QUESTIONS AND ANSWERS

SAFETY UIC WEBINAR "OBJECTS LEFT ON THE LINE"

8 NOVEMBER 2023 FROM 1:00PM TO 4:30PM CET.

SESSION 1 **Risk assessment**

1. Are railways aware of size of this risk and have they identified their priorities ?

    o   Speaker : Marcus Dacre (RSSB)

1.1. In the Netherlands 5 train animal collisions are registered per kilometer every 10 years. Or 4 every day on the total of 3000 km of railway. The registration is certainly not complete. Yes, it is a subject of interest. **How are these numbers in other countries?**

Over the past five years, the GB mainline railway's Safety Management Intelligence System (SMIS) has recorded an annual average of around 1,850 reports of animals on the line of which around 45% were struck by a train. There is most focus on livestock and those animals with potential to derail a train, particularly cattle, which accounted for around 15% of reports of animals on the line and 3% of those struck by trains. Incidents of wild animals on the line are typically reported if an animal is struck, particularly if the collision causes damage to the train. Britain's wild animals are not as large as those in some other countries and are very unlikely to derail a train. The above stats suggest that there are fewer animal collisions reported in GB than in the Netherlands despite the GB railway being several times larger in terms of line km. It would be interesting to compare reporting, particularly for events involving lower-risk animals, to understand if this might explain some of the differences. It's also worth noting that in GB the railway is responsible for maintaining lineside fencing to keep livestock away from the track, which may not be the case in all countries.

1.2. As the London subway is the oldest subway or first subway of the world, my question is: **Is the old design still more expensive for the tourist industry and stations? And does it affect safety?**

Although RSSB's scope doesn't cover London Underground, the GB mainline also faces the challenge of managing a railway that combines the latest technology with 19th century engineering. This can increase some costs, for example when working on buildings that have listed status because of their historic significance. If we were able to entirely rebuild our railway based on current knowledge and good practice, there would be opportunity to design out more of the risk and potentially reduce some operational controls – but this would be prohibitively expensive. A benefit from having a long history is the experience gained and lessons learnt (sometimes painfully), which contribute to risk management and safety culture in GB rail today. We're proud of the improvements we've made but are always striving to do more.

2. I'm safer and I know it // Geolocated Asset Management

   o Speaker : Kurt Van Ruyskensvelde (Infrabel)

2.1. Some numbers… **how many drivers have lost their license last years because SPADs?**

Not possible to share this info.

2.2. Since you implement !nfraSPAD app, regarding the number of spots of INFRA SPADS, **did you see already a significant reduction of number of events ?**

We are in the beginning of the massive roll-put, we haven't seen a significant reduction but we know that !nfraSPAD has already been helpful.

SESSION 2 **Maintenance activities**

3. What processes and arrangements are in place to ensure the line is free of objects ?

   Speaker : Damien Pallant (SNCF Réseau)

3.1. The incidents you mention are painfully familiar in Britain too. The extra controls you mentioned seem vulnerable to human behaviour/error. Now that geolocation technology is readily available and in use on railways, with real time kinematic (RTK) accuracy to just a few centimeters, if necessary, **what plans do you have to introduce more resilient controls?**

Today we don't have plans to use geolocation to prevent such events. We are planning to use it to prevent collisions with rail workers and to prevent trains engaged in working zones from unexpected exits from protected working areas.

4. How can we minimise large animal incursions and collisions ?

   o Speaker : Malgorzata Kopczynska (PLK S.A.)

4.1. **Is it possible to use UOZ to warn human beings of an oncoming train particularly on open lines?** This with an aim of reducing persons from being struck by trains.

The use of UOZ-1 to warn people of an oncoming train is possible but would require modifications related to the type of sounds emitted. The principle of UOZ is based on emitting sounds that are natural warning signals for animals (sounds such as the warning cry of a jay, the barking of dogs, the cawing of a hare, the neighing of a horse) - their use is necessary to make animals react appropriately. For people, it is possible to use other signals, as there is a higher level of awareness related to railway safety.

PKP Polskie Linie Kolejowe S.A. uses UOZ-1 to protect animal migration routes, which are usually located in places away from dense human settlements, which is associated with less human use of these areas and a low probability of being hit. This solution (UOZ-1) is not used in Poland to warn people of the trains.

It should be considered that the sounds emitted may be a nuisance to residents of areas adjacent to the railway line, especially at night. The device emits sounds before a train passes and using it in residential areas causes additional impact on acoustically protected areas.

4.2. What do you do with UOZ 1, **when you have to do maintenance - works on the track-shoulder? Do have to uninstall them and put them up again, afterwards?**

Animal deterring devices are installed in the line of traction poles, some distance from the tracks, and do not affect the maintenance work. The need for uninstallation is rather related to investment work - during modernisation and renovation.

SESSION 3 **Lessons learnt**

5. Two trains crash into construction crane in Voorschoten (April 2023)

   - o   Speaker : Bart Hoogcarspel (Prorail)

5.1. Was the **GSMR phone not working because it was damaged in the collision?** Or was it broken beforehand?

It was technically checked that the GSMR-phone was damaged and not working after the accident. No investigation has been conducted on if the GSMR-phone was properly working before the accident. On the other hand, there are no indications that there was a problem before the accident. All parties seem to be convinced or assume that the GSMR-phone was in normal operating condition before the accident.

5.2. **What actions are taken to prevent this kind of situation?** (In Netherlands and other countries)

With the investigation still going on, there are no extra measures considered at this moment. The normal safety design in NL (that was also planned for this specific situation) includes a two-layer defense model:

> *a. traffic control takes the tracks (as described in the work planning) out of use and informs the safety staff on site;*

> *b. safety staff on site places one or more self-detecting shunt bar(s) that simulates the presence of a train by providing short circuit;*

> *c. work force is informed that they can enter the designated tracks.*

SESSION 4 **Innovative solutions**

6. What cutting edge, technological solutions are available to manage these risks ?

    - o Speaker : Darryl Hopper (RSSB)

    The third use a system known as RTK real time kinematic information, which supplements the GPS and enables those systems to be remarkably accurate. **Could you expand on that at all in his** *points about the cutting-edge technology which is now available?*

    Although other technologies are being used in the UK, and I would recommend using the contacts at the end of the presentation for a better technical reflection, I can expand a little on RTK and the use of Beacons. RTK uses satellites to determine the position of a wearable tag using satellite positioning that is more accurate than the type we use for our cars. However, even with these more sophisticated systems there is potential for error in identifying the location of the tag and a need to compensate for issues such as signal strength and timing. To do this the satellite signal locates the tag that we wish to locate but also locates a known beacon location which acts as a reference point to calculate any small error and provide correction data for the location tags position so that up to centimetre-level accuracy is achieved.

7. How can we use the AI to develop better risk insights and help improve safety on the line? AI uses cases in railway maintenance.

    - o Speaker : Ignacio Jardi (Ferrovial)

    7.1. What does means **« semi automatic detection of assets"?**

    In the asset's detection process, there are different phases. Some of them are automatic and others require manual supervision. That's why we say it's semi-automatic.

    7.2. What **speed at the maximum** do you consider that AI detection systems with frontside cameras can make trains stop before collision to the unexpected objects?

    The limit is set by the train's braking capacity, not technology. If technology detects an object on the track, the object must be far enough away for the train to stop. Therefore, the maximum speed is the one that allows the train to brake before colliding.