SUMMARY

DERAILMENT OF TEN WAGONS OF A FREIGHT TRAIN IN TOIJALA, FINLAND, ON 16 JUNE 2009

Ten wagons of a freight train on its way from Turku to Tampere were derailed in Toijala on 16 June 2009 at 8:51pm. Five of the wagons tipped over. The derailed wagons were the 17th–26th wagons of the total 30 wagons in the train. The speed of the train at the moment of derailment was 70km/h. Safety equipment, parts of the track, and electric railway equipment were damaged in the accident. Safety device and communications connections were disrupted in Toijala and in the nearest operating points.

Traffic was totally interrupted for 5 hours 20 minutes. When operations were resumed, diesel locomotives were used initially to pass the accident spot, using one track only. The first train passed the accident spot at 2:10am. The first electric train passed Toijala on 18 June 2009 at 3:40pm, that is, some 43 hours after the accident. Close to normal operations were resumed on the main track on 18 June 2009 after 8pm, 48 hours after the accident. Traffic between Turku and Tampere resumed on 19 June 2009 after 6pm, but trains were unable to stop at Toijala. Trains between Turku and Tampere were again able to stop at Toijala on 28 June 2009. Normal operations were resumed 15 days after the accident.

According to VR, 134 passenger trains and more than 100 freight trains had to be cancelled as a result of the accident at Toijala. In terms of direct costs, the damage to rolling stock, track and equipment amounted to more than € 2 million.

No direct environmental damage was caused by the accident. Due to insufficient clearing and cleaning operations, an odour problem and a pest problem later developed in the railway yard. The wagons involved in the accident contained grain and fishmeal, among other things. The cleaning was completed on 21 July 2009, 35 days after the accident.

The derailment of the freight train was caused by a switch turning underneath the train. In the ensuing investigation, it was shown that it was possible to force open the switch lock by exposing the switch blade to mechanic oscillation at the frequency same as caused by the axles of the freight train in question. It also became apparent in the investigation that the Railex locking device had been adjusted eccentrically, and that the switch contactors at the locking device allowed the closed switch blade to move in excess of the reference value. The Investigation Commission considers it likely that as a combined result of track geometry, switch adjustments, the oscillatory properties of the switch, and the rolling stock passing through the turnout, the switch lock became unlocked as the train passed over it.

In order to avoid similar accidents in the future, the Accident Investigation Commission recommends the following:

- Adjustments of the locking devices and switch contactors located next to them should be inspected regularly and adjusted according to reference values.
- How the mechanical switch lock become unlocked should be investigated under normal circumstances, as well as control disturbances in the point switches.
- The installation, inspections and maintenance of switches and their components should be seamlessly documented.

To improve preparedness for accidents and other exceptional situations, the Investigation Commission recommends the following:

- To maintain control of the overall situation, a plan of action for accidents should be drawn up by the infrastructure manager.
- To deal effectively with exceptional situations, the forms of cooperation and the distribution of duties and responsibilities should be clearly defined both at national and local level.