**R2021-04, Derailment of a train transferring rolling stock in Oulunkylä on 2 December 2021, summary**

A train transferring rolling stock was derailed in Oulunkylä on 2 December 2021. The train was transferring an overhauled metro without brakes from the Ilmala depot to the metro depot via the Vuosaari harbour track.

The train broke in two between the locomotive and the metro. The break occurred because the towing adapter and the metro coupling malfunctioned at the same time. After the train broke up, the brakes of the locomotive locked up automatically after the brake pipe was cut off. A measurement carriage had been connected after the metro to act as the braking unit. However, due to the implementation of the temporary brake pipe, its brakes did not work and as a result, the metro collided with the locomotive. During the collision, the coupling of the metro came loose and fell under the train, derailing the other axle of the metro. The metro suffered significant damage in the accident. The damage to the locomotive and the track were less severe.

The metro was one of the trains included in the metro overhaul project HKL had commissioned from VR-FleetCare. The overhauled trains were transferred by towing them on the railway as special transports, and an exemption for their transfers had been received from the Finnish Transport and Communications Agency.

When the transfer of the train involved in the accident was prepared, the connection between the units seemed successful and it functioned during the test towing. The characteristics and structure of the adapters prevented the users from having an option to confirm that the connection was locked. The investigation also found that the adapter model used had a hidden connection fault that prevented the locking of the adapter connection. In addition to the incomplete locking of the adapter, the breaking up of the train was also enabled by a hidden fault in the coupling on the metro side, which similarly prevented it from locking.

Even though the adapters had been used for temporary transfers for more than 20 years, all characteristics of the adapters were not known and no instructions on their use had been made. Their safe usability, especially the indication of a locked connection, had not been sufficiently taken into account in the design of the device. The adapters had not been identified and no maintenance programme had been created for them, either.

A hose had been attached to the chassis of the metro as a temporary brake pipe. The hose did not meet the requirements of a brake pipe; it was thinner and more flexible. The risk caused by a thinner hose and the lack of fastening of its ends had not been identified in practice. The ease of installation was emphasised in the selection and attachment of the hose.

It is difficult for the supervisory authority to monitor the safety of installations made in the field, such as the brake installations. In that case, the monitoring of safety arrangements is based on the self-monitoring of the companies carrying out the transfer. It would be extremely important to focus on the areas most critical to the safety of operations in self-monitoring.

Trains break up from time to time, but the functioning of the brake system should prevent accidents. Problems may occur in special transports when local solutions are used in brakes. The risk assessment does not always reach the solutions made in the field when implementing temporary transfers.

In order to improve the safety of transports that differ from normal operation, the Safety Investigation Authority, Finland, issues the following recommendations:

1. When auditing the safety management systems of railway operators, the Finnish Transport and Communications Agency should evaluate whether the assessments are updated as needed in addition to the risk assessment procedures.
2. Railway operators should ensure that the towing adapters and other auxiliary devices they use for connections have been identified and are included in the maintenance programme and that there are instructions for their use.
3. Railway operators should verify that brakes work in transfers of rolling stock implemented with special arrangements and take the risk of the train breaking up into account.