MINISTRY OF
CONSTRUCTION AND TRANSPORT
TRANSPORTATION SAFETY BUREAU

# FINAL REPORT (EXTRACTION)


2024-0659-5
(HU-10569)

**Railway accident / Derailment**
Ludas (Switch 1), 24th June 2024

## Translation

This document is the translation of Points 1, 5 and 6 of Hungarian version of the Final Report. Although efforts have been made to translate the mentioned parts of the Final Report as accurately as possible, discrepancies may occur. In this case, the Hungarian Final Report is the authentic, official version.

## Basic principles of the safety investigation

The purpose of the safety investigation fulfilled by Transportation Safety Bureau (TSB) as National Investigation Body of Hungary is to reveal the causes and circumstances of serious railway accidents, railway accidents and railway incidents and propose recommendations in order to prevent similar incidents. The safety investigation is not intended to examine and determine fault, blame or liability in any form.

The findings of the safety investigation are based on an assessment of the evidence available and obtained by TSB in the course of the investigation, taking into account the principles of a fair and impartial procedure. In the Final Report, the persons involved in the occurrence shall be referred to by the positions and duties they had at the time of the occurrence.

The Final Report shall not have binding force and no appeal proceedings may be initiated against it.

This safety investigation has been carried out by TSB pursuant to relevant provisions of

- Act CLXXXIV of 2005 on the safety investigation of aviation, railway and marine accidents and incidents;
- Commission Implementing Regulation (EU) 2020/572 of 24 April 2020 on the reporting structure to be followed for railway accident and incident investigation reports;
- in the absence of other related regulation of the Act CLXXXIV of 2005, the TSB conducts the investigation in accordance with Act CL of 2016 on General Public Administration Procedures.

Act CLXXXIV of 2005 is to serve compliance with Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety.

The competence of the TSB is based on Government Regulation № 230/2016. (VII.29.) on the assignment of a transportation safety body and on the dissolution of Transportation Safety Bureau with legal succession.

The safety investigation is independent of other investigations, administrative infringement or criminal proceedings, as well as proceedings initiated by employers in connection with the accident or incident.

## Copyright Notice

# 1. SUMMARY

At 21:05 on June 24, train No. 25738-1 travelling on the left main track 2 at Ludas station derailed at turnout No. 1 and the train broke apart. The train consisted of five vehicles with individual running permits (two motor cars and three trailer cars) and was heading to Szolnok station for renovation. The motor car, as the second vehicle of the train derailed with one axle, one trailer (No 3) derailed with two axles and another one (No 4) derailed with one axle. The derailed vehicles knocked down the exit signal marked “V1”" and damaged approximately 350 meters of track. As a result of the incident, 13 trains were delayed by a total of 56 minutes.

The investigation found that the original torque support arms were missing from the axle drives of the driven wheels installed in the two motor cars and had been replaced with temporary solutions. This replacement device broke off on the motor car that started the derailment, causing the train to derail.

The main causes of the occurrence were that

- the maintenance material supply system does not provide the necessary spare parts, forcing maintenance personnel to use temporary solutions;
- the vehicle's operating license was issued in accordance with the instructions, despite the fact that it had a running safety deficiency.

The TSB is issuing a safety recommendation for the review of parts supply processes.

# 5. CONCLUSIONS

## 5.1 Summary

### 5.1.1 Direct causes

Acts, mistakes, events or conditions or a combination thereof the elimination or avoiding of which could probably have prevented the accident or incident:

a) the organization responsible for maintaining the motor car was unable to achieve its objective of making the vehicle safe for operation;
b) the axle drive of the first motor car to derail turned and, after the axle-gear anti-rotation rod component broke off, became stuck in an intermediate part of the turnout, and lifted the vehicle;
c) the maximum speed authorised in the vehicle's operating licence was not in accordance with the suitability of the component replacing the axle-gear anti-rotation rod.

### 5.1.2 Indirect causes

During the investigation, the IC identified no acts, errors, events or conditions which influenced the occurence by increasing its probability, accelerating the effects or the severity of the consequences, but the elimination of which would not have prevented the occurence.

### 5.1.3 Systemic factors

Causal or contributing factors of organisational, management, social or regulatory nature which are likely to have an effect on similar or related occurrences, particularly including regulatory framework conditions, the design and use of the safety management systems, the skills of the personnel, the procedures and maintenance:

a) the maintenance supply did not provide the necessary parts for proper maintenance.

## 5.2 Actions taken

The Regional Railway Safety Department of MÁV Zrt. carried out several inspections at the traction depot, with particular regard to the composition of trains, the condition of technical equipment and its documentation. The IC was not informed of the results.

According to information provided by MÁV-START Zrt., compliance with the instructions in force is sufficient to prevent similar incidents, therefore no further measures are considered necessary.

## 5.3 Additional notes

The IC did not identify any factors that are unrelated to the occurrence but increase risk.

## 5.4 Proven procedures, good practices

The IC identified no factor that helped to reduce the consequences of the occurence and avoid a more serious outcome.

## 5.5 Lessons learnt

Disruptions in the supply of spare parts force maintenance personnel to implement and tolerate solutions that deviate from normal operating procedures. There is a risk that the suitability of substitute solutions will be misjudged, which carries a risk of accidents.

# 6. SAFETY RECOMMENDATION

Safety recommendations, together with the findings and conclusions in the final investigation report, represent important information for the further improvement of railway safety. Accordingly,

- The authorities responsible for safety shall take action as necessary to ensure that safety recommendations are duly taken into consideration and applied where appropriate.
- The organisations responsible for introducing such safety recommendations shall start, with no delay, the risk assessment and risk management activities related to the contents of such safety recommendation within the procedural framework of their safety management system.

Within 90 days of the issue of the safety recommendation, they shall report back to the IC on the actions taken or planned or on their non-acceptance (with justification) of such safety recommendation.

*During the investigation, the IC found that the railway company's material supply system does not ensure that the necessary parts affecting operational safety are available in time, which may force maintenance personnel to use unprofessional replacement solutions.*

Number: **BA2024-0659-5-01**

Addressed to: **Railway Authority Department, Ministry of Construction and Transport**

Responsible for introduction: **MÁV Személyszállítási Zrt.**

**The TSB recommends Railway Authority Department to consider reviewing the spare parts supply system of MÁV Személyszállítási Zrt. to ensure that the necessary spare parts are available in a timely manner.**

*If the recommendation is accepted and implemented, it will be possible to replace missing or defective parts with parts that comply with the operational design.*