety perspective. With this in mind, a complete review of current competency requirements has taken place and where gaps in knowledge, when compared to the Machine Operator, have been identified training module changes have been made.

Training Modules

In the interest of consistency and clarity, Network Rail has merged the Machine Controller and OTP Operator Core modules into one module titled 'OTP Core'. As a consequence this has effectively led to an 'up-skilling' of the Machine / Crane Controller to increase their level of competence as well as providing consistency within this discipline.

The industry training module for On Plant Track Machine Controller Crane Controller (OTP-MC-CC) has been thoroughly reviewed and updated. Issue 3 was published on 13 June 2012.

Within this revision of this module consideration has been given to the need to highlight previous accidents and incidents (Module 10). This acts to emphasis the strict control measures that are required to be put in place whilst off tracking RRVs. Operators and MCs being trained in the correct procedures for such activities.

On and off tracking is addressed within module 1 of the MC RRV Lesson Plan (Revised and Issued June 2012) where it is stated:

> *Explain that when on and off tracking, a braked condition must be maintained at all times. Explain the importance of avoiding an un-braked condition (Freewheel runaway) by confirming one set of wheels is fully engaged before lowering the other set.*
>
> *Direct rail wheel braking is being applied to the highest risk category of RRVs, i.e. excavators. This is being rolled out to a minimum of 450 vehicles and will be completed by 31 March 2013).*

Further Consideration

Network Rail has undertaken reviews of the safety requirements specified for RRVs and has determined appropriate performance levels for safety functions that are required within the control systems of the machine. The requirements have been written into RIS Issue 4, Rail Industry Standard for Engineering Acceptance of On-Track Plant and Associated Equipment. This standard is currently out for industry consultation and scheduled for issue by end of 2013 after which the standard will be mandated by Network Rail in March 2013.

The determination of these performance levels will further mitigate against on and off tracking risk.

ORR Decision

7. After reviewing all the information received from Network Rail, 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.

ORR will write to RAIB again it becomes aware that the information above is inaccurate.

Status: ***Implemented***