MINISTRY OF
CONSTRUCTION AND TRANSPORT

TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)

2023-0439-5
(HU-10409)

Railway accident / Derailment
Hajdúhadház - Újfehértó, 7th May 2023

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.

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1. SUMMARY

On 7 May 2023, 9 wagons of freight train № 47370-1, which was hauled from Eperjeske-Átrakó to Hegyeshalom by two locomotives, derailed between Újfehértó and Hajdúhadház stations on section 2470; several wagons overturned, some of them on the other track.

According to the investigation, the bearing 2L of wagon 20 overheated due to an unidentifiable fault, became hot and was damaged to the extent that the axle journal broke. As a result, the bearing housing fell off and the wagon derailed.

36 km before the derailment, the train passed through a hot box detector, which measured the bearing temperature as dangerously high, but was set to display a temperature value that was still just acceptable. The crew who then observed the train did not see any indication of bearing failure.

Since the bearing failure could not be precisely determined despite the detailed material test carried out, and the setting of the hot box detector had been changed by the railway network operator in the meantime, the IC did not consider it justified to issue a safety recommendation.

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) there was a defect in the 2L bearing housing of wagon 20 of the train, which was not detected during the investigation, and it initially caused the bearing to heat up and later to break;
b) the overheated bearing passed a hot-box detector which did not give an alarm due to its settings, so the train was not stopped by the traffic crew;
c) the bearing fracture led to the axle journal breaking, so the 2L bearing housing fell off the wagon;
d) on the 20th wagon of the train, the 1R wheel was unloaded due to the 2L bearing housing falling off; as a result, the 1R wheel crossed the rail on the next left curve, causing the wagon to derail.

5.1.2 Indirect causes

Acts, mistakes, events or conditions which influenced the occurrence by increasing its probability, accelerating the effects or the severity of the consequences, but the elimination of which would not have prevented the occurrence:

a) when the traction was released, the end of the train hit the first wagon to derail, flipping it crosswise, and other wagons also derailed.

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) due to the values set up on the hot-box detector, it gave an untrue bearing temperature value to the traffic personnel, and the operation of its software was such that it did not give any error indication of this phenomenon, thus not supporting its detection and repair.

5.2 Actions taken

At the time of the inspection, the infrastructure manager reviewed the settings of the hot-box detectors and made changes to them.

5.3 Additional notes

Risk increasing factors that are unrelated to the occurrence of the incident:

a) for several minutes after the train had stopped, the locomotive driver did not realise that his train had derailed and that the wreckage was directly endangering traffic on the other track;

b) the dynamic wheel load measuring equipment involved in the train path was not working, so a possible load failure could not be detected – the current investigation could use the data from the post-loading weighing;

c) the railway infrastructure manager does not have a maintenance contract for its track-side diagnostic equipment on an ongoing basis, and when a previous contract expires, the next one is not always available yet.

5.4 Proven procedures, good practices

It helped to reduce the cosequences of the occurence and avoid a more serious outcome that

a) the incident was reported by a citizen, which this time proved to be the first relevant information.

5.5 Lessons learnt

The safety investigation did not identify any factors that could be used as a basis for drawing lessons for bearing mounting.

At the same time, a dangerous defect that has already occurred does not necessarily lead to an accident if it is detected in time: the railway infrastructure manager has the means to do this, but the equipment will only do its job if it works well and the operator knows its operation and characteristics and uses the appropriate settings (**Hiba! A hivatkozási forrás nem található.**).

In this case, it did not pose an additional immediate danger, but in other circumstances, the timely detection of a derailment and the safety measures taken as a result are of great importance.

6. SAFETY RECOMMENDATION

Such incidents can be avoided by following the rules (what rules?) and by exercising due care and attention by the staff, and the IC therefore does not consider it appropriate to issue a safety recommendation.