

## 6 SAFETY RECOMMENDATIONS

### 6.1 New recommendations

#### 6.1.1 Ensuring requirements for the operational safety of the metro

The accident investigation revealed that the safety device design included a fault that has been carried across two generations of devices.

The Safety Investigation Authority issues the following recommendation:

*Helsinki City Transport and the safety device supplier should investigate and analyse the requirements relating to the operational safety of the metro railway system thoroughly in order to avoid potential faults being carried across to the next system in the course of the current safety device revision. [2017-S22]*

#### 6.1.2 Development of the safety management system

Helsinki City Transport was not required to have a safety management system until the summer of 2016, following the entry into force of the new Urban Rail Transport Act. This is why the system was undeveloped. For example, there were shortcomings in the processing of safety deviations, and the risk of metro trains colliding had not been identified.

The Safety Investigation Authority issues the following recommendation:

*The Finnish Transport Safety Agency should ensure that Helsinki City Transport's safety management system is developed so that it meets the requirements set by the European Railway Agency (ERA) for safety management systems. [2017-S23]*

The requirements laid down in the recommendation should be extended to all urban rail transport operators.

#### 6.1.3 Development of the planning and coordination of night-time traffic

Controlling night-time traffic is challenging. Unscheduled night-time test and teaching traffic had not been planned sufficiently well or coordinated. It was difficult to form a comprehensive picture of the traffic situation. Night-time traffic requires traffic controllers to make quick decisions based on events.

The Safety Investigation Authority issues the following recommendation:

*Helsinki City Transport should schedule night-time metro trains and other units and draw up a driving programme for them. [2017-S24]*

#### 6.1.4 Development of the training system

In its investigation "Collision of trams on Mäkelänkatu in Helsinki, Finland, on 13 June 2008 (B2/2008R)", the Safety Investigation Authority gave the following recommendations:

##### S265 Training programme development

*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 (B2/08R/S265)."*

*The training programme should be based on a detailed analysis of the job and its segmentation into constituent parts.*

##### S266 Monitoring of learning progress

*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 (B2/08R/S266)."*

*Learning progress should be monitored by means of training diaries and checklists, for example (cf. procedures at professional driving schools).*

The Safety Investigation Authority issues the following recommendation:

*Helsinki City Transport should ensure that recommendations S265 and S266 given by the Safety Investigation Authority previously are extended to also apply to metro traffic.  
[2017-S25]*

#### 6.2 Other observations and proposals

The platforms at underground metro stations are separated from the tunnel by manually closable smoke doors designed for controlling smoke in the event of a fire. Automatically closing fire doors are in use in the new West Metro. If for some reason a metro train needs to be parked somewhere else than at a platform, attention must be given to ensuring that the train does not prevent the automatic or manual closing of the fire and smoke doors of the tunnel.