# NIB ANNUAL REPORT 2010

Accident Investigation Board

FINLAND

## PREFACE TO THE REPORT

This is the annual report of railway sector of the Accident Investigation Board of Finland for calendar year 2010.

### Terms used in this report:

| Investigation categories | |
|---|---|
| A-investigation | Major accident |
| B-investigation | Accident or serious incident |
| C-investigation | Incident, damage or minor accident |
| D-investigation | Other incident |
| S-investigation | Safety study |

### Investigation identifier:

Each investigation is designated by an identifier that consists of four parts, such as A1/1998R.

The first part refers to the investigation category (A, B, C, D or S).
The second part is a sequence number referring to the order of the accident within its accident category in the year in question.
The third part refers to the year of the accident.
The fourth part indicates the accident category (L, R, M or Y).

E.g. A1/1998R refers to the first major railway accident investigation in 1998.

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Annex 1. Recommendations

# 1 INTRODUCTION TO THE INVESTIGATION BODY

## 1.1 Legal Basis

The Accident Investigation Board of Finland was founded in 1996 within the Ministry of Justice. The tasks of the Accident Investigation Board are specified in the relevant act and decree which also include overall directions on the characteristics of the accidents to be investigated and the methods of investigation to be implemented. In Finland the Accident Investigation Board is a multimodal investigation body, which investigates aviation, maritime, rail and other accidents and incidents.

In Finland the investigation of rail accidents is based on the EU Railway Safety Directive. The current accident investigation act is in harmony with to the Safety Directive. In January 2009 a working group was appointed to amend legislation applying to accident investigation. The working group submitted its report to the Ministry of Justice in February 2010. The Government submitted the bill to the Parliament on 22 October 2010. The new “Safety Investigation Act” will enter into force on 1 June 2011.

## 1.2 Role and Mission

In Finland the Accident Investigation Board investigates all major accidents regardless of their nature as well as all aviation, maritime and rail accidents and incidents.

The purpose of the investigation of accidents is to improve safety and prevent future accidents. The flow of events during the accident, its causes and consequenses, as well as the rescue operations are dealt with in the investigation. A report is prepared on the results of the investigation. The report also presents the recommendations, which are based on the conclusions of the investigation. All reports are written in Finnish with English summaries. An English translation of important reports will be available.

In addition the Accident Investigation Board takes care of the readiness to conduct investigations and of the development of accident investigation methods. The training of investigators, the preparation of guidelines for the process of investigation, publication of the reports and international cooperation are handled by the Board.

Accident investigation focuses on the course of events of the accident, its causes and consequences as well as on the relevant rescue measures. Particular attention is paid to whether the safety requirements have been adequately fulfilled in the planning, design, manufacture, construction and use of the equipment and structures involved in the accident. It is also investigated whether the supervision and inspection has been carried out in an appropriate manner. Any eventually detected shortcomings in safety rules and regulations may call for investigation, as well. In addition to the direct causes of an accident, the accident investigation intends to reveal any contributory factors and background circumstances that may be found in the organization, the directions, the code of practice, or the work methods.

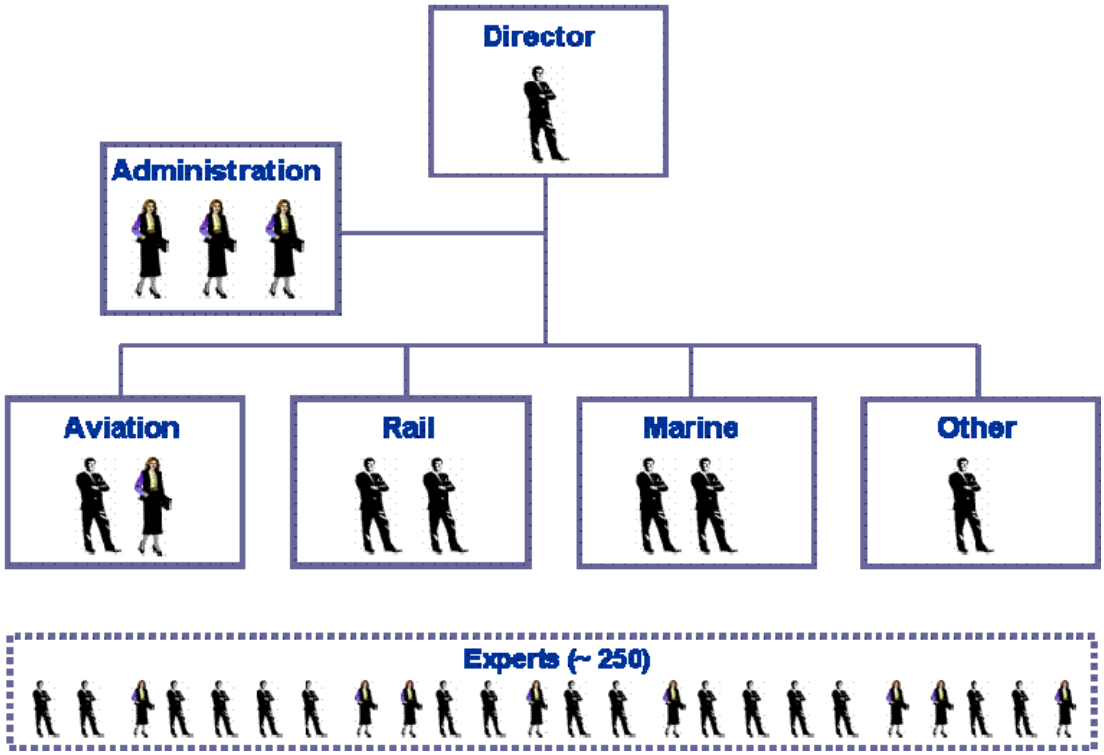
In the decision-making on the commencement of an accident investigation, the degree of seriousness of the incident is considered as well as its probability of recurrence. An incident or accident or hazardous situation, with only minor consequences may also require investigation in case it sets several persons at risk and an investigation is assessed as producing important information in view of the improvement of the general safety and the prevention of further accidents. Generally speaking, the Accident Investigation Board does not investigate an incident or accident caused intentionally or by an offence.

The Accident Investigation Board is also responsible for the printing and distribution of the investigation reports and their publishing on website *www.onnettomuustutkinta.fi.*

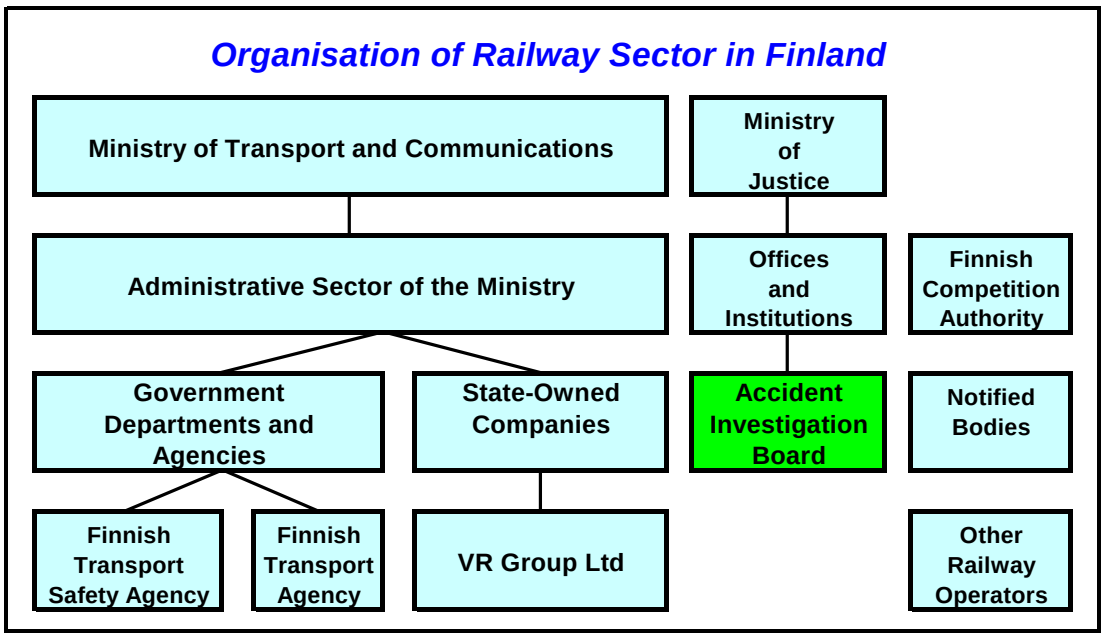
## 1.3 Organisation

**Personnel:**

| | |
|---|---|
| Director | Tuomo Karppinen (-> 31.5.2010) |
| | Veli-Pekka Nurmi (1.7.2010 ->) |
| Administrative director | Pirjo Valkama-Joutsen |
| Assistant | Sini Järvi |
| Assistant | Leena Leskelä |
| | |
| Aviation accidents | |
| Chief Air Accident Investigator | Markus Bergman |
| Air Accident Investigator | Tii-Maria Siitonen |
| | |
| Rail accidents | |
| Chief Rail Accident Investigator | Esko Värttiö |
| Rail Accident Investigator | Reijo Mynttinen |
| | |
| Marine accidents | |
| Chief Marine Accident Investigator | Martti Heikkilä |
| Marine Accident investigator | Risto Repo |
| | |
| Other Accidents | |
| Chief Accident Investigator | Kai Valonen |




## 1.4 Organisational flow



# 2 INVESTIGATION PROCESSES

## 2.1 Cases to be investigated

A rail accident investigation is conducted in following cases:

- Accident in train traffic
- Hazardous situation in train traffic
- Accident in shunting work in railways, if a person is deceased or seriously injured
- Accident in shunting work in railways, if it is related to transportation of dangerous goods
- Underground or tram accident, if several persons have been deceased or seriously injured or there is other special safety related reasons for the investigation

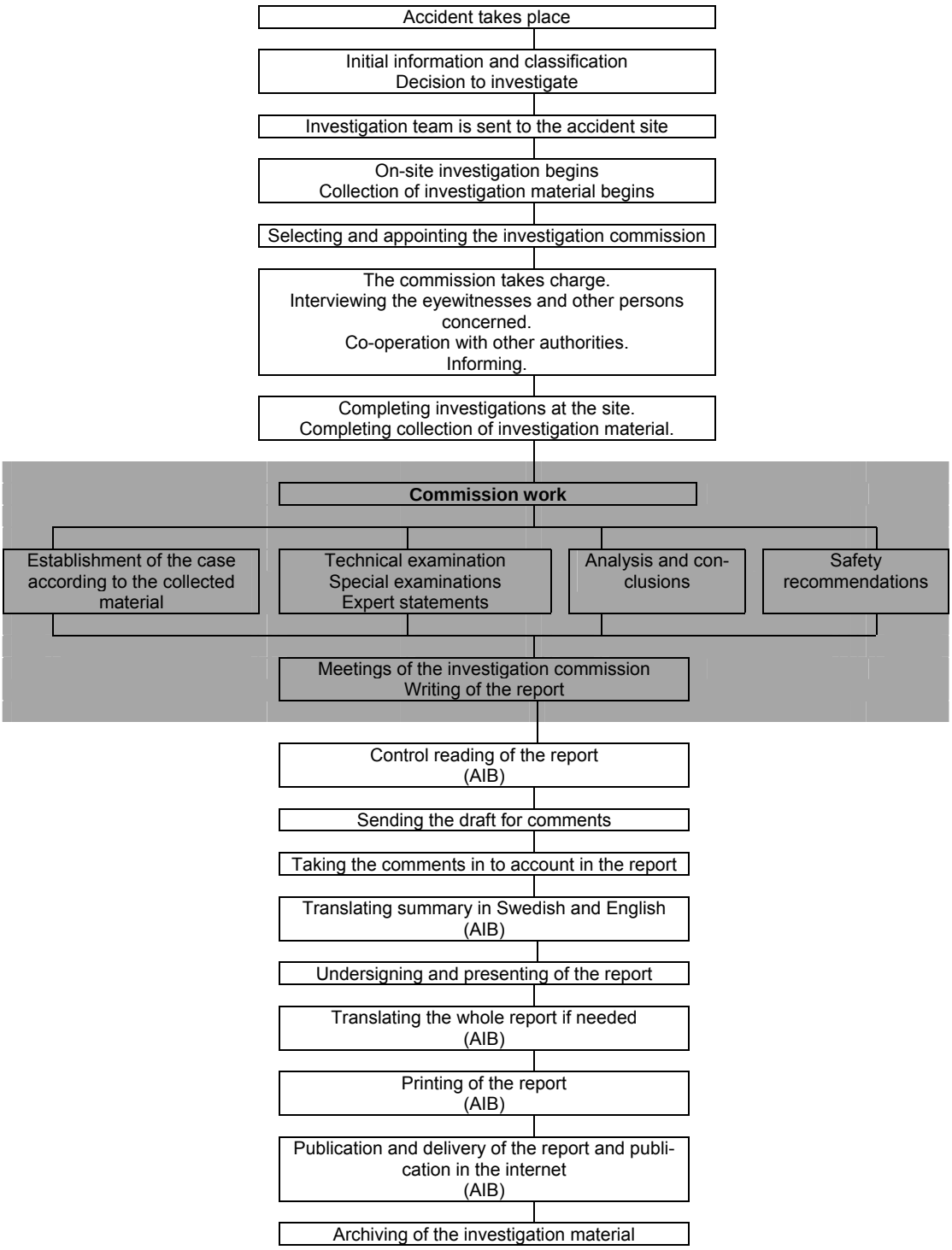
In accordance with the Act on Accident Investigation (373/1985) the Accident Investigation Board of Finland investigates level crossing accidents in which a train has derailed or a passenger or a train crew member is deceased or injured seriously. In accordance with the EU Railway Safety Directive, the Accident Investigation Board has also investigated all fatal level crossing accidents involving road vehicles since 2007. In accordance with the relevant legislation on the matter (24/2001), the traffic accident investigation teams of the Traffic Safety Committee of Insurance Companies (VALT) of the Finnish Motor Insurers' Centre investigate all fatal road and terrain accidents in Finland including fatal level crossing accidents.

## 2.2 Institutions involved in investigations

The Accident Investigation Board of Finland investigates all rail accidents. Those investigations are independent and reports are public. According to the Railway Act the Finnish Transport Safety Agency can investigate those occurrences AIBF does not investigate. Investigation reports are not public.

## 2.3 Investigation process or approach of the IB

### Chart of the investigation process



# 3 INVESTIGATIONS

## 3.1 Overview of investigations completed, identifying key trends

| Type of accidents investigated | Number of accidents | Number of victims | | Damages in € (approximation) | Trends in relation to previous years |
|---|---|---|---|---|---|
| | | Deaths | Seriously Injured | | |
| **Collisions** | 0 | 0 | 0 | 0 | |
| **Derailments** | 2 | 0 | 0 | 390 000 | |
| **Level crossing accidents** | 8 | 10 | 2 | 39 000 | |
| **Other** | 2 | 0 | 0 | 20 000 | |

## 3.2 Investigations completed and commenced in 2010

### Investigations completed in 2010

| **Date** of occurrence | **Title of the investigation** (Occurrence type, location) | **Legal basis** | **Comleted** (date) |
|---|---|---|---|
| 11.2.2009 | A Fatal level crossing accident at the unprotected Teurastamo level crossing in Pori | i(a) | 16.4.2010 |
| 25.3.2009 | Fatal level crossing accident in Nurmijärvi | i(a) | 19.4.2010 |
| 25.4.2009 | Fatal level crossing accident in Mustio, Rasepori | i(a) | 15.10.2010 |
| 24.5.2009 | Fatal level crossing accident in Eurajoki | i(a) | 23.4.2010 |
| 14.7.2009 | Fatal level crossing accident in Vihti | i(a) | 15.10.2010 |
| 17.7.2009 | Fatal level crossing accident in Loviisa | i(a) | 6.9.2010 |
| 3.12.2009 | Fatal level crossing accident in Seinäjoki | i(a) | 25.11.2010 |
| 16.12.2009 | Fatal level crossing accident in Laukaa | i(a) | 13.12.2010 |
| 20.10.2008 | Train traffic incident in Kerava | iii | 8.4.2010 |
| 9.3.2009 | Derailment of six wagons of a freight train at the Lahti railway yard | iii | 5.3.2010 |
| 17.9.2009 | Derailment of five freight train wagons in Kilpua station | iii | 25.11.2010 |
| 1.10.2009 | A passenger train ended up on the wrong track in Koria | iii | 17.5.2010 |

**The Legal Basis for the decision to investigate accident/incident:**

i National rules imposed by implementing of the Safety Directive
  (a) in light of Article 19, §1 of SD
  (b) in light of Article 19, §2 of SD
    (a) the seriousness of the accident or incident
    (b) it forms part of a series of accidents or incidents relevant to the system as a whole
    (c) its impact on railway safety on a Community level
    (d) requests from infrastructure managers, the safety authority or the Member State
  (c) in light of Article 21 of SD
    (§5) cross-border investigation or request to assistance
    (§6) other reasons than those referred to in Article 19

ii Other national rules/regulations (covering possible areas excluded in Article 2, §2 of the SD)
  (a) metros, trams and other light rail systems
  (b) networks that are functionally separate from the rest of the railway system…
  (c) privately owned railway infrastructure that exist solely for use by the infrastructure owner for its own freight operations.

iii Other national rules/regulations not referred to the Safety Directive.

### Investigations commenced in 2010

| **Date** of occurrence | **Title of the investigation** (Occurrence type, location) | **Legal basis** |
|---|---|---|
| 4.1.2010 | Collision of passenger cars with a rail barrier and eventually the wall of an office building at the Helsinki Central Railway Station | i(a) |
| 25.2.2010 | Fatal level crossing accident in Pori | i(a) |
| 14.4.2010 | Fatal level crossing accident in Karjaa | i(a) |
| 26.4.2010 | Derailment of commuter train at Helsinki station | i(b)(a) |
| 16.5.2010 | Fatal level crossing accident in Kokemäki | i(a) |
| 23.6.2010 | Fatal level crossing accident in Kyrö | i(b)(a) |
| 19.2.2010 | Derailment of five tank wagons during shunting work in Kilpilahti | ii(c) |
| 24.3.2010 | Derailment of three freight train cars at the Joensuu railway yard | iii |

**The Legal Basis for the decision to investigate accident/incident:**

i National rules imposed by implementing of the Safety Directive
  (a) in light of Article 19, §1 of SD
  (b) in light of Article 19, §2 of SD
    (a) the seriousness of the accident or incident
    (b) it forms part of a series of accidents or incidents relevant to the system as a whole
    (c) its impact on railway safety on a Community level
    (d) requests from infrastructure managers, the safety authority or the Member State
  (c) in light of Article 21 of SD
    (§5) cross-border investigation or request to assistance
    (§6) other reasons than those referred to in Article 19

ii Other national rules/regulations (covering possible areas excluded in Article 2, §2 of the SD)
  (a) metros, trams and other light rail systems
  (b) networks that are functionally separate from the rest of the railway system…
  (c) privately owned railway infrastructure that exist solely for use by the infrastructure owner for its own freight operations.

iii Other national rules/regulations not referred to the Safety Directive.

## 3.3 Safety Studies commissioned and completed in 2010

### Safety Studies completed in 2010

| **Date** of commission | **Title of the Study** (Occurrence type, location) | **Legal basis** | **Comleted** (date) |
|---|---|---|---|
| | - | | |

### Safety Studies commenced in 2010

| **Date** of commission | **Title of the Study** (Occurrence type, location) | **Legal basis** |
|---|---|---|
| | - | |

## 3.4 Summaries of investigations completed in 2010

Photo: Police

**B1/2009R**

**A fatal level crossing accident, at the unprotected Teurastamo level crossing in Pori on 11 February 2009**

A level crossing accident took place at the unprotected level crossing of Teurastamo on the Mäntyluoto–Pori track and Pikakyläntie road on Wednesday, 11 February 2009, at 3.12 p.m. The engine driver emergency braked 29 metres before the collision, when the car had disappeared from his sight. The locomotive hit the middle of the car's right side, not being able to reduce speed before the collision. The car clung to the front of the locomotive and travelled in front of it for 223 metres, until the locomotive stopped. Two passengers in the car suffered fatal head injuries in the accident, and the driver was seriously injured. The locomotive suffered minor damage, while the car was wrecked beyond repair.

The accident was caused by the car driver noticing the train too late and not having time to stop or otherwise prevent the accident. Underlying factors for this were:

- The level crossing was familiar to the driver, which in most cases decreases carefulness
- The level crossing did not feature any alarm devices
- The level crossing did not have proper wait platforms and the slope to the crossing was so steep that drivers try to avoid stopping, particularly in slippery conditions
- Visibility to the left was worse than in the direction of the train to the right, and an imbalance such as this tends to increase detection errors in the region of the better-visibility area
- An embankment over a district-heating pipe decreased the visibility of the train
- The car driver was fairly inexperienced, and the day in question was a special festive day related to studying
- Driving on the narrow private road with icy ridges was already occupying the driver's attention.

To prevent similar accidents, the Investigation Commission recommends that the unprotected level crossing of Teurastamo on the Pikakyläntie road be removed. The level crossing could be removed with minor costs by digging ditches on both sides of the track – continuing the current ditches – at the site of the road and by removing the planking. Should the level crossing be kept, it should be repaired in accordance with instructions equipped with a warning installation with half-barriers, and the embankment on the district-heating pipes should be lowered.

Localisation of the level crossing where the accident took place was problematic. Time was wasted with location problems between the engine driver and the traffic controller and between the traffic controller and the Emergency Response Centre, causing delays in raising the alarm. At their worst, such location problems may lead to treatment procedures being delayed, with fatal consequences. Therefore, the commission recommends that various operators develop systems and implement devices to facilitate localisation. Other possible means could be, for example:

- The engine driver, traffic controller, and Emergency Response Centre having a rail-section-specific list of level crossing locations
- The Emergency Response Centre Administration attending to all ERCs using the location details in a unified manner
- The locomotives being equipped with GPS devices, which would provide the specific location data in an easily transmittable format.

Furthermore, because of the delays that arose in the emergency call, the Investigation Committee repeats recommendation S211, described in investigation report B1/2005R: *The instructions for the drawing up of an emergency notice should be developed to ensure that whenever urgent aid is needed from the rescue service, also the general emergency number is called from the incident scene, in addition to the notifying of the traffic control unit.*

**B2/2009R**

**Fatal level crossing accident in Nurmijärvi on 25 March 2009**

On Wednesday, 25 March 2009, a level crossing accident involving a van and a freight train occurred on the Hyvämäki level crossing in Nurmijärvi. The accident was fatal to the van driver. The engine driver, the shunting foreman and two shunters who were on the train came through the accident uninjured. The van was wrecked beyond repair. The train sustained minor damage.

The direct cause of the accident was the driver of the van advancing onto the level crossing without stopping at the STOP sign. It is likely that the driver of the van completely failed to notice the freight train approaching from the right. This may have been due to the following:

- the driver was focused on something other than making a safe crossing
- the intermediate wall between the van's cabin and storage space, and also the absence of windows in the storage space, hindered visibility in the direction of the approaching train.
- the sun shining in the driver's face blinded him.

In order to prevent similar accidents, the Investigation Commission recommends that the wait platforms of the Hyvämäki level crossing be renovated and that nearby road junctures be relocated at a sufficient distance from the crossing. The level crossing should also be equipped with a warning installation with half-barriers. Due to difficulties experienced in locating the level crossing after the accident, the investigation commission reiterates recommendation S143: *Level crossings should be equipped with signboards displaying at least the name of the level crossing and its location in coordinates, and the relevant track-km. The signboard should be clearly visible in both directions in which the road runs.*

In addition, to further reduce difficulties in locating the scenes of accidents, the investigation commission recommends the preparation of a list of level crossings, including their locations within sectios of line, and that this list be made available to engine drivers, traffic controllers and the emergency response centre. The list should clearly indicate the name and location of the level crossing. This would ease communication between the parties and reduce time spent locating level crossings. In addition, the Emergency Response Centre Administration should ensure that location information be uniformly introduced in all emergency response centres.

In its statement, the Emergency Response Centre Administration proposes that VR Group equip all trains with the appropriate GPS[1] devices, which would relay accurate coordinates for any accident to the relevant response centre without delay. In addition, the Emergency Response Centre Administration reiterates its earlier recommendation, that a direct mobile phone connection be ensured from the accident sites to the relevant emergency response centre.

**B3/2009R**

**Fatal level crossing accident in Mustio, Raasepori on 25 April 2009**

At 1:08 p.m. on Saturday 25 April 2009, a level crossing accident occurred in Mustio in Raasepori involving a car and a freight train en route from Kirkniemi to Karjaa. The accident proved fatal to the car driver, while the engine driver escaped uninjured. While the car was wrecked beyond repair, the train sustained only minor damage.

[1] **GPS =** Global Positioning System

The direct cause of the accident lay in the car's driving onto the level crossing while the freight train was approaching simultaneously from the right. It has not been ascertained why the car driver drove onto the level crossing. The following may have played a role in this decision:

- the car driver did not observe the approaching train, or judged that it would be possible to make the crossing before the train's arrival
- the driver accidentally pressed the accelerator instead of the brakes
- the driver noticed the train but had insufficient time to stop the car before reaching the crossing.

In order to prevent similar accidents, the investigation commission recommends that the Ingvallsby unprotected level crossing be removed. In addition, the investigation commission reiterates recommendation S211 concerning the establishment of a direct mobile phone connection from accident scenes to the emergency response centre. Recommendation S211 is also supported by the Ministry of the Interior Rescue Department and the Emergency Response Centre Administration. Furthermore, the Emergency Response Centre Administration recommends that VR Group equip all trains with the appropriate GPS devices, allowing the relay of accident location information to the emergency response centre clearly and without delay.

The investigation commission also notes that the response process to level crossing accidents could be determined by road vehicle type and that the right to drive could be restricted for drivers who have an illness or who are on permanent medication affecting their driving ability.

Photo: Police

**B4/2009R**

**Fatal level crossing accident in Eurajoki on 24 May 2009**

On Sunday, 24 May 2009, at 2:28 p.m., a fatal level-crossing accident occurred on the Köykäntie unprotected level crossing in Eurajoki. The accident occurred when a car en route from Lapijoki village to the centre of Eurajoki drove onto the level crossing in front of a freight train en route from Rauma to Tampere. The only person in the car was the driver, who died from his injuries despite first aid. Damage caused by the accident to track equipment amounted to some € 5,000.

The accident probably occurred because the driver did not observe that the car, which was equipped with an automatic gearbox, started moving slowly forward as the driver was reaching

into the car's right front seat or leg space. This may have been due to the driver searching through a bag or picking one up that had fallen off the seat after braking. The driver had stopped the car ahead of the level crossing, probably due to having noticed the approaching train.

In order to prevent similar accidents, the Investigation Commission recommends that the Köykäntie level crossing be removed. Alternatively, the level crossing should be equipped with a warning installation with half-barriers.

In addition, municipalities with rail traffic should regularly review the status of unprotected level crossings in their jurisdictions and guide traffic through safer routes. Through mutual cooperation, municipalities and the Finnish Transport Agency should be able to identify which level crossings are dangerous and remove them with little effort and at little cost.

**B6/2009R**

**Fatal level crossing accident in Vihti on 14 July 2009**

At 11:17 a.m. on Tuesday 14 July 2009, a fatal level crossing accident occurred on the Kotkaniementie unprotected level crossing in Ojakkala in Vihti. The accident occurred when a car travelling along Kotkaniementie road drove without stopping in front of a freight train en route to Riihimäki. A nine-year-old girl in the car was fatally injured. The car was wrecked beyond repair. Damage totalling €6,000 was caused to yhe rolling stock and to the track.

The cause of the accident lay in the car driver’s completely failing to observe the approaching freight train.

Considering that the Kotkaniementie road is busy with domestic and international traffic, and that no other route to the Kotkaniemi area is available, the investigation commission recommends that the Kotkaniemi 1 level crossing be equipped with half-barriers.

The investigation commission also makes the following points and proposals:

- Education and campaigns on safe level crossing practices should be continued.
- Clear instructions should be provided for the clearing of sightlines at level crossings, covering both the division of responsibilities and scheduled actions. Clearing actions should also be monitored.

- Dv12 locomotives should be driven with the short front ahead, better enabling locomotive drivers to see approaching cars and issue a warning signal.
- Making the cabin colour of Dv12 locomotives brighter would make approaching trains more conspicuous.

A locomotive should issue a warning signal whenever the simultaneous approach of a vehicle towards an unprotected level crossing is observed.

**B7/2009R**

**Fatal level crossing accident in Loviisa on 17 July 2009**

On Friday, 17 July 2009, at 9.50am, a level crossing accident took place at the unprotected Rauhalantie level crossing in Loviisa, in which the driver of a car perished after having steered in front of a freight train.

The most probable cause for the accident was the elderly driver's failure to perceive the approaching train. Other underlying causative factors in the accident may include the driver's familiarity with the level crossing and the fact that his physical capabilities were diminished through illnesses and impaired eyesight.

Removing the heavy-traffic Rauhalantie level crossing by constructing a replacing road connection via the road Seppäläntie has been under consideration in Loviisa at least for the past three decades. Pursuant to the safety strategy on level crossings issued by the Finnish Rail Administration, removal of level crossings is the preferred method of improving their safety; therefore, this solution would comply with the strategy. During the investigation, the Loviisa Town Council decided in connection with discussion of the budget for the 2010 fiscal year not to construct the extension to Seppäläntie but to equip the Rauhalantie level crossing with warning installation instead.

In the investigation, it also emerged that the relevant parties hold divergent views on the duty to clear the sightlines at level crossings. The Investigation Commission recommends that the Ministry of Transport and Communications ensure that such consistent guidelines on the duty to clear the sight lines be issued as are acceptable to all parties.

During the investigation, the Finnish Rail Agency and the Finnish Rail Administration were, from the beginning of 2010, organisationally merged with the Finnish Transport Safety Agency (Trafi) and the Finnish Transport Agency, respectively. In this investigation report, the previous names of the agencies are used.

**B8/2009R**

**Fatal level crossing accident in Seinäjoki on 3 December 2009**

On Thursday 3 December 2009 at 4.05 a.m., a fatal level crossing accident occurred at the Teppo level crossing in Seinäjoki. The level crossing was equipped with half barriers. A passenger train en route to Helsinki collided with a car which was at a halt on the crossing. The collision caused immediate to the car driver.

The cause of the accident lay in the train colliding with the car, which had come to a halt on the crossing. Due to issues that became apparent during the investigation, the investigation commission will not issue any recommendations as a result of the accident.

Photo: Keski-Suomi Rescue Department

**B9/2009R**

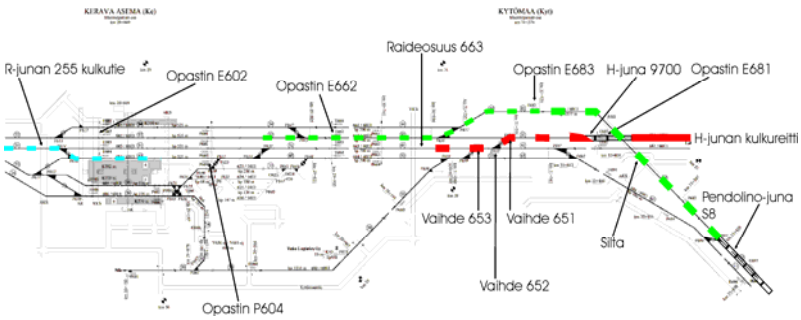
**Fatal level crossing accident in Laukaa on 16 December 2009**

On Wednesday 16 December 2009 at 13:26 p.m., a fatal level crossing accident occurred on the Lemettilä unprotected level crossing in Laukaa municipality. The accident occurred when a van with a couple inside drove in front of a freight train en route from Jyväskylä to Äänekoski. The van's driver and passenger died immediately from the injuries received. The damage caused by the accident to rolling stock amounted to € 1,300.

The cause of the accident was that the van driver drove onto the level crossing without apparently observing the train approaching from the right. A contributing factor was the fact that, when approached, the crossing looks safe, rendered observation more difficult. Special care should

have been exercised, however, considering that the road slopes downwards before the level crossing, that there is a road crossing close to the level crossing and that the sun was shining directly towards the approaching van.

In order to prevent similar accidents, the investigation commission recommends the removal of the Lemettilä unprotected level crossing. Alternatively, the level crossing should be equipped with a half-barrier installation.




**C6/2008R**

**Train traffic incident in Kerava on 20 October 2008**

On Monday, 20 October 2008, at 4:46pm, an incident occurred in the Kerava railway yard when an H-marked local train en route from Riihimäki to Helsinki passed an entry signal that was in the stop position and forced open the turnout. The main track's remote control operator noticed the situation on his monitor and radio-commanded the train to stop. The train stopped on the track section after the turnout. A Pendolino train was simultaneously approaching Kerava from the direction of the Kerava–Lahti direct line. This train was behind schedule. The traffic controller had set a route for it to Kerava's track 2. After this, the traffic controller had set a northward route along Kerava's track 4 for an R-marked local train approaching Kerava from the south.

At the point when the H train was driven past the entry signal in stop position, the main signal for the Pendolino train, and also the main signal at the north end of the Kerava railway yard for the R train, switched from proceed aspect to stop position. The Pendolino train was 1.9 km from the signal, and the R train about 4.6 km from the signal. When the H train reserved the next turnout after the one it had forced open, the main signal reserved for the R train after the platform switched from proceed aspect to stop. At that point, the R train was about 2.8 km from the signal.

Because of ongoing construction work, the automatic train running control (ATC) was not in operation for the Hanala–Järvenpää section and the section was set as a construction area. The train speed limit has been set at 80 km/h in construction areas and the automatic train running control (ATC) only monitors to ensure that this speed is not exceeded.

As a result of forcing open the turnout, the H train fell 12 minutes behind schedule, the Pendolino train fell an additional 10 minutes behind schedule, and the R train fell 45 minutes behind schedule. Further delays in train traffic were experienced for 12 hours after the incident.

The reason for passing the entry signal in the stop position and forcing open the turnout was that the H train's driver did not observe the stop signal, drove past the signal, and forced open the turnout after it. The factors contributing to this incident were that:

- the engine driver was used to driving the train according to the instructions provided by the automatic train running control (ATC) and to trusting the route monitoring it provided
- the signal for the H train (E681) was set to be proceed even though the distant signal after Kyrölä was in the wait/stop position
- the stop position of the main signal (E681) is not easy to observe, because its visibility can be obstructed by bridge structures and the specially built catenary suspension
- the construction area set for the automatic train running control (ATC) was too extensive
- the advance notification provided did not give sufficient information to the engine driver
- the automatic train running control (ATC) does not notify the train driver strongly enough that the train is in a construction area and that the train must proceed according to the visible signals

In order to prevent the occurrence of similar incidents, and therefore possible accidents, the Accident Investigation Board recommends that signal E681 be placed in a more visible spot, that construction areas for automatic train running control (ATC) not be set too broadly, that advance notifications provided to train drivers be more specific about ATC construction area conditions, and that train running control monitors and the information displayed there be improved in such a way that they better indicate the necessary information during exceptional circumstances.

**C2/2009R**

**Derailment of six wagons of a freight train at the Lahti railway yard on 9 March 2009**

On Monday, 9 March 2009, at 8:42pm, six domestic wagons were derailed at the Lahti railway yard. The derailment occurred at a turnout, when the 33-wagon freight train had set off from Lahti towards Kouvola. After two and a half minutes, the engine driver felt a strange tugging in the train. The engine driver reduced power, saw an intense flash in the rear-view mirror of the locomotive, and then saw a portal topple and the contact wires falling down. The engine driver immediately stopped the train, using only the direct-acting brakes of the locomotive because of the slow speed. The empty, covered four-axle wagon that was 19th in the train had derailed on the trailing turnout crossing, pulling the next five wagons off the rails.

Traffic on the main tracks in Lahti was badly disrupted, because the toppling of the signal portal caused the contact wires of several tracks to come down. Because of the falling of the north main track's contact wire, passenger train traffic from the east had to be stopped, and passengers had

to be transported to their destinations in other vehicles. The total costs from the accident were EUR 278 000.

The accident was caused by the wheel flanges of the first derailed wagon rising over the ice packed in the flangeway between the crossing frog and the check rail, and further off the rails. As the wagon, which had a light axle weight, arrived at the crossing, its front bogie was turned, by the fully frozen crossing and chunks of ice and snow, far enough to cause the wheel flange to rise over the wingrail, causing the derailment of the wheelset. There were many snow and ice chunks in the vicinity of the turnout crossing, at least some of which had likely fallen from the inner surface of the buffer plate of the locomotive of a departing train.

In order to prevent similar accidents, the Accident Investigation Board of Finland recommends that the work instructions for turnout cleaning related to winter maintenance be specified, with special attention paid to ice removal.

**C3/2009R**

**Derailment of five freight train wagons in Kilpua station on 17 September 2009**

On Thursday 17 September 2009 at 13:13 p.m., five Russian pellet-carrying wagons were derailed at Kilpua station on the Oulu-Ylivieska section of line. The derailment occurred at the southern end of the station, when a pellet train en route from Oulu to Kokkola departed from track three towards the main track after giving way to an oncoming train. When the train's rear section was still on track 3, the train driver felt an abrupt jerk and noticed the brake pipe loosening. The train driver immediately stopped the train and went outside to inspect the situation. Although the last three of the train's eight wagons were still on the track, five had been derailed. The train had a total of 45 wagons. Being able to disengage the train at the point where the first wagon had derailed, the driver moved the wagons at the front to Oulainen for further inspection. The total costs of the incident amounted to 112,000 euros.

The incident occurred because the heavy pellet train was directed onto a sidetrack which was in poor condition. Due to oncoming traffic, the remote controller was forced to direct the freight train onto Kilpua's track three.

Another factor contributing to the derailment lay in the driver used the electric brakes only after departing from Kilpua. These only affected the locomotives, therefore exerting longitudinal force

along the train. Combined with the stiff bogies, of the wagons' longitudinal force caused the outer rail to give way at a curve, with the result that the wheels on the inside of the curve were derailed.

In order to prevent similar incidents from occurring, the Accident Investigation Board recommends that the Finnish Transport Agency review the actual condition of station sidetracks and their ability to handle heavy, Russian freight train traffic. The Accident Investigation Board also reiterates its earlier recommendation concerning the condition inspection and greasing of pivots on Russian wagons.

**C4/2009R**

A passenger train ended up on the wrong track in Koria on 1 October 2009

At 12:29pm on Thursday, 1 October 2009, an incident occurred at the Koria station on the Lahti–Kouvola section of line, when a passenger train ended up on the wrong track in front of a freight train.

Several sub-projects relating to the Lahti–Luumäki–Vainikkala construction project were underway on the Lahti–Kouvola section of line. With regard to the Koria station, work was in progress relating to the commissioning of a new signal box to be installed on the Lahti–Kouvola section of line. The Automatic Train Protection (ATP) system was not operational at the Koria station and special arrangements were applied at the station. The signal box of Koria station was manned.

A freight train arriving from the direction of Lahti had stopped on the southbound track, to the west of the Koria station. The incident occurred when a passenger train, arriving from the direction of Kouvola along the northbound track and passing through the turnouts near the western end of the Koria station, entered the southbound track in front of the freight train. The engine driver of the passenger train noticed the danger in time and managed to stop the train 200 metres ahead of the locomotive of the freight train.

The immediate cause of this incident was the transverse route set for freight train ahead of the passenger train by the traffic controller. The traffic controller's situation awareness was not up to date, as a result of which his perception of the location of the passenger train was incorrect.

The situation arose due to signal E being inoperative. The signal box was not used to secure all routes.

Another contributing factor lay in a feature of the signal box, which enables the turnouts on the route being set to turn even if one or more of the track sections directly connected to the turnouts

is occupied. Furthermore, the signal box in use enabled a ”proceed” signal to be displayed for the freight train.

Unambiguous instructions were not issued for centralised traffic control during the construction work at the Koria operating point. Furthermore, the operating model did not utilise the safety features of the signal box to the full.

To prevent similar situations from occurring, the investigation commission recommends that safety planning should be enhanced during transitional stages.

Two organisational changes occurred while the investigation was in progress: the Finnish Rail Agency became part of the Transport Safety Agency, while the Finnish Rail Administration was incorporated into the Finnish Transport Agency. The previous names are used throughout the investigation report.

### 3.5 Comment and introduction or background to the investigations

**Investigations commenced in 2010 and not followed**

| **Date** of occurrence | **Title of the investigation** (Occurrence type, location) | **Legal basis** | **Reason of non following or suspension of investigations** | **Who, why, when (decision)** |
|---|---|---|---|---|
| | - | | | |

### 3.6 Accidents and incidents investigated during last five years (in 2006–2010)

**Rail investigations in 2006–2010**

| **Accidents investigated** | | **2006** | **2007** | **2008** | **2009** | **2010** | **TOT** |
|---|---|---|---|---|---|---|---|
| Serious accidents (Art 19, 1 + 2) | Train collision | 0 | 0 | 0 | 0 | 0 | **0** |
| | Train collision with an obstacle | 0 | 0 | 0 | 0 | 1 | **1** |
| | Train derailment | 0 | 0 | 0 | 1 | 1 | **2** |
| | Level-crossing accident | 0 | 7 | 5 | 8 | 4 | **24** |
| | Accident to person caused by RS in motion | 0 | 1 | 0 | 0 | 0 | **1** |
| | Fire in rolling stock | 0 | 0 | 0 | 0 | 0 | **0** |
| | Involving dangerous goods | 0 | 0 | 0 | 0 | 0 | **0** |
| Other accidents (Art 21.6) | Train collision | 0 | 0 | 2 | 0 | 0 | **2** |
| | Train collision with an obstacle | 1 | 0 | 1 | 0 | 0 | **2** |
| | Train derailment | 2 | 5 | 3 | 2 | 2 | **14** |
| | Level-crossing accident | 1 | 0 | 0 | 0 | 0 | **1** |
| | Accident to person caused by RS in motion | 0 | 0 | 0 | 0 | 0 | **0** |
| | Fire in rolling stock | 0 | 0 | 0 | 0 | 0 | **0** |
| | Involving dangerous goods[2] | 1 | 1 | 2 | 0 | 1 | **5** |
| | Incidents | 0 | 1 | 2 | 2 | 0 | **5** |
| **TOTAL** | | **4** | **14** | **13** | **13** | **8** | **52** |

[2] Belongs also to an other category and is not calculated another time to the total amount.

# 4 RECOMMENDATIONS

## 4.1 Short review and presentation of recommendations

### Implementation of recommendations during 2006–2010

| Recommendations issued | | Recommendation implementation status | | | | | |
|---|---|---|---|---|---|---|---|
| | | Implemented | | In progress | | Not to be implemented | |
| Year | [No.] | [No.] | [%] | [No.] | [%] | [No.] | [%] |
| **2006** | 8 | 2 | 25 | 2 | 25 | 4 | 50 |
| **2007** | 25 | 10 | 40 | 11 | 44 | 4 | 16 |
| **2008** | 20 | 6 | 30 | 11 | 55 | 3 | 15 |
| **2009** | 17 | 8 | 47 | 8 | 47 | 1 | 6 |
| **2010** | 15 | 3 | 20 | 12 | 80 | 0 | 0 |
| **TOTAL** | **85** | **29** | **34** | **44** | **52** | **12** | **14** |

Implementation of Recommendations, see Annex 1

A total of 285 recommendations were issued from the beginning of 1997 until the end of 2010. According to information available at 8 August 2011, 164 (64.4 %) recommendations were implemented and 46 (16.4 %) were decided not to be implemented. The fulfilment of recommendations can take time, as indicated by the fact that, of the 201 recommendations issued from 1997–2005, 152 (77.6 %) had been implemented by the end of 2010 and 34 (17.3 %) were decided not to be implemented.

## 4.2 Recommendations 2010

### S271 Specification of the turnout cleaning instructions

The wagon wheel flanges rose over the ice compressed in the flangeway of the crossing, and further off the rails.

*Work instructions for turnout cleaning related to winter maintenance should be specified, with special attention paid to ice removal. [C2/09R/S271]*[3]

Similar instructions should be drafted for so-called short YV54-200-1:9-0 turnouts.

Snow workers should be trained according to the new, further specified work instructions. Maintenance should be monitored in accordance with the management agreement.

[3] Code in the parenthesis means: C2/09R = Investigation report C2/2009R, S271 = Recommendation number 271.

### S272 Moving signal E681 to a more visible location

The bridge structures and the catenary suspension limit the visibility of the stop signal from the locomotive cab.

*Signal E681 should be moved to a more visible location. [C6/08R/S272]*

The signal could be moved north of the bridge or closer to turnout V651.

### S273 Limiting the area of set ATC construction areas

Broad ATC construction areas slow down traffic and force centralised traffic control to perform prioritisation in order to minimise delays from schedule. Non-standard arrangements also increase the risk of accident.

*Overly extensive ATC construction areas should be limited. [C6/08R/S273]*

### S274 Developing the advance notification

The train driver's advance notification information (ET) did not provide sufficient details about the construction area. The information, for example, did not point out that the signal box was functioning as normal and also did not remind the driver that the visible signals should be followed.

*Advance notification (ET) provided to the engine driver should provide more specific information about ATC construction area conditions. [C6/08R/S274]*

### S275 Development of automatic train running control equipment (ATC)

The information provided by the locomotive's running control as the train approached the ATC construction area was incomplete.

*The running control monitors of locomotives and the information provided via these monitors should be developed in such a way that they provide better information during non-standard situations. [C6/08R/S275]*

The locomotive's running control monitor should provide clear notification that the train is in an ATC construction area, that the speed limit is 80 km/h, and that the train must proceed in accordance with visible signals.

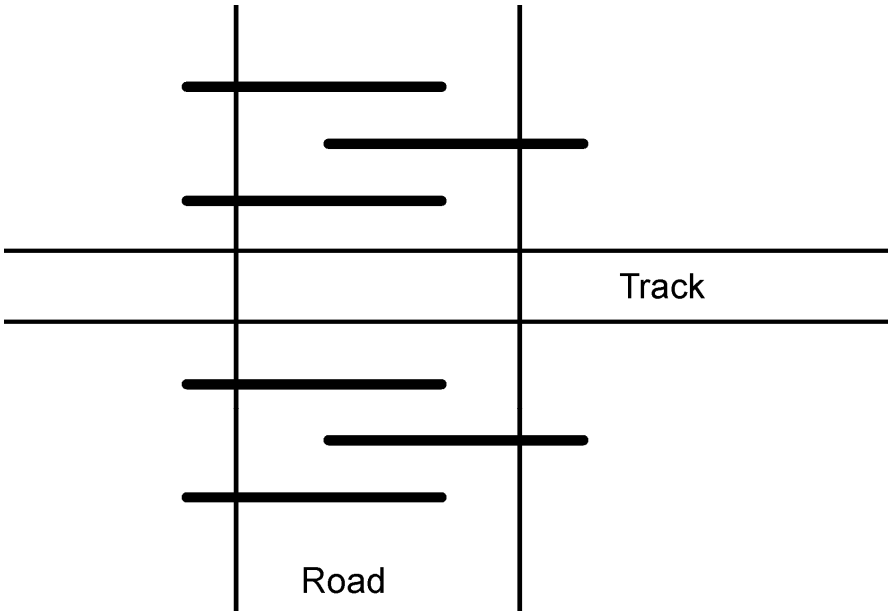
### S276 Removal of the unprotected level crossing on Pikakyläntie

The Pikakyläntie road is mainly used as a shortcut, and there are two guarded level crossings in the vicinity of the level crossing. Traffic on Pikakyläntie could be safely directed to these roads and over the Pori–Mäntyluoto track. In addition, since equipping a level crossing with a warning installation with half-barriers is expensive, the Investigation Commission recommends:

*The unprotected level crossing of Teurastamo on the Pikakyläntie road should be removed. [B1/09R/S276]*

The level crossing could be removed at minor cost by digging ditches on both sides of the track – continuing the current ditches – at the site of the road and removing the planking.

Furthermore, the level crossing can be closed to vehicle traffic only, at which point it must be equipped with pedestrian and bicycle traffic gates (see the diagram below).




If the level crossing is retained, it should be repaired in accordance with instructions equipped with a warning installation with half-barriers, and the embankment on the district-heating pipes should be lowered.

The safest solution would be the removal of the level crossing from the Pori–Mäntyluoto rail section in accordance with the plan prepared by the town of Pori.

**S277 Facilitating location of an accident site**

Time was wasted in locating problems between the engine driver and the traffic controller and between the traffic controller and the Emergency Response Centre. Because of these difficulties, the traffic controller had problems clarifying to the ERC operator the location of the level crossing. For the entire duration of the rescue operation, the level crossing was referred to with incorrect names. At their worst, such location problems can lead to treatment procedures being delayed, with fatal consequences.

*A variety of operators should develop systems and implement equipment to facilitate location of an accident site. [B1/09R/S277]*

*Means might be, for example:*

- The engine driver, traffic controller, and ERC all having a copy of the same rail-section-specific list of level crossing locations. The list should specify the exact location and name of the level crossing. This would, in part, aid in communications between the parties. Now, a significant amount of time is spent in locating the level crossing.
- The Emergency Response Centre Administration should attend to all ERCs using the location details of the railway network in a consistent manner.

Nowadays, an alternative, faster way of locating locomotives would be to equip them with a GPS[4] unit, which would provide precise location details in an easily transmittable format.

**S278 Removal of the Köykäntie level crossing**

Based on traffic volumes and the angle at which the road and track meet, the Köykäntie unprotected level crossing should be equipped with a warning installation with half-barriers, in accordance with the Finnish Rail Administration's technical regulations (RATO). Given that there are two safer routes equipped with half-barriers available for residents nearby, the level crossing could be removed at little cost.

*The Köykäntie unprotected level crossing should be removed. [B4/09R/S278]*

The Eurajoki municipality should assess whether the Köykäntie unprotected level crossing is necessary, and remove it in cooperation with the Finnish Transport Agency. Alternatively, if this is not done, the level crossing should be equipped with a warning installation with half-barriers.

Until the level crossing is removed or equipped with a half-barrier, safety at the level crossing can be improved by reducing the road speed limit, by improving visibility at the crossing by clearing trees, or by placing stop signs on the road ahead of the crossing. In addition, the angle at which the road and track meet should be such that visibility is good in both directions.

**S279 Equipping the level crossing with a warning installation with half-barriers**

Because the Hyvämäki unprotected level crossing does not meet technical regulations (RATO) in terms of sightlines, wait platforms and road juncture distances, and because traffic volumes are high, the investigation commission recommends the following:

*The Hyvämäki level crossing wait platforms should be reconditioned and road junctures should be relocated sufficiently far from the crossing. The level crossing should also be equipped with a warning installation with half-barriers. [B2/09R/S279]*

[4] GPS = Global Positioning System.

Because Nurmijärvi municipality has already reserved funds for the project, the Finnish Transport Agency should proceed quickly with the related planning.

**S280 Safety management at the transitional stage**

Safety planning for the transitional stage was not entirely successful. The location of the construction area, the use of the railhead sign on the route, and the utilisation of the features of the signal box, were not appropriate in terms of the entire project. Decommissioning or exceptional usage of systems relating to Automatic Train Protection and safe traffic arrangements should be taken into account as separate risk factors in safety planning relating to the railway system.

*A risk assessment of technical safety systems as well as the planning, implementation, provision of instructions, and monitoring of safety-enhancing measures based on this assessment should be carried out in conjunction with all construction projects involving work on safety devices. [C4/09R/S280]*

**S281 Duty to clear the sightlines**

The relevant parties hold divergent views on the duty to clear the sightlines.

*The Ministry of Transport and Communications should ensure that such consistent guidelines on the duty to clear the sightlines are issued as are acceptable to all parties. [B7/09R/S281]*

**S282 Removal of the level crossing**

The Ingvallsby unprotected level crossing offers a shortcut to Nikuntie, but an alternative route to this destination also exists via road 186. The investigation commission therefore recommends the following:

*The Ingvallsby unprotected level crossing should be removed. [B3/09R/S282]*

**S283 Equipping the level crossing with a half-barrier**

The level crossing is very busy with various kinds of traffic, especially during the summer. Each year, nearly 4,000 people visit the premises of Yara Suomi on the other side of the crossing (Kotkaniemi road maintenance committee statement 5 November 2009). There is no alternative route to these premises. In addition, the Kotkaniemi private road maintenance committee covers four properties and summer residences with a total of 22 shareholders. Considering the busy domestic and international traffic on the Kotkaniemi road, the investigation commission recommends the following:

*The Kotkaniemi 1 level crossing should also be equipped with warning istallation with half-barriers. [B6/09R/S283]*

In its statement, the Finnish Transport Safety Agency notes that road users should be provided with the possibility to cross the track safely at the crossing, even if traffic volumes are low. The Vihti municipality notes in its statement that equipping the level crossing with half-barriers would be the only appropriate solution. Furthermore, the Vihti municipality suggests that the possible removal of the Kotkaniemi 2 level crossing be reviewed.

### S284 Condition verification and limit setting for station sidetracks

Knowing the actual condition of station sidetracks is of major importance to traffic control, which directs trains towards sidetracks when the traffic situation so requires. In order to ensure that traffic control can choose the right track for any given train, the Accident Investigation Board recommends the following:

*The Finnish Transport Agency should define the station sidetracks to which trains comprising heavy Russian wagons can be directed. Clear restrictions should be imposed with regard to tracks that are unsuitable for heavy Russian wagons. [C3/09R/S284]*

A heavy wagon is understood to be a wagon with an axle weight in excess of 20 tons.

### S285 Removal of the Lemettilä unprotected level crossing

With the supply of relevant signs and within limitations set by the road maintainer, traffic passing through the Lemettilä unprotected level crossing could be redirected to cross the bridge on road 637 north of the crossing. In addition, given that equipping the crossing with a half-barrier installation is expensive and would not ensure that further accidents are prevented, the investigation commission recommends:

*The Lemettilä unprotected level crossing should be removed. [B9/09R/S285]*

Alternatively, if it is decided that this removal should not take place, the level crossing should be equipped with a half-barrier installation.

Relevant clearance work should be completed immediately to ensure that sightlines at the level crossing are in accordance with the track speed limit at the crossing, or alternatively the maximum speed limit should be reduced to match the sightlines.

**RECOMMENDATIONS**

| | | | |
|---|---|---|---|
| ***Date and time (Code):*** | 30.3.2005, 4.07 (B1/2005R) | | |
| ***Location:*** | Between Saakoski and Jämsänkoski | | |
| ***Type of occurrence:*** | Derailment of car | | |
| ***Train type and number:*** | Passenger train 802, locomotive Sr1 + 7 car | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 3 | |
| | ***Passengers:*** | ≈50 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | Derailed wagon and its bogie damaged. | | |
| ***Damages on track equipment:*** | About 1 200 meters of track were damaged. | | |
| ***Other damages:*** | None | | |

***Summary*****:** At Jämsä on the Jyväskylä - Tampere section of line between the Saakoski and Jämsänkoski stations, on Wednesday March 30, 2005 early in the morning an incident occured where a bogie of a car of the 802 passenger train derailed at a rail breakage. The train was carrying about 50 passengers. Neither the passengers nor the train crew were injured in the incident. The total cost of the accident was 127 600 euros.

| | |
|---|---|
| ***Final report issued:*** | 15.1.2007 |

| ***Recommendation Nr. S211*** | | |
|---|---|---|
| | **The instructions for the drawing up of an emergency notice should be developed to ensure that whenever urgent aid is needed from the rescue service, also the general emergency number is called from the incident scene, in addition to the notifying of the traffic control unit.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009[5] | In progress | The ERC Administration supports, VR Ltd is against. |
| 19.2.2010 | In progress | The ERC Administration supports, VR Ltd will consider to change directions when the new GSM-R system is in use. |
| 16.6.2011 | In progress | Emergency Response Centre, VR Group Ltd and Finnish Transport Agency in co-operation are drafting the procedure. |

| ***Recommendation Nr. S212*** | | |
|---|---|---|
| | **The compliance of the localization data used by the railway with the data system of the Emergency Response Centre Agencies shall be ensured, e.g. by installing the track-kilometre data in the data system of the Emergency Response Centre Agencies.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | Under process. |
| 19.2.2010 | In progress | Will be taken into consideration in ERC Administration's TOTI project. |
| 16.6.2011 | In progress | Emergency Response Centre, VR Group Ltd and Finnish Transport Agency in co-operation are drafting the procedure. |

| | |
|---|---|
| ***Date and time (Code):*** | S1/2005R |
| ***Location:*** | - |
| ***Type of occurrence:*** | Safety Study on Level Crossing Accidents |

***Summary*****:** At the request of VR-Group Ltd, in December 2005 the Accident Investigation Board of Finland commenced a safety study on road/railway level crossing accidents and appointed a commission therefor. The safety study included seven recent level crossing accidents, the first one of which had been subject to investigation before the commencement of the safety study referred to. Moreover the commission investiagted other level crossing accidents having occurred in 2003, 2004 and 2005, on the basis of data collected by VR-Group Ltd. The investigation also included fatal level crossing accidents in 1991–2004 as based on investigation documents produced by the Traffic Safety Commis-

[5] Date of the annual meeting concerning status of the recommendations, if not said otherwise.

| | | |
|---|---|---|
| sion of Insurance Companies (VALT), statistics from 1991–2004 on level crossing accidents and railway and road traffic accidents, international statistics on level crossing accidents and railway and road traffic accidents, as well as investigation reports on individual accidents in certain countries and documentation pertaining to projects on the development of level crossing safety in some countries. | | |
| ***Final report issued:*** | 20.06.2007 | |
| ***Recommendation Nr. S215*** | As the road vehicle driver's perception error is often the cause of his failing to stop at a level crossing, the perceptibility of both the train and the level crossing should be improved. For example, in the accidents investigated by the commission, the road vehicle driver either failed to perceive the train or only perceived it too late. | |
| | **The perceptibility of a train and a level crossing should be improved.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | Different kind of alternatives is tested. |
| 19.2.2010 | In progress | Bumps and vibration ribs on road are on tests. |
| 16.6.2011 | In progress | Studies and tests have been made and will continue. |
| ***Recommendation Nr. S216*** | A great number of level crossings feature high speed limits, even 80 km/h. This impacts the road vehicle driver's impression of a safe level crossing and hence his/her driving behaviour at the level crossing. | |
| | **At a level crossing the maximum speed allowed on the road should be 50 km/h or lower as depending on the locality and the characteristics of the level crossing.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | Will be taken up when drafting new directions. |
| 16.6.2011 | Not yet implemented | |
| ***Recommendation Nr. S217*** | At a number of level crossings, the condition of the wait platform fails to meet the relevant RAMO[6] specifications. This often results in an unwillingness to stop at the level crossing. | |
| | **Such wait platforms of level crossings that feature a poor condition should be upgraded to meet the relevant RAMO specifications.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | No greement on who should be responsible for. |
| 16.6.2011 | In progress | Wait platforms belong to road keepers. Most of roads are private.<br>Road Association has started to pay attention and will need co-operation with of authorities. Road Association has organized training for the maintenance of level crossings. |
| ***Recommendation Nr. S218*** | The regulations in Part 9, RAMO are not applied to old level crossings. Consequently it is not quite clear what regulations apply to the maintenance of level crossings. | |
| | **Maintenance instructions should be drawn up for level crossings.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | |
| 16.6.2011 | In progress | Maintenance orders and instructions are under preparation. |
| ***Recommendation Nr. S219*** | At the moment it is not possible to restrict traffic on level crossings or prohibit the use of level crossing, e.g. for heavy-duty road vehicles, even in case of an extremely dangerous level crossing. For example, on the rail network there are level crossings with sightlines that are insufficient for a safe crossing of the level crossing by a combined transport vehicle. Nevertheless the use of the crossing cannot be prohibited. | |
| | **The railway keeper and the safety authority should be allowed to restict road vehicle traffic on level crossings.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | The Rail Act makes it possible. |
| 19.2.2010 | In progress | The Rail Act makes it possible when making track plan and the use is changed. |
| 18.8.2011 | **IMPLEMENTED** | According to the Rail Act restriction of traffic is possible. |

[6] RAMO = The Track Technological Rules and Regulations.

| | | |
|---|---|---|
| ***Recommendation Nr. S220*** | In many countries, the warning whistle given by a train is a key safety element. In some countries this is even mandatory and in some countries, it is customary to whistle at all level crossings. On the other hand, whistling generates noise nuisance. Furthermore no Finnish research data exists as for the audibility and conspicuousness of whistles. | |
| | **A study should be conducted on the use of whistles at level crossings.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | No plan to go over. No evidences of the need. |
| 19.2.2010 | In progress | No evidences of the need. |
| 16.6.2011 | **NOT TO BE IMPLEMENTED** | VR: When there are level crossings close to each other, whistle would be used all the time. |
| ***Recommendation Nr. S221*** | If the advance route plan has been drawn up poorly or on an erroneous basis, leads this to unnecessary and dangerous crossings, especially for heavy vehicles. | |
| | **In their route plans, transport operators should consider possible crossings of railways. Railway crossings should be minimized and more safe crossings prioritized.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | |
| 16.6.2011 | **IMPLEMENTED** | Transport and Logistics organisation remind regularly the members about the matter in newsletters and the Journal. |
| ***Recommendation Nr. S222*** | As the amount of building land continuously diminishes especially in big population centres, new areas are planned with only poor transport connections. A road may cross a railway in a place where the crossing was originally designed and built for only one house or one farming road. The planning of transport connections should be carefully carried out so as to ensure safe access to the area. | |
| | **In land use planning, special attention should be paid to safe railway crossing, and the building of new level crossings should be avoided.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | The Ministry of Environment has enclosed this issue in a publication.. |
| 16.6.2011 | **IMPLEMENTED** | The instructions of the environmental administration. |

| | | | |
|---|---|---|---|
| ***Date and time (Code):*** | 21.6.2005, 16.04 (C2/2005R) | | |
| ***Location:*** | Helsinki railway station | | |
| ***Type of occurrence:*** | Collision with an obstacle | | |
| ***Train type and number:*** | Passenger train 171 | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1+1 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | The end- and substructures of the collided coach. | | |
| ***Damages on track equipment:*** | Trackbuffer | | |
| ***Other damages:*** | None | | |
| ***Summary*****:** In Helsinki on 20 April 2005 at 16.04, while being shunted to its departure track, passenger train 171 collided with a rail barrier, broke it and, having mounted it, continued for a further six metres towards the end platform. | | | |
| ***Final report issued:*** | 26.9.2007 | | |

| | |
|---|---|
| ***Recommendation Nr. S223*** | In order to identify the cause of the audibility disturbances, and to determine whether the technical requirements for escort radios are sufficient and whether some new technical solutions are required to guarantee audibility, the Accident Investigation Board recommends the following: |

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|---|---|---|
| | **The operation of escort radios at Helsinki Central Railway Station must be inspected in order to identify any black spots in radio audibility and any external interference.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | Use of GSMR-radio will cancel the audibility disturbances. 2010 in use. |
| 19.2.2010 | In progress | Nothing new. |
| 16.6.2011 | **IMPLEMENTED** | Implemented in a different way. GSMR is in use and shunting of passenger trains is carried out with indoor phone. |

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| ***Date and time (Code):*** | 17.1.2007, 10.52 (B1/2007R) | | |
| ***Location:*** | Närpiö, Kallmossvägen / Karlå level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – van | | |
| ***Train type and number:*** | Freight train 3273, two Dv12 diesel locomotives and 35 wagons | | |
| ***Road vehicle:*** | Van Opel Astra, 2001 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The locomotive suffered minor damage while the van was wrecked beyond repair. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | Deliverable post was lost and damaged. | | |
| ***Summary*:** On Wednesday 17 January 2007 at 10.50 a.m. an accident occurred in Närpiö in which a train carrying lumber on its way from Seinäjoki to Kaskinen collided with a van at an unprotected level crossing. | | | |
| ***Final report issued:*** | 23.11.2007 | | |

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| ***Recommendation Nr. S224*** | When driving on a familiar route, a driver performing a delivery task may pay such strong attention to matters other than driving that his/her attentiveness, and following the traffic and his or her surroundings is disrupted. At such moments, special danger zones include unguarded level crossings. | |
| | **Itella and other businesses performing deliveries can improve safety by avoiding unguarded level crossings when planning their delivery routes.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 16.6.2011 | In progress | Finnish Transport and Logistics will also remind Itella of this subject. |

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| ***Recommendation Nr. S225*** | Level crossings and other dangerous locations should also be taken into consideration when mail is sorted route-specifically. | |
| | **A warning sign notifying of a dangerous location on the route, placed between sorted mail stacks being delivered, might act as a prompt to the mail carrier when he/she arrives at the dangerous location on the route.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 16.6.2011 | In progress | |

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| ***Recommendation Nr. S226*** | As the use of navigators is becoming more common, they can be complimented with various programs which will warn of dangerous locations en route. | |
| | **A navigator/GPS device in the vehicle, should be installed warning of dangerous locations such as level crossings.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | Level crossing databank for navigators can be downloaded from the internet. |
| 16.6.2011 | In progress | |

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| ***Recommendation Nr. S227*** | Using the safety belt in an accident, even when driving at moderate speeds, may prevent injury or death. | |
| | **Compulsory use of safety belts should be expanded to include delivery vehicle drivers and passengers, irrespective of the driving distance.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | Finnish Transport and Logistics supports because of safety reasons. |
| 16.6.2011 | In progress | |

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| ***Date and time (Code):*** | 5.3.2007, 14.39 (B2/2007R) | | |
| ***Location:*** | Nivala, Niskakankaantie / Pahaoja level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, Passenger train – car | | |
| ***Train type and number:*** | Local train H494, Dm12 rail bus | | |
| ***Road vehicle:*** | Passenger car Renault Laguna Break 1.6, 2000 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | 1 |
| | ***Passengers:*** | 25 | 1 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 1 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | Slight damages to the rail bus, the car was completely wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Monday 5 March 2007 at 2.39 p.m., a level crossing accident took place involving a passenger car and a rail bus travelling from Ylivieska to Iisalmi. Both the driver and the passenger of the car perished, while the train personnel and passengers were unharmed. The accident wrecked the car beyond repair, while the train suffered only minor damage. The total material costs due to the accident were approximately EUR 70,000.

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| ***Final report issued:*** | 23.11.2007 |

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| ***Recommendation Nr. S228*** | The Pahaoja unguarded level crossing is situated on a busy private road in Niskakangas which, in addition to the locals, is used by regular taxi traffic and heavy traffic due to farming and industry in the area. For train safety alone, it would be extremely important that the level crossing be equipped with a warning station with automatic gates. This measure would also increase the likelihood that a driver notices an approaching train, thanks to lowered or lowering gates. | |
| | **The Pahaoja unguarded level crossing should be equipped with a half barrier equipment.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | RHK is not going to install the level crossing with barriers. |
| 16.6.2011 | In progress | Nivala town is of the opinion that the level crossing should be equipped with half barriers. |

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| ***Recommendation Nr. S230*** | The lower part of the fender, attached with screws, was torn loose in the collision. Had it been caught underneath the wheels it might have derailed the train. | |
| | **The structure of the obstruction cleaning device of Dm12 rail bus should be such that it is either formed of one piece or possible additional parts are attached sufficiently well.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | The construction has been designed. |
| 19.2.2010[7] | **IMPLEMENTED** | Fastened by welding. |

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| ***Date and time (Code):*** | 2.2.2007, 9.01 (C1/2007R) |
| ***Location:*** | Pelto switch area at the Joensuu railway yard |
| ***Type of occurrence:*** | Accident during shunting work |
| ***Train type and number:*** | Shunting unit, Dr14 diesel locomotive and 7 wagons |
| ***Road vehicle:*** | |

[7] Decision made.

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| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1+3 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 1 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | None | | |
| ***Damages on track equipment:*** | None | | |
| ***Other damages:*** | The shunting unit foreman's radio telephone got unuseable broken. | | |
| ***Summary*:** An accident claiming the life of a shunting unit foreman occurred at the Joensuu railway yard onriday 2 February 2007 at 9.01 a.m. The foreman, employed by VR Cargo Joensuu, perished instantly after being run over by one of the wheels of a freight car. | | | |
| ***Final report issued:*** | 7.12.2007 | | |

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| ***Recommendation Nr. S233*** | In the instructions for safe rail yard work, it is stated that the footwear used must be suitable for shunting work and special attention must be paid to the footwear being supportive of the ankles and that the material used in the soles must be of the kind that reduces the risk of slipping. According to test results, the footwear model used at the time of the accident was of average level regarding grip. The grip category of the footwear in the conditions at the time of the accident was "uncertain" and "slippery" in terms of the heel's side slip. | |
| | **The grip of footwear used in rail yard work should be better than average under all weather and working conditions.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | Tests have been done and tests are going on. |
| 16.6.2011 | **IMPLEMENTED** | After tests new footwear has been purchased. |

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| ***Date and time (Code):*** | 6.5.2007, 15.33 (B4/2007R) | | |
| ***Location:*** | Kiuruvesi, Pohja level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, passenger train - car | | |
| ***Train type and number:*** | Regional train 746, two Dm12rail busses | | |
| ***Road vehicle:*** | Car Nissan Almera 4D Sedan, 2005 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | 1 |
| | ***Passengers:*** | ≈60 | 1 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 1 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The car was wrecked beyond repair. Equipment of the train's nose and substructure were damaged | | |
| ***Damages on track equipment:*** | The wooden covering on the level crossing sustained minor damage. | | |
| ***Other damages:*** | None | | |
| ***Summary*:** A fatal level crossing accident took place in Kiuruvesi, at the unprotected level crossing of Pohja. This accident occurred when a car travelling along the Pohja private road drove without stopping under a rail bus running from Ylivieska to Iisalmi. There were two passengers in the car; the driver perished and the front seat passenger was seriously injured. | | | |
| ***Final report issued:*** | 29.1.2008 | | |

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| ***Recommendation Nr. S234*** | Since the Pohja level crossing is dangerous with regard to its conditions and very near a safe overpass, the investigation commission recommends: | |
| | **The Pohja level crossing should be closed and a replacement overpass be created at the Hilapparannantie bridge.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | |

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| 18.8.2011 | In progress | |
| ***Recommendation Nr. S235*** | The Pohja level crossing is located very close to a safe overpass, and the cost of its removal would be reasonably low. The safe overpass located nearby is not utilised in the current situation.<br>The Finnish Rail Administration should systematically locate and remove level crossings in cases where the removal and construction of a replacement route could be performed at a minor cost. Due to this, the investigation commission recommends: | |
| | **The Finnish Rail Administration should systematically locate crossings that have a bridge nearby or whose traffic can otherwise be directed through a safer route, removing them even though their volume and risk level might be low.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 18.8.2011 | In progress | |
| ***Recommendation Nr. S236*** | The start of the accident rescue operation was hindered by the fact that the emergency alarm call made by a traffic controller was patched through to the North Ostrobothnia and Kainuu Emergency Response Centre, which was not the Emergency Response Centre responsible for the accident site. Since railway traffic control areas are typically part of more than one Emergency Response Centre's area, the opportunities traffic controllers have for making emergency alarm calls should be enhanced. Due to this, the investigation commission recommends: | |
| | **Traffic controllers should have the capacity to place an emergency alarm call to the Emergency Response Centre in the ERC area in which the accident site is located.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | On process. |
| 19.2.2010 | In progress | Remote controllers have direct numbers to different ERCs. |
| 16.6.2011 | In progress | Emergency Response Centre, VR Group Ltd and Finnish Transport Agency are drafting guidelines in co-operation. |

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| ***Date and time (Code):*** | 9.3.2007, 16.13 (B3/2007R) | | |
| ***Location:*** | Särkisalmi, Sinkonen level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, passenger train -- car | | |
| ***Train type and number:*** | Regional train 746, Dm12-railcar | | |
| ***Road vehicle:*** | Car Mercedes Benz 190D, 1985 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | 1 |
| | ***Passengers:*** | 34 | 1 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 1 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The railcar's blockage bumper and automatic coupling of the rail bus were damaged, while the passenger car was severely damaged. | | |
| ***Damages on track equipment:*** | None | | |
| ***Other damages:*** | None | | |
| ***Summary*****:** A level crossing accident involving a passenger car and a rail bus travelling from Savonlinna to Parikkala took place in Särkisalmi on 9 March 2007 at 4.13 p.m. The driver and passenger of the passenger car were killed but the train personnel and passengers escaped uninjured. The passenger car was completely wrecked and the train sustained minor damage. | | | |
| ***Final report issued:*** | 12.12.2007 | | |
| ***Recommendation Nr. S237*** | Drivers cross a railway through the Särkisalmi level crossing, equipped with half-barriers, as they drive along Melkonniementie to the Särkisalmi residential area. This route is 200 metres longer than the route taken by the vehicle driver through the Sinkonen level crossing. In order to prevent this dangerous shortcut from being used, the Accident Investigation Board recommends: | | |

| | **The Sinkonen level crossing located in the Särkisalmi residential area should be removed.** | |
|---|---|---|
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | The speed limit area of the track has been lengthened. |
| 16.2.2010 | In progress | Parikkala municipal executive board renews comment that the Sinkonen level crossing should be equipped with warning installations. |
| 16.6.2011 | Not yet implemented | The Parikkala municipality and Finnish Transport Agency do not agree on the matter. |

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| ***Date and time (Code):*** | 21.3.2007, 10.33 (C2/2007R) | | |
| ***Location:*** | Ylivieska railway station | | |
| ***Type of occurrence:*** | Derailment | | |
| ***Train type and number:*** | Freight train 5406, electric locomotive Sr1 + 23 wagons | | |
| ***Road vehicle:*** | - | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | The coupling equipment of two wagons and the bogie of the derailed wagon were damaged. | | |
| ***Damages on track equipment:*** | The electric-motor switch drives of two turnouts were damaged. | | |
| ***Other damages:*** | None. | | |
| ***Summary*:** On Wednesday, 21 March 2007, at 10:33 am, one wagon of the freight train en route from Oulu to Ylivieska was derailed at the northern turnout of the Ylivieska station, as the train was switching from main track to side track. | | | |
| ***Final report issued:*** | 3.3.2008 | | |
| ***Recommendation Nr. S238*** | Because inspections had not reacted to the wheel flat or the broken leaf, the Accident Investigation Board of Finland recommends: | | |
| | **Greater care should be exercised during statutory freight train inspections, and any flaws observed should be acted upon more quickly than is currently the case.** | | |
| ***Date*** | ***Status*** | ***Comments*** | |
| 20.1.2009 | In progress | | |
| 16.6.2011 | **IMPLEMENTED** | Will be taken in account when instructions of railway yard working are drafted. | |

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| ***Date and time (Code):*** | 31.12.2005, 9.14 (C9/2005R) | | |
| ***Location:*** | Tuupovaara railway yard | | |
| ***Type of occurrence:*** | Derailment | | |
| ***Train type and number:*** | Shuntig unit, Dv 12 diesel locomotive and 11 wagons | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1+1 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 1 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | The derailed wagon suffered minor damages. | | |
| ***Damages on track equipment:*** | None | | |
| ***Other damages:*** | None. | | |
| ***Summary*:**. On Saturday 31 December 2005 at 9.14 a.m., a shunting accident occurred in the Tuu- | | | |

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| povaara railway yard, in which a group of empty wagons for carrying wood products, being pushed by an engine, collided with a derailer, causing the derailment of the first wagon in the direction of travel. The shunting foreman, who was standing on the wagon's left end step, was seriously injured after falling between the tracks and being hit by the left end step of the next wagon as he extricated himself from the moving wagons. The step dragged him for several metres before he was able to break free. | | |
| ***Final report issued:*** | 15.4.2008 | |
| ***Recommendation Nr. S239*** | Because the derailers are widely used in railway yards, it should also be ensured that they can be operated as safely as possible. | |
| | **It should not be possible to remove the key from a derailer's safety lock without also removing the derailer from the rail.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | No instructions exist. |
| 18.8.2011 | **NOT TO BE IMPLEMENTED** | Will exist on silent section of line. |
| ***Recommendation Nr. S240*** | | |
| | **Greater attention should be paid to shunting work safety during the ploughing of snow in rail yards.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 18.8.2011 | | |

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|---|---|---|---|
| ***Date and time (Code):*** | 13.8.2007, 15.15 (B5/2007R) | | |
| ***Location:*** | Nurmijärvi, Röykkä, Leppälammentie / Korpi level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, Freight train – car | | |
| ***Train type and number:*** | Freight train 3649, 2 Dv12 diesel locomotives and 41 wagons | | |
| ***Road vehicle:*** | Car Ford Sierra 2.0, 1990 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 1 |
| | ***Passengers:*** | 0 | 1 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 1 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | Damages to the equipment of locomotive nose, private car entirely wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None | | |

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| ***Summary*:**.. On Monday 13 August 2007 at 3.15 p.m., a level crossing accident occurred in Röykkä, Nurmijärvi, in which a passenger car collided with a freight train en route from Kirkniemi to Riihimäki, resulting in the death of the car's passenger and serious injuries to the car driver. | | |
| ***Final report issued:*** | 23.6.2008 | |
| ***Recommendation Nr. S241*** | Because the area's growing population is continuously increasing the volume of traffic at the Korpi level crossing, and because fast growing bushes around the crossing do not enable the maintenance of visibility in line with Ministry of Transport and Communications and Finnish Railway Administration requirements, the investigation commission recommends the following: | |
| | **The Korpi level crossing should be equipped with half-barriers.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | Will be equipped with half barriers, when the financing is ok. |
| 19.2.2010 | In progress | In action and economic plan 2010–2013. |
| 18.8.2011 | Not yet implemented | No funding yet. |

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| ***Date and time (Code):*** | 21.11.2007 (B7/2007R) |
| ***Location:*** | Lahti, Heikinpellontie level crossing, unprotected |
| ***Type of occurrence:*** | Level crossing accident, freight train – car |
| ***Train type and number:*** | Freight train 2873, Dv12 diesel locomotive |

## Annex 1/10 (25)

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|---|---|---|---|
| ***Road vehicle:*** | Car Volkswagen Golf 1.6, 1999 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The car was wrecked beyond repair. The front of the locomotive sustained some damage. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On 21 October 2007 at 12.55 p.m., a fatal level crossing accident occurred on an unprotected level crossing along Heikinpellontie road in Lahti. The accident occurred when a car on Heikinpellontie road drove without stopping in front of a locomotive en route from Lahti to Heinola. The driver, who was the sole person in the car, died instantly. The accident occurred because the driver of the car did not see the train. The level crossing in question meets regulations concerning visibility and crossing angles, but does not meet those concerning wait platforms. It is possible that the driver was not sufficiently vigilant due to familiarity with the crossing and the impression that train traffic was infrequent there.

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| ***Final report issued:*** | 9.9.2008 |

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| ***Recommendation Nr. S243*** | Track renovation investments have been scheduled for the Lahti–Heinola track within the next few years. The intended focus is on track technology renewal, but it is clear that the investments will also cover raising level crossing safety to the level set in technical track requirements (RATO). Considering the danger posed by the level crossings along the track at the moment, it is recommended that actions to improve level crossing safety are initiated in advance before the investments proper. Such actions include the following: possible replacement of level crossings with alternative road routing, sightline improvements, wait platform improvements and crossing angle adjustments. | |
| | **Actions to improve level crossing safety along the Lahti–Heinola track should be carried out before the initiation of scheduled renovation investments.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | In some level crossings there has been reduced speed limit on roads. |
| 18.8.2011 | In progress | Lahti town proposes to make a level crossing plan and to enclose it to the building program in the next few years. |

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| ***Recommendation Nr. S244*** | The speed limit along the Lahti–Heinola track is currently 60 km/h for the most part. However, sightline on many level crossings is limited to such an extent that an accident is possible even if nobody makes a mistake or there is no technical fault in the vehicles. The track profile does not allow for a reduction in speed limits to the appropriate levels, but it is nevertheless possible to reduce speeds to some degree. | |
| | **The speed limit along the Lahti–Heinola track should be reduced in the proximity of level crossings with poor sightline to the extent that this is reasonably possible.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | Is not yet reduced. |
| 18.8.2011 | **IMPLEMENTED** | The speed limit has been lowered to 60 km/h. |

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| ***Date and time (Code):*** | 4.8.2007, 6.24 (C6/2007R) | | |
| ***Location:*** | Siilinjärvi, Kemira GrowHow Oyj industrial railway yard | | |
| ***Type of occurrence:*** | Derailment | | |
| ***Train type and number:*** | Shunting unit, 3 Dv12 diesel locomotives + 6 tank wagons | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |

| | | | |
|---|---|---|---|
| ***Persons on board:*** | ***Crew:*** | 1 + 2 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | Tank isolation and bogies of the overturned wagon damaged. Minor damages to two other wagons. | | |
| ***Damages on track equipment:*** | Derailer and 5 meter track damaged. | | |
| ***Other damages:*** | None. | | |

***Summary*:** At Kemira GrowHow Oyj railway yard an accident occurred on Saturday 4.8.2007 at 6.24 am, where a tank wagon loaded with nitric acid collided with a derailer, causing the wagon to derail and tip over. The following wagon also derailed. It stayed upright. The total cost of the accident was less than 50 000 euros.
The reason for the accident was that the derailer was not removed before shunting of the wagons and that the derailer that had been left on was not noticed in time. The shunting foreman gave order to shunt without securing the route first.

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| ***Final report issued:*** | 28.10.2008 |

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| ***Recommendation Nr. S247*** | Right operation of the derailer should always be secured so that misuse could not be possible. Forgetting a derailer on should be hindered. | |
| | **A derailer should always have interdependence to the turnout which leads to the track in question. Especially railway yards where dangerous substances are handled should always be built according to regulations.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | No instructions exist. |
| 18.8.2011 | In progress | |

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| ***Date and time (Code):*** | 15.7.2007, 18.11 (C5/2007R) | | |
| ***Location:*** | Talviainen station | | |
| ***Type of occurrence:*** | Derailment | | |
| ***Train type and number:*** | Freight train 3913, 2 Dv12 diesel locomotives and 35 wagons | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | Some brake clutches of the locomotive had to be replaced and wheels required lathing. | | |
| ***Damages on track equipment:*** | Track retainers broke off and the wheels of the derailed locomotive left marks on the sleepers. | | |
| ***Other damages:*** | The axle counter sensor and cable were replaced. | | |

***Summary*:** On Sunday 15 July 2007 at 6.11 p.m., one of the two locomotives of a freight train was derailed after passing a curved turnout in Talviainen station. The derailed locomotive incurred some damage.
The derailment occurred because the track was bent out of shape and therefore hindered passage.

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| ***Final report issued:*** | 18.11.2008 |

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| ***Recommendation Nr. S249*** | The rail inconsistency that was uncovered during the investigation would have been noticed earlier if track geometry measurements had been completed before the rail was taken into use, for example during final rail securing work. Final rail securing work is a good time for this, since today's securing machines enable track geometry measurements. Measurements could be a quality requirement. This would ensure that any geometries that do not meet regulations would become apparent before track commissioning. |

| | **Demanding surface construction projects should include rail geometry measurements before the track is taken into use. The measurements could be compared with set limit values.** | |
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| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | All of the constructors do not yet have devices. |
| 18.8.2011 | In progress | Some constructors have already obtained equipment. |

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| ***Date and time (Code):*** | 6.10.2008 (B6/2007R) | | |
| ***Location:*** | Kempele, Sohjanantie / Perälä level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, Pendolino train – car | | |
| ***Train type and number:*** | Pendolino S52, Sm3 electric motor train, 6 cars | | |
| ***Road vehicle:*** | Car Volkswagen Polo, 1998 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 3 | 1 |
| | ***Passengers:*** | 38 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | Damages to the locomotive nose and the equipment of nose, the car entirely wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Saturday 6 October 2007 at 11.36 a.m., a car and a Pendolino train en route from Oulu to Helsinki collided on the Perälä level crossing in Kempele, resulting in the death of the car driver. The train staff and passengers were not injured.
The direct cause of the accident was that the car driver drived onto the level crossing without stopping. It is likely that the driver failed to make any observation of the train approaching from the left.

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| ***Final report issued:*** | 29.12.2008 |

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| ***Recommendation Nr. S251*** | Because the speed limit at the level crossing is 140 km/h and because the track is in heavy use, the Accident Investigation Board recommends the following: | |
| | **The Perälä unprotected level crossing should be removed or replaced by an interchange.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | The municipality will remove the level crossing during chanc-ing the town plan. |
| 18.8.2011 | Not yet imple-mented | Will be removed in context of Seinäjoki-Oulu track project. |
| ***Recommendation Nr. S252*** | Because a car can become wedged under the front structure of the train when the structure breaks, the Accident Investigation Board recommends the following: | |
| | **The front structure of the Sm3 electric train should be redesigned to prevent cars from being wedged under the structure.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 20.1.2009 | In progress | |
| 19.2.2010 | In progress | |
| 16.6.2011 | Not yet imple-mented | According to VR the running features of the train would change too much. |

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| ***Date and time (Code):*** | 25.2.2008, 9.53 (B1/2008R) | | |
| ***Location:*** | Laukaa, Notkotie / Kauramaa level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – tractor | | |
| ***Train type and number:*** | Freight train 3359, Dv12 diesel locomotive and 27 wagons | | |
| ***Road vehicle:*** | Tractor Case IH 4240, 1997 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |

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| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The front of the locomotive sustained some damage, the tractor was totally wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None | | |

***Summary*:** On 25 February 2008 at 9.53 a.m., a fatal level crossing accident occurred on Laukaa's Kauramaa unprotected level crossing. A tractor returning along an agricultural road from ploughing work drove without stopping in front of a freight train en route from Jyväskylä to Suolahti. The only person in the tractor was the driver, who died from his injuries in hospital later that day.

The accident occurred because the driver of the tractor did not observe the approaching train and drove onto the level crossing without stopping. Furthermore, the crossing did not meet level crossing safety requirements on the part of the wait platform and with respect to sightline. Too short a wait platform, in particular, may have caused the driver to focus more than usual on controlling the tractor, to which extra equipment was hitched, as it approached and arrived at the crossing. The driver's visibility may also have been impaired due to the sun shining against him. The agricultural road was intended only for agricultural use and not for through-traffic.

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| ***Final report issued:*** | 26.1.2009 |

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| ***Recommendation Nr. S255*** | Two alternative routes in the vicinity of the Kauramaa level crossing offer safer access to agricultural fields surrounding the track. | |
| | **The Kauramaa level crossing should be removed.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | Laukaa community seconds the recommendation. |
| 18.8.2011 | Not yet implemented | The municipality of Laukaa and Finnish Transport Agency have not yet started discussions. |

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| ***Date and time (Code):*** | 25.9.2008, 16.18 (B6/2008R) | | |
| ***Location:*** | Iisalmi, Suurisuo level crossing, protected, equipped with half barriers | | |
| ***Type of occurrence:*** | Level crossing accident, passenger train – car | | |
| ***Train type and number:*** | Passenger train IC78, Sr1 electric locomotive and 7 coaches | | |
| ***Road vehicle:*** | Car Toyota Camry 4D sedan, 1998 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 4 | 1 |
| | ***Passengers:*** | ≈180 | 1 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 1 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The front and left side of the locomotive were damaged in the collision. The car was wrecked beyond repair. | | |
| ***Damages on track equipment:*** | A column supporting the track's electric cables and its foundations incurred damage. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On 25 September 2008 at 4.18p.m., a level crossing accident leading to two fatalities occurred at the half barrier equipped level crossing of Suurisuo in Iisalmi. The accident occurred when a private car driving slowly westward along Parkatintie road collided with a passenger train en route from Kajaani to Helsinki. The two persons in the car died instantly. The car was wrecked beyond repair.

The direct cause of the accident was that the car driver drove onto the level crossing without stopping. The driver applied the brakes only after the car had driven beneath the lowering barrier and was hit by it, with the result that the car stopped on the track. It is likely that the driver did not notice the level crossing warning signs or the lowering barriers. Potentially contributory factors possibly included the sun shining in the driver's face, a worn windshield, the driver's impaired eyesight, hearing and alertness.

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| ***Final report issued:*** | 15.6.2009 |

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| ***Recommendation Nr. S256*** | The visibility of red blinking warning signs should be improved at protected level crossings where bright sunlight from ahead inhibits the visibility of the level crossing warning signs. This has been tested along the Turku-Toijala track by replacing filament lamps with LED lamps, and the results indicate that drivers find the visibility of LED lights good. | |
| | **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.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | |
| 18.8.2011 | Not yet imple-mented | The town of Iisalmi supports the recommendation. |

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| ***Date and time (Code):*** | 26.8.2008, 10.43 (B5/2008R) | | | |
| ***Location:*** | Suonenjoki, Haapakoski, Konttila level crossing, unprotected | | | |
| ***Type of occurrence:*** | Level crossing accident, railway work unit – car | | | |
| ***Train type and number:*** | Railway work unit 7582, Service rail car Tka8 and 3 wagons | | | |
| ***Road vehicle:*** | Car Ford Sierra 4D 2.0, 1986 model | | | |
| | | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | | 1 + 2 | 1 |
| | ***Passengers:*** | | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | | 0 | 1 |
| | ***Passengers:*** | | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | | 0 | 0 |
| | ***Passengers:*** | | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | | 0 | 0 |
| | ***Passengers:*** | | 0 | 0 |
| ***Damages of rolling stock:*** | Slight damages to the service railcar, the car entirely wrecked. | | | |
| ***Damages on track equipment:*** | None. | | | |
| ***Other damages:*** | None. | | | |

***Summary*:** At 10.43 a.m. on Tuesday 26 August 2008, a railway work unit en route from Pieksämäki to Suonenjoki collided with a car at an unprotected level crossing in Suonenjoki.
The accident was fatal to the driver of the car. The car was damaged beyond repair and the railway work unit, which was a service railcar, incurred minor damage.
The direct cause of the accident was that the car driver drove onto the level crossing without stopping. In all probability, the driver completely failed to observe the railway work unit approaching from the left. The lack of a proper wait platform, a sharply rising road and limited visibility made it difficult to observe the surroundings and drive the car at the same time.

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| ***Final report issued:*** | 26.6.2009 |

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| ***Recommendation Nr. S257*** | The road rises too sharply before the level crossing and there is no proper wait platform. In addition, visibility is poor and does not meet the regulations in force. The crossing was also not equipped with the *unprotected railway level crossing* warning sign. A report in the level crossing database notes that the level crossing is dangerous. Although the Konttila level crossing is on a private road with little traffic, the track speed limit is 140 km/h and limited visibility makes even a diligent crossing dangerous. | |
| | **The sightlines of the level crossing should be improved and the wait platforms should be reconditioned to meet regulations and warning sign 171 should be installed.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | |
| 18.8.2011 | **IMPLEMENTED** | In a different way. The level crossing has been removed. |
| ***Recommendation Nr. S258*** | In their statement, the owners of the rights to the road indicated that they were not aware that they were responsible for the road's maintenance in the vicinity of the level crossing. | |
| | **The Finnish Rail Administration should inform parties in charge of road maintenance about their obligation to build and maintain road segments leading to level crossings as set out in the relevant regulations. The Finnish Rail Administration should also appropriately inform of any track changes to be made and any shortcomings discovered during inspection rounds.** | |

| ***Date*** | ***Status*** | ***Comments*** |
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| 19.2.2010 | In progress | |
| 18.8.2011 | Not yet imple-mented | Needs co-operation between Finnish Transport Agency and Road Association. |

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| ***Date and time (Code):*** | 8.6.2008, 5.48 (C5/2008R) | | |
| ***Location:*** | Jyväskylä railway yard | | |
| ***Type of occurrence:*** | Collision of the locomotive and the tamping machine at the railway yard | | |
| ***Train type and number:*** | 3 x Dv12 locomotive – turnout tamping machine Ttk2-857 | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 - 4 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 – 1 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | The tamping machine was damaged in the chassis, body, bogies, wheelsets and automated controls. The foremost locomotive's maintenance deck and hand rails were damaged on the right side. | | |
| ***Damages on track equipment:*** | About 20 metres of track was damaged. | | |
| ***Other damages:*** | None. | | |

***Summary*****:** On 8 June 2008 at 5.48 a.m., a turnout tamping machine was involved in an accident at the Jyväskylä railway yard, leading to the slight injury of a track foreman in the driver's cab of the tamping machine. The accident involved the collision of a unit consisting of three Dv12 locomotives with a tamping machine involved in work. The engine driver applied the emergency brakes, but the locomotives were unable to stop in time and the front corner of the foremost locomotive collided with the left corner of the tamping machine. The force of the collision caused the right rail to collapse underneath the tamping machine. The collision damaged the tamping machine in places including the chassis, body, automated controls, bogie and wheelsets. The foremost locomotive incurred damage on the right side of the maintenance deck and hand rails. About 20 metres of track were damaged.
The direct cause of the accident was that the front of the tamping machine, which was at work on turnout V032, extended so close to turnout V024 that the locomotives were unable to safely pass the tamping machine. Since turnout V032 was reserved because it was being replaced, turnout V024 was also reserved. In order to control and reverse turnout V024, the traffic controller had to use the VHP[8] command. The traffic controller was unaware of the precise location of the tamping machine. Another factor contributing to the accident lay in the fact that the tamping machine's foreman and the traffic controller had not agreed on the precise limits of the work area.

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| ***Final report issued:*** | 6.8.2009 |

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| ***Recommendation Nr. S261*** | The practice of vaguely prepared rail work notifications contributed to the accident. During the investigation, a review of recorded conversations indicated that the rail work notification only vaguely defined the limits of the work area in question for both the foreman of the tamping machine and the traffic controller. | | |
| | **Rail work notifications should precisely define the outermost limits of work areas.** | | |
| ***Date*** | ***Status*** | ***Comments*** | |
| 19.2.2010 | In progress | | |
| 18.8.2011 | **IMPLEMENTED** | Otherwise. The work area is marked to a map which is attached to the Rail work notification. | |

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| ***Recommendation Nr. S262*** | Just before the unit consisting locomotives and tamping machine collided, the traffic controller prepared a route for the locomotives through a turnout adjacent to the work area reserved for the tamping machine, using the VHP command. | | |
| | **Before executing the VHP command, the traffic controller should ensure that there are no other units at or within the vinicity of the turnout for which the command is given.** | | |
| ***Date*** | ***Status*** | ***Comments*** | |
| 19.2.2010 | In progress | | |

[8] VHP = emergence release of point locking.

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| 18.8.2011 | Not yet implemented | Should be included in instructions of traffic control centres. |

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| ***Date and time (Code):*** | 25.6.2008, 16.23 (B3/2008R) | | |
| ***Location:*** | Liperi, Viinijärvi, Huikuri agricultural road / Huikuri level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, passenger train – scooter | | |
| ***Train type and number:*** | Regional train 784, Dm12 rail bus | | |
| ***Road vehicle:*** | Scooter: Baotian BT49QT-7-TCAP7/49, 2006 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | 1 |
| | ***Passengers:*** | ≈20 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The rail bus was slightly damaged; the scooter was wrecked beyond repair. | | |
| ***Damages on track equipment:*** | The ploughing sign was bent | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Wednesday, 25 June 2008, at 4:22.50 pm, a level crossing accident involving a scooter and a rail bus en route from Joensuu to Pieksämäki occurred at the Huikuri level crossing. The accident was fatal to the driver of the scooter. The personnel and passengers of the rail bus remained uninjured. The scooter was wrecked beyond repair. The rail bus incurred damage to its left front corner and the obstruction clearing device. The repair costs of the rail bus amounted to EUR 1,400.

The direct cause of the accident was that the driver of the scooter drove onto the level crossing without stopping. The driver of the scooter probably did not notice the rail bus at all or saw it too late. Contributing to this were the following factors:

- the level crossing was very close to a highway with substantial traffic
- the driver of the scooter was focusing on maintaining balance as the road surface changed from tarmac to gravel
- the level crossing was not equipped with an active warning installation
- the rail bus was approaching the crossing at 120 km/h
- rail buses are silent and quite neutral coloured, which makes them difficult to see.

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| ***Final report issued:*** | 7.9.2009 |

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| ***Recommendation Nr. S263*** | There are several level crossings in the vicinity of the Huikuri unprotected level crossing through which traffic can be directed. | |
| | **The Huikuri unprotected level crossing should be removed.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | |
| 18.8.2011 | | |

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|---|---|---|---|
| ***Date and time (Code):*** | 13.6.2008, 13.50 (B2/2008R) | | |
| ***Location:*** | Helsinki, Mäkelänkatu 45, Mäkelänrinne stop, no. 0269 | | |
| ***Type of occurrence:*** | Collision, rear collision | | |
| ***Rolling stock type and number:*** | Articulated tram type I, no. 70, line 1, shift 3 – articulated tram type I, no. 42, line 7B, shift 71 | | |
| ***Road vehicle:*** | | | |
| | | ***In the tram*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 + 1 | |
| | ***Passengers:*** | 18 + 31 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 + 0 | |
| | ***Passengers:*** | 2 + 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 + 1 | |
| | ***Passengers:*** | 11 + 11 | |
| ***Damages of rolling stock:*** | The front of the tram colliding with the other was somewhat damaged, and the rear of the other tram was seriously damaged. | | |
| ***Damages on track equipment:*** | None. | | |

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| ***Other damages:*** | None. |
| ***Summary*:**. On Friday, 13 June 2008, at 1:50pm, a line-1 tram collided with the rear of a line-7B tram on the Mäkelänrinne stop, on Mäkelänkatu, in Helsinki. Two passengers were severely injured. A tram driver and 22 passengers were slightly injured. Several others received lesser injuries such as bruises and neck and shoulder pain and headaches caused by whip flash. The rails were not damaged and the trams remained on the rails. The rear of the line-7B tram was substantially damaged. For example, the chassis of the rearmost car was bent out of shape. The front of the line-1 tram was somewhat damaged, but after minor repairs it was temporarily operative.<br>The cause of the accident was that the driver of the tram approaching from behind was not able to stop the tram in time. The driver apparently tried to stop the tram via incorrect braking methods in the belief that the brakes were not working properly. The background factors were the driver's inexperience, the possibility that the driver anticipated that the tram ahead would leave the stop earlier, and the driver's suspicion that the brakes were not working properly and therefore the use of the incorrect braking method. | |
| ***Final report issued:*** | 4.11.2009 |

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| ***Recommendation Nr. S265*** | Tram driver training includes learning materials from several different teachers and is not organised well enough. The learning materials also overlap in part. | |
| | **Tram drivers should be provided with a personalised and logically progressing training programme.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | Will be implemented in 2010. |
| 16.6.2011 | **IMPLEMENTED** | |

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| ***Recommendation Nr. S266*** | The driving skills of tram driver trainees are reviewed during an on-the-job learning period, but this is not documented in writing. | |
| | **The training programme for driving performance should be documented.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | Will be implemented in 2010. |
| 16.6.2011 | **IMPELEMENTED** | |

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| ***Recommendation Nr. S267*** | The floor hatch that came off at the joints caused severe injury to one passenger. The floor hatches of articulated trams are not locked. In order to ensure that the hatches do not come off in collisions and similar accidents. | |
| | **It should be ensured that tram floor hatches remain fastened in all conditions.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | Fastening of hatches in articulation part has been solved, designing of the fastening of other hatches is not yet ready. |
| 16.6.2011 | In progress | Is postponed to year 2012. |

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| ***Recommendation Nr. S268*** | Six tram passengers received wounds that would have required bandages to stop the bleeding. Tram drivers have first-aid skills, and some of the passengers had a health-care education, but neither tram was equipped with a first-aid kit. | |
| | **All trams should be equipped with a first-aid kit.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | Will be implemented in 2010. |
| 16.6.2011 | **IMPLEMENTED** | |

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| ***Date and time (Code):*** | Safety Study S1/2008R |
| ***Location:*** | Kouvola remote control |
| ***Type of occurrence:*** | Incident, traffic control safety deviations |
| ***Summary*:**. On 21 August 2008, the Accident Investigation Board decided to start a safety study on traffic control safety deviations observed in Kouvola, Finland. The basis for the study was a VR Group Ltd letter sent to the Accident Investigation Board, dated 17 June 2008, in which VR Group expressed its concern about the possible route automation and safety system malfunctions observed in Kouvola Centralised Traffic Control.<br>Initially, the investigation commission was tasked with investigating two safety deviations that had been observed before the initiation of the study. However a third incident occurred during the early stages of the study, and the decision was made to include it within the scope of the study.<br>The first deviation occurred on 25 April 2008 at Järvelä station on the Lahti–Riihimäki section of line. During shunting, a route automation memory function generated an unexpected train route setting leading to the turning of the turnouts in front of the shunting unit's intended route.<br>The second deviation occurred on 23 May 2008 on the Lahti–Riihimäki section of line, between the Hakosilta junction and Lahti station. A commuter train that had departed from Lahti station toward | |

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| Riihimäki was issued with the number and train route of another commuter train that was awaiting its departure time at the station.<br>The third deviation was observed on 6 September 2008 on the Kerava–Lahti directr line on the southern side of the Hakosilta junction. Two trains were proceeding toward Lahti with only one block section between them. At the boundary between two interlocking areas on the southern side of the junction, the number of the train travelling first was replaced in the traffic control system with the number of the latter train. | | |
| ***Final report issued:*** | 31.8.2009 | |
| ***Recommendation Nr. S269*** | In the deviation management system currently in use information about a deviation does not always reach all the relevant parties. It is possible that even documented deviations may not be handled. Also, some deviations has been undocumented. The informing of procedures related to the deviation management has been inadequate. | |
| | **The organisations responsible for the ownership, use, and maintenance of traffic control and safety equipment systems should improve and clarify the procedures by which deviations are identified and managed.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | |
| 16.6.2011 | In progress | VR supports the recommendation. |
| ***Recommendation Nr. S270*** | Several parties from the Finnish Rail Administration and VR Group participate in the traffic control system procurement and management. The organising of work packages and the assignment of project ownership and responsibilities over the life cycles of the systems are unclear. The centralisation of traffic control requires continuous introduction of new automation and information technologies. The deviations investigated have involved shortcomings in system user instructions as well as difficulties for the users to identify problematic situations on the display screens. The responsibility for ensuring that the systems function properly and that the corrective actions are monitored should be placed near the end users. | |
| | **The experts using traffic control systems on a daily basis should participate in the specifications, inspections, and start-up activities of these systems and also take part in the system administration during the life-cycle of the system.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 19.2.2010 | In progress | |
| 18.82011 | In progress | |

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|---|---|---|---|
| ***Date and time (Code):*** | 9.3.2009, 20.42 (C2/2009R) | | |
| ***Location:*** | Lahti railway yard | | |
| ***Type of occurrence:*** | Derailment of a freight train | | |
| ***Train type and number:*** | Freight train 2895, 2 Dv12 diesel locomotives and 33 wagons | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | |
| | ***Passengers:*** | 0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | All 6 derailed wagons were damaged. | | |
| ***Damages on track equipment:*** | 80 meters of track and two turnouts were broken. One signal portal was turned over and catenary supports were damaged. | | |
| ***Other damages:*** | None. | | |
| ***Summary*****:** On Monday, 9 March 2009, at 8:42pm, six domestic wagons were derailed at the Lahti railway yard. The derailment occurred at a turnout, when the 33-wagon freight train had set off from Lahti towards Kouvola. After two and a half minutes, the engine driver felt a strange tugging in the train. The engine driver reduced power, saw an intense flash in the rear-view mirror of the locomotive, and then saw a portal topple and the contact wires falling down. The engine driver immediately stopped the train, using only the direct-acting brakes of the locomotive because of the slow speed. The empty, covered four-axle wagon that was 19th in the train had derailed on the trailing turnout crossing, | | | |

| | | |
|---|---|---|
| pulling the next five wagons off the rails. | | |
| ***Final report issued:*** | 10.3.2010 | |
| ***Recommendation Nr. S271*** | The wagon wheel flanges rose over the ice compressed in the flangeway of the crossing, and further off the rails. | |
| | **Work instructions for turnout cleaning related to winter maintenance should be specified, with special attention paid to ice removal.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 18.8.2011 | **IMPLEMENTED** | The instructions have been improved. |

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|---|---|---|---|
| ***Date and time (Code):*** | 20.10.2008, 16.46 (C6/2008R) | | |
| ***Location:*** | Kerava, Helsinki Riihimäki section of line | | |
| ***Type of occurrence:*** | Incident | | |
| ***Train type and number:*** | Commuter train 9700, Sm4 electrical train | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | |
| | ***Passengers:*** | ? | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | None. | | |
| ***Damages on track equipment:*** | One turnout was damaged. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Monday, 20 October 2008, at 4:46pm, an incident occurred in the Kerava railway yard when an H-marked local train en route from Riihimäki to Helsinki passed an entry signal that was in the stop position and forced open the turnout.
The reason for passing the entry signal in the stop position and forcing open the turnout was that the H train's driver did not observe the stop signal, drove past the signal, and forced open the turnout after it.

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| ***Final report issued:*** | 11.4.2010 | |
| ***Recommendation Nr. S272*** | The bridge structures and the catenary suspension limit the visibility of the stop signal from the locomotive cab. | |
| | **Signal E681 should be moved to a more visible location.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 18.8.2011 | In progress | |
| ***Recommendation Nr. S273*** | Broad ATC construction areas slow down traffic and force centralised traffic control to perform prioritisation in order to minimise delays from schedule. Non-standard arrangements also increase the risk of accident. | |
| | **Overly extensive ATC construction areas should be limited.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 18.8.2011 | In progress | Technical possibilities exist. |
| ***Recommendation Nr. S274*** | The train driver's advance notification information (ET) did not provide sufficient details about the construction area. The information, for example, did not point out that the signal box was functioning as normal and also did not remind the driver that the visible signals should be followed. | |
| | **Advance notification (ET) provided to the engine driver should provide more specific information about ATC construction area conditions.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 16.6.2011 | In progress | ET reported in the main message that the ATP is off. |
| ***Recommendation Nr. S275*** | The information provided by the locomotive's running control as the train approached the ATC construction area was incomplete. | |
| | **The running control monitors of locomotives and the information provided via these monitors should be developed in such a way that they provide better information during non-standard situations.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 18.8.2011 | In progress | |

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|---|---|
| ***Date and time (Code):*** | 11.2.2009, 15.12 (B1/2009R) |

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|---|---|---|---|
| ***Location:*** | Pori, Kyläsaari / Teurastamo level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – car | | |
| ***Train type and number:*** | Freight train 3864, diesel locomotive Dv12 | | |
| ***Road vehicle:*** | Private car Volvo S40, 1997 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 1 |
| | ***Passengers:*** | 1 | 2 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 2 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | Minor damages to the locomotive. Car was entirely wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

***Summary*****:** A level crossing accident took place at the unprotected level crossing of Teurastamo on the Mäntyluoto–Pori track and Pikakyläntie road on Wednesday, 11 February 2009, at 3.12 p.m. The engine driver emergency braked 29 metres before the collision, when the car had disappeared from his sight. The locomotive hit the middle of the car's right side, not being able to reduce speed before the collision. The car clung to the front of the locomotive and travelled in front of it for 223 metres, until the locomotive stopped. Two passengers in the car suffered fatal head injuries in the accident, and the driver was seriously injured. The locomotive suffered minor damage, while the car was wrecked beyond repair.

The accident was caused by the car driver noticing the train too late and not having time to stop or otherwise prevent the accident.

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| ***Final report issued:*** | 10.3.2010 |

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| ***Recommendation Nr. S276*** | The Pikakyläntie road is mainly used as a shortcut, and there are two guarded level crossings in the vicinity of the level crossing. Traffic on Pikakyläntie could be safely directed to these roads and over the Pori–Mäntyluoto track. In addition, since equipping a level crossing with a warning installation with half-barriers is expensive, the Investigation Commission recommends: | |
| | **The unprotected level crossing of Teurastamo on the Pikakyläntie road should be removed.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 18.8.2011 | In progress | Private road transaction is in progress. |

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| ***Recommendation Nr. S277*** | Time was wasted in locating problems between the engine driver and the traffic controller and between the traffic controller and the Emergency Response Centre. Because of these difficulties, the traffic controller had problems clarifying to the ERC operator the location of the level crossing. For the entire duration of the rescue operation, the level crossing was referred to with incorrect names. At their worst, such location problems can lead to treatment procedures being delayed, with fatal consequences. | |
| | **A variety of operators should develop systems and implement equipment to facilitate location of an accident site.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 18.8.2011 | In progress | Markings on track to demote the location will be improved. |

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| ***Date and time (Code):*** | 24.5.2009, 14.28 (B4/2009R) | | |
| ***Location:*** | Eurajoki, Köykäntie level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – car | | |
| ***Train type and number:*** | Freight train 3716, Sr1 diesel locomotive and 37 wagons | | |
| ***Road vehicle:*** | Car Mercedes Benz E270 CDI Sedan, 2003 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |

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| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | Minor damages to the locomotive. Car was entirely wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Sunday, 24 May 2009, at 2:28 p.m., a fatal level-crossing accident occurred on the Köykäntie unprotected level crossing in Eurajoki. The accident occurred when a car en route from Lapijoki village to the centre of Eurajoki drove onto the level crossing in front of a freight train en route from Rauma to Tampere. The only person in the car was the driver, who died from his injuries despite first aid. Damage caused by the accident to track equipment amounted to some € 5,000.
The accident probably occurred because the driver did not observe that the car, which was equipped with an automatic gearbox, started moving slowly forward as the driver was reaching into the car's right front seat or leg space. This may have been due to the driver searching through a bag or picking one up that had fallen off the seat after braking. The driver had stopped the car ahead of the level crossing, probably due to having noticed the approaching train.

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| ***Final report issued:*** | 23.4.2010 |

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| ***Recommendation Nr. S278*** | Based on traffic volumes and the angle at which the road and track meet, the Köykäntie unprotected level crossing should be equipped with a warning installation with half-barriers, in accordance with the Finnish Rail Administration's technical regulations (RATO). Given that there are two safer routes equipped with half-barriers available for residents nearby, the level crossing could be removed at little cost. | |
| | **The Köykäntie unprotected level crossing should be removed.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 16.6.2011 | **IMPLEMENTED** | In a different way. Equipped with half barrier installation. |

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|---|---|---|---|
| ***Date and time (Code):*** | 25.3.2009, 10.43 (B2/2009R) | | |
| ***Location:*** | Nurmijärvi, Herunen / Hyvämäki level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train - van | | |
| ***Train type and number:*** | Freight train 3675, Dv12 diesel locomotive and 6 wagons | | |
| ***Road vehicle:*** | Fiat Ducato van 2.8, model 2002 | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 + 3 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The locomotive suffered minor damages, the van was entirely wrecked. | | |
| ***Damages on track equipment:*** | The ploughing sign was bent. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Wednesday, 25 March 2009, a level crossing accident involving a van and a freight train occurred on the Hyvämäki level crossing in Nurmijärvi. The accident was fatal to the van driver. The engine driver, the shunting foreman and two shunters who were on the train came through the accident uninjured. The van was wrecked beyond repair. The train sustained minor damage.
The direct cause of the accident was the driver of the van advancing onto the level crossing without stopping at the STOP sign. It is likely that the driver of the van completely failed to notice the freight train approaching from the right.

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| ***Final report issued:*** | 19.4.2010 |

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| ***Recommendation Nr. S279*** | Because the Hyvämäki unprotected level crossing does not meet technical regulations (RATO) in terms of sightlines, wait platforms and road juncture distances, and because traffic volumes are high, the investigation commission recommends the following: | |
| | **The Hyvämäki level crossing wait platforms should be reconditioned and road junctures should be relocated sufficiently far from the crossing. The level crossing should also be equipped with a warning installation with half-barriers.** | |
| ***Date*** | ***Status*** | ***Comments*** |

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| 16.6.2011 | **IMPLEMENTED** | |

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|---|---|---|---|
| ***Date and time (Code):*** | 1.10.2009, 12.29 (C4/2009R) | | |
| ***Location:*** | Koria station on the Lahti–Kouvola section of line | | |
| ***Type of occurrence:*** | Incident, risk of collision of a passenger train and a freight train. | | |
| ***Train type and number:*** | Passenger train IC6 – freight train 2823 | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2+2 | |
| | ***Passengers:*** | 400+0 | |
| ***Fatally injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Seriously injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Slightly injured:*** | ***Crew:*** | 0 | |
| | ***Passengers:*** | 0 | |
| ***Damages of rolling stock:*** | None. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

***Summary*:** At 12:29pm on Thursday, 1 October 2009, an incident occurred at the Koria station on the Lahti–Kouvola section of line, when a passenger train ended up on the wrong track in front of a freight train.

Several sub-projects relating to the Lahti–Luumäki–Vainikkala construction project were under-way on the Lahti–Kouvola section of line. With regard to the Koria station, work was in progress relating to the commissioning of a new signal box to be installed on the Lahti–Kouvola section of line. The Automatic Train Protection (ATP) system was not operational at the Koria station and special arrangements were applied at the station. The signal box of Koria station was manned.

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| ***Final report issued:*** | 18.5.2010 |

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| ***Recommendation Nr. S280*** | Safety planning for the transitional stage was not entirely successful. The location of the construction area, the use of the railhead sign on the route, and the utilisation of the features of the signal box, were not appropriate in terms of the entire project. Decommissioning or exceptional usage of systems relating to Automatic Train Protection and safe traffic arrangements should be taken into account as separate risk factors in safety planning relating to the railway system. | |
| | **A risk assessment of technical safety systems as well as the planning, implementation, provision of instructions, and monitoring of safety-enhancing measures based on this assessment should be carried out in conjunction with all construction projects involving work on safety devices.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 18.8.2011 | In progress | Implemented in major projects. |

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| ***Date and time (Code):*** | 17.7.2009, 9.50 (B7/2009R) | | |
| ***Location:*** | Loviisa, Rauhalantie level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – car | | |
| ***Train type and number:*** | Freight train 2867, two Dv12 diesel locomotives and a wagon | | |
| ***Road vehicle:*** | Car Volkswagen Golf Variant, 2004 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The front of the locomotive sustained some damage, the car was wrecked beyond repair. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

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| ***Summary*:** On Friday, 17 July 2009, at 9.50am, a level crossing accident took place at the unprotected Rauhalantie level crossing in Loviisa, in which the driver of a car perished after having steered in front of a freight train.<br>The most probable cause for the accident was the elderly driver's failure to perceive the ap-proaching train. Other underlying causative factors in the accident may include the driver's famili-arity with the level crossing and the fact that his physical capabilities were diminished through illnesses and im-paired eyesight. | | |
| ***Final report issued:*** | 6.9.2010 | |
| ***Recommendation Nr. S281*** | The relevant parties hold divergent views on the duty to clear the sightlines. | |
| | **The Ministry of Transport and Communications should ensure that such consistent guidelines on the duty to clear the sightlines are issued as are acceptable to all parties.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 16.6.2011 | In progress | A working group will be needed. |

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| ***Date and time (Code):*** | 25.4.2009, 13.08 (B3/2009R) | | |
| ***Location:*** | Raasepori, Mustio /Ingvallsby level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – car | | |
| ***Train type and number:*** | Freight train 3534, Dv12 diesel locomotive and 7 wagons | | |
| ***Road vehicle:*** | Car Toyota 4D Corolla Sedan, 2004 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The locomotive suffered minor damage and the car was entirely wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |
| ***Summary*:** At 1:08 p.m. on Saturday 25 April 2009, a level crossing accident occurred in Mustio in Raasepori involving a car and a freight train en route from Kirkniemi to Karjaa. The accident proved fatal to the car driver, while the engine driver escaped uninjured. While the car was wrecked beyond repair, the train sustained only minor damage.<br>The direct cause of the accident lay in the car's driving onto the level crossing while the freight train was approaching simultaneously from the right. It has not been ascertained why the car driver drove onto the level crossing. | | | |
| ***Final report issued:*** | 15.10.2010 | | |
| ***Recommendation Nr. S282*** | The Ingvallsby unprotected level crossing offers a shortcut to Nikuntie, but an al-ternative route to this destination also exists via road 186. The investigation com-mission therefore recommends the following: | | |
| | **The Ingvallsby unprotected level crossing should be removed.** | | |
| ***Date*** | ***Status*** | ***Comments*** | |
| 18.8.2011 | | | |

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| ***Date and time (Code):*** | 14.7.2009, 11.17 (B6/2009R) | | |
| ***Location:*** | Vihti, Kotkaniemi / Kotkaniemi 1 level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – car | | |
| ***Train type and number:*** | Freight train 3647, two Dv12 diesel locomotives | | |
| ***Road vehicle:*** | Car Renault Megane 1.6, 2000 model | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 1 |
| | ***Passengers:*** | 0 | 1 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 1 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 0 |

| | | | |
|---|---|---|---|
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The front of the locomotive suffered minor damage and the car was entirely wrecked. | | |
| ***Damages on track equipment:*** | Wooden cover of the next level crossing was damaged. | | |
| ***Other damages:*** | None. | | |

***Summary*:** At 11:17 a.m. on Tuesday 14 July 2009, a fatal level crossing accident occurred on the Kotkaniementie unprotected level crossing in Ojakkala in Vihti. The accident occurred when a car travelling along Kotkaniementie road drove without stopping in front of a freight train en route to Riihimäki. A nine-year-old girl in the car was fatally injured. The car was wrecked beyond repair. Damage totalling €6,000 was caused to yhe rolling stock and to the track.
The cause of the accident lay in the car driver's completely failing to observe the approaching freight train.

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| ***Final report issued:*** | 15.10.2010 |

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| ***Recommendation Nr. S283*** | The level crossing is very busy with various kinds of traffic, especially during the summer. Each year, nearly 4,000 people visit the premises of Yara Suomi on the other side of the crossing (Kotkaniemi road maintenance committee statement 5 November 2009). There is no alternative route to these premises. In addition, the Kotkaniemi private road maintenance committee covers four properties and summer residences with a total of 22 shareholders. Considering the busy domestic and international traffic on the Kotkaniemi road, the investigation commission recommends the following: | |
| | **The Kotkaniemi 1 level crossing should also be equipped with warning installation with half-barriers.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 16.6.2011 | In progress | Transport Agency and Vihti municipality are drafting a joint project Nissola interchange arrangement preliminary master plan, the purpose is the removal of Kotkaniemi level crossing. |

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| ***Date and time (Code):*** | 17.9.2009, 13.13 (C3/2009R) | | |
| ***Location:*** | Kilpua, Kilpua station | | |
| ***Type of occurrence:*** | Derailment | | |
| ***Train type and number:*** | Freight train 5418, 2 x Sr1-electrical locomotive + 45 wagons | | |
| ***Road vehicle:*** | | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 1 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The bogies and breaking equipment of four derailed wagons were damaged. | | |
| ***Damages on track equipment:*** | Track damage extended over around 200 metres. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Thursday 17 September 2009 at 13:13 p.m., five Russian pellet-carrying wagons were derailed at Kilpua station on the Oulu-Ylivieska section of line. The derailment occurred at the southern end of the station, when a pellet train en route from Oulu to Kokkola departed from track three towards the main track after giving way to an oncoming train. When the train's rear section was still on track 3, the train driver felt an abrupt jerk and noticed the brake pipe loosening. The train driver immediately stopped the train and went outside to inspect the situation. Although the last three of the train's eight wagons were still on the track, five had been derailed. The train had a total of 45 wagons. Being able to disengage the train at the point where the first wagon had derailed, the driver moved the wagons at the front to Oulainen for further inspection. The total costs of the incident amounted to 112,000 euros.
The incident occurred because the heavy pellet train was directed onto a sidetrack which was in poor condition. Due to oncoming traffic, the remote controller was forced to direct the freight train onto Kilpua's track three.

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| ***Final report issued:*** | 25.11.2010 |

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| ***Recommendation Nr. S284*** | Knowing the actual condition of station sidetracks is of major importance to traffic control, which directs trains towards sidetracks when the traffic situation so requires. In order to ensure that traffic control can choose the right track for any given train, the Accident Investigation Board recommends the following: | |
| | **The Finnish Transport Agency should define the station sidetracks to which trains comprising heavy Russian wagons can be directed. Clear restrictions should be imposed with regard to tracks that are unsuitable for heavy Russian wagons.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 16.6.2011 | In progress | VR: Information about tracks, which can not be used, should be available. |

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| ***Date and time (Code):*** | 16.12.2009, 13.26 (B9/2009R) | | |
| ***Location:*** | Laukaa, Lemettilänmäentie / Lemettilä level crossing, unprotected | | |
| ***Type of occurrence:*** | Level crossing accident, freight train – van | | |
| ***Train type and number:*** | Freight train 3365, Dv12 diesel locomotive and 23 wagons | | |
| ***Road vehicle:*** | Van Volkswagen Transporter, model 1998 | | |
| | | ***In the train*** | ***In the road vehicle*** |
| ***Persons on board:*** | ***Crew:*** | 2 | 1 |
| | ***Passengers:*** | 0 | 1 |
| ***Fatally injured:*** | ***Crew:*** | 0 | 1 |
| | ***Passengers:*** | 0 | 1 |
| ***Seriously injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Slightly injured:*** | ***Crew:*** | 0 | 0 |
| | ***Passengers:*** | 0 | 0 |
| ***Damages of rolling stock:*** | The front of the locomotive sustained some damage, the van was totally wrecked. | | |
| ***Damages on track equipment:*** | None. | | |
| ***Other damages:*** | None. | | |

***Summary*:** On Wednesday 16 December 2009 at 13:26 p.m., a fatal level crossing accident occurred on the Lemettilä unprotected level crossing in Laukaa municipality. The accident occurred when a van with a couple inside drove in front of a freight train en route from Jyväskylä to Äänekoski. The van's driver and passenger died immediately from the injuries received. The damage caused by the accident to rolling stock amounted to € 1,300.

The cause of the accident was that the van driver drove onto the level crossing without apparently observing the train approaching from the right. A contributing factor was the fact that, when approached, the crossing looks safe, rendered observation more difficult. Special care should have been exercised, however, considering that the road slopes downwards before the level crossing, that there is a road crossing close to the level crossing and that the sun was shining directly towards the approaching van.

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| ***Final report issued:*** | 13.12.2010 |

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| ***Recommendation Nr. S285*** | With the supply of relevant signs and within limitations set by the road maintainer, traffic passing through the Lemettilä unprotected level crossing could be redirected to cross the bridge on road 637 north of the crossing. In addition, given that equipping the crossing with a half-barrier installation is expensive and would not ensure that further accidents are prevented, the investigation commission recommends: | |
| | **The Lemettilä unprotected level crossing should be removed.** | |
| ***Date*** | ***Status*** | ***Comments*** |
| 16.6.2011 | In progress | |
| | | |