SAFETY STUDY ON LEVEL CROSSING ACCIDENTS

While the number of level crossing accidents in Finland reduced significantly between 1991 and 1998, since then the number has remained constant and, at times, has even increased slightly. The number of accidents has fallen in the last two years. However, this has not influenced the number of deaths. Since 1993, there has been an average of 10 fatalities per year in level crossing accidents. Compared to other European countries, level crossing safety in Finland is below average.

Some 78 per cent of all fatal accidents occurred on level crossings without warning devices. Accidents on level crossings of this type were generally caused by the vehicle driver misjudging the situation, not by the driver taking unnecessary risks. The road speed limit was typically 80 km/h and the railway speed limit 120 km/h. Most level crossings without warning devices are located on private roads and most fatal accidents occurred on level crossings on such roads. Nearly all level crossings without warning devices fail to meet the related railway regulations. Maintainers of private roads do not have sufficient information on their level crossing maintenance obligations.

Based on statistical analysis, a dangerous level crossing is one without warning devices, with a low road speed limit, and with a high amount of average daily traffic. Such level crossings are typically located in residential areas.

On average, some 140 level crossings were removed in Finland between 1991–2010. The number of level crossings has dropped by 10% between 2004–2009, which is higher than average in Europe. Removal of level crossings has not been targeted at dangerous level crossings, because removals have primarily been performed to facilitate an increase in the speed limit for the section of line. Improving level crossing safety is not always a part of railway upgrading projects, but is performed with separate funding.

The average processing time of level crossing accident emergency calls increased in the emergency response centres during the reference period of 2003–2010. Traffic controllers and ERC operators have no uniform way of locating the level crossing in question. Municipality information is not included in the files used by traffic controllers, and the ERC operators of some emergency response centres are unable to locate the level crossing, based on the kilometric railway distance information. Rescue Services' risk evaluation instructions do not guide the operator's actions in the best possible way. These instructions have not been updated and no one is nationally responsible for update work.

Several level crossing information databases are used, but the information contained in them is, to some extent, partial. Railway actors have no common database for registering accidents and incidents, but all actors have their own databases and there is no automatic updating from one system to another.

Several researches of level crossing safety have been conducted in Finland since the completion of the previous level crossing safety study. These have been funded by the Ministry of Transport and Communications, the Rail Administration (now part of the Finnish Transport Agency and the Finnish Transport Safety Agency), the Finnish Transport Agency and the Finnish Transport Safety Agency. Concrete suggestions for improving safety have been outlined by these researches, but only some have been implemented.

A measure implemented after the previous level crossing safety study was a campaign targeted at level crossing users, which included e.g. three different radio spots on using the level crossing.

These level crossing campaign radio spots were selected as the best social radio ads in 2009. An ongoing measure is the upgrading project of the Seinäjoki–Oulu section of line, where all level crossings will be removed.

21 out of 61 existing level crossing safety recommendations have been implemented. Nine of the unimplemented recommendations are no longer valid or are too extensive, and the investigation commission decided to remove them.

The Safety Investigation Authority, Finland recommends the following, to improve level crossing safety:

1. A new strategy should be drawn up to improve level crossing safety, and a concrete plan with funding arrangements should be drafted based on the strategy.
2. The safety of each level crossing should be evaluated using new statistical analyses, in order to better specify the order in which level crossings should be secured or removed.
3. Databases on level crossings and their conditions should be merged into one and the database should be kept up to date.
4. A single and common accident and deviation database for all those operating the railway system in Finland should be created.
5. Level crossing safety should also be included in provincial and municipal traffic safety plans.
6. When planning school transportation, the municipalities should improve safety by avoiding level crossings without warning devices along the routes.
7. Clear instructions should be drawn up regarding road traffic speed limits and the use of the STOP sign at level crossings.
8. Ways of improving the perceptivity of level crossings and their conditions of use and technical properties should be specified.
9. Instructions on level crossings should be drawn up for road maintainers.
10. The visibility of the fronts of locomotives and train units should be improved.
11. When planning delivery routes, Itella should improve safety by avoiding level crossings without warning devices.
12. Emergency Response Centre risk assessment instructions should be continuously updated and a national quarter responsible for the instructions should be assigned.

The Safety Investigation Authority wishes to highlight two recommendations for further consideration, because factors supporting their implementation were revealed by the investigation:

- *At the Suurisuo level crossing and similar level crossings, where it has been noted that sunlight hinders visibility, the visibility of barriers and warning signs should be improved by replacing red blinking filament lamps with blinking or flashing LED lights. [B6/08R/S256]*
- *A variety of operators should develop systems and implement equipment to facilitate location of an accident site. [B1/09R/S277]*