Extract from the investigation report RJ 2009:06 on a near-collision occurred on 19/01/2006

Summary

At 06:52 on Thursday, 19 January 2006, commuter train number 2510, consisting of four units, set off from Västerhaninge to Stockholm. When the driver was to test the brakes, the circuit breakers cut out and the train's emergency brakes were used. Following fault-tracing, the driver drove the train back to Västerhaninge. At that time the final carriage remained standing in place, without the driver being aware of this. After the brakes on the carriage had self-released, it rolled in to Västerhaninge behind the train, stopping immediately behind the other carriages in the train.

The day before that, there had been an unsuccessful attempt to release the coupling between the two units where the connection came unleashed. The decoupling cylinder had been pressurised, but it had not been possible to make the coupler come apart.

When the brake testing was carried out on the morning of 19 January, the train had one unit of type x10 at the end of the train, which (due to the fact that it is also equipped with an electrical resistance brake) braked a little earlier than the rest of the vehicle, causing a jolt in the train which thereby disconnected, which in turn caused the circuit breaker cut-off and emergency braking. It was cold at the time, and the cold may have contributed towards the connection's mechanism being sluggish.

Before the train was driven back to Västerhaninge, the driver defined the rear of the train as being between the middle units, which meant that the two final units were no longer controlled by the control circuit. This also meant that the driver was unable to check that he could control all the brakes in the train; neither was he able to notice that a carriage was disconnected.

After just over five minutes, the brakes on the carriage that was left behind self-released. The fact that this happened so quickly was due to faulty check valves, which caused the brake cylinders to release air. The fact that the brake cylinders were in a faulty condition was due to inadequate maintenance of and controls on the integrity of the brake cylinder circuit.

The direct reason for the self-release was inadequate maintenance, which meant that there were leaking check valves in the vehicle which released air from the brake cylinders.

The underlying causes were that the check valves had not been examined, and no analysis of the consequences of changes in maintenance routines had been carried out. The state of the carriages, and the general perception among the personnel that the carriages' braking systems leak rapidly, indicate a failure to carry out adequate measures to compensate for the eliminated safety audits. This situation must therefore be a fundamental cause of the incident. Nor had the leakage been discovered and dealt with in the course of overhauls. This means that quality defects in overhauls or excessively long intervals between the integrity checks have contributed to the occurrence of a near-accident.

A contributory reason for the self-release is that no brake function test in accordance with CityM02-1017 could be carried out, since the control circuit in the train was broken.

Causes

The direct cause of the self-release was inadequate maintenance which meant that there were leaking check valves in the vehicle, which released air from the brake cylinders.
Underlying reasons were that the check valves had not been examined and the consequences of alterations to maintenance routines had not been analysed. The state of the carriage, and the general perception among the personnel that the carriages' brake systems leak rapidly, indicate a failure to carry out adequate measures to compensate for the eliminated safety audits. This situation must therefore be a fundamental cause of the incident. Nor had the leakage been discovered and dealt with in the course of overhauls. This means that quality defects in overhauls or excessively long intervals between the integrity checks contributed to the occurrence of a near-accident.
A contributory reason for the self-release is that no brake function test in accordance with CityM02-1017 could be carried out, since the control circuit in the train was broken.

Recommendations

The Swedish Transport Agency is recommended to:

- take steps to ensure that a risk analysis is carried out which analyses the consequences of the altered maintenance routines for commuter trains (series X1) in Stockholm, and take steps to ensure that measures are taken to reduce any residual risks indicated by such an analysis *(RJ 2009:06 R1);*

- introduce routines which mean that the Swedish Transport Agency, in the course of its work, detects changes to rules and routines among operatives which ought to give rise to risk analyses and supplementary measures *(RJ 2009:06 R2).*