MINISTRY OF
CONSTRUCTION AND TRANSPORT

TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)

2022-0512-5
(HU-10356)

Railway accident / Derailment
Zalaszentmihály-Pacsa, 13th May 2022

Translation

This document is the translation of Points 1, 5 and 6 of the 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

On 13 May 2022, at Zalaszentmihály-Pacsa station, the second freight wagon (№ 43 71 4378 547-9) in the freight train (№ 44791-2) leaving track IV, derailed with 4 axles, while the third freight wagon (№ 37 80 4952 394-7) derailed with 2 axles on siding 7. There were no injuries in the accident.

In connection with the occurrence, the sidings 5 and 7 were impassable; the damage figure (material, restoration) was HUF 26,221,698.

The bearing box № 7 of the derailed wagon № 43 71 4378 547-9 was broken, the linking element of the twin wagon fractured, the fittings and parts under the chassis were damaged. Until the draft final report was completed, the operating entity did not provide any information on the damage figure.

The IC determined that the derailment was caused by a gauge widening on the switch section of turnout № 7. The right front wheel of the first derailed car fell between the stock rail and the tongue rail at the 7th sleeper of the switch. The carriage continued to roll with the derailed wheel, then, between the 4th and 3rd sleepers, the left front wheel got on the rail crown and continued to roll on it, falling to the outside of the rail after the 1st sleeper. The wheelsets became unmanoeuvrable, causing the carriage to come to a stop, leaning at an angle of about 30° to the outside of the curve, digging into the ballast and the embankment. During the investigation, the IC found that the immediate cause of the gauge expansion was the deteriorated, dry rotted condition of the wooden sleepers of the № 7 siding, which caused a transverse movement of the rail chairs and bolts, of about 5-8 cm. As a result of the movement of the fasteners, elastic gauge widening was formed. The track inspection system did not detect this fault.

Since dry rot is a long process; the defect could have been detected either by thoroughly inspecting the sleepers according to instruction D.5 or by monitoring the change in gauge over time, but no such inspections were carried out.

The IC does 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) as the train progressed, the rails were pushed apart transversely in the siding between the 10th and the 7th sleepers, where the gauge widening caused the 4 axles of wagon № 43 71 4378 547-9 8 (which was in the train), and the front two wheelsets of wagon № 37 80 4952 394-7 to derail.

b) the sleepers of siding 7 were in a deteriorated condition, so the transverse movement of the rail chairs and bolts was about 2-3 cm, resulting in elastic gauge widening.

5.1.2 Indirect causes

During the investigation, the IC identified no acts, errors, 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.

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 current track supervision system cannot detect this and similar defects;
b) the infrastructure manager is unable to replace the superstructure at the end of its design life due to lack of resources and has not addressed this risk through other safety measures.

5.2 Actions taken

In its comments to the Draft Report, the infrastructure manager reported the following action, which it had formulated in the final report of its own investigation:

"[...] in our Final Report, we recommended to the infrastructure manager to develop the possibility of an instrumental inspection of the internal material structure of sleepers for siding installed more than 30 years ago, if the switch section has not been replaced."

5.3 Additional notes

No risk-increasing factor was identified by the Administrative Board that could not be linked to the occurrence of the case.

5.4 Proven procedures, good practices

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

5.5 Lessons learnt

The incident serves as a lesson that the current track inspection system does not always detect such and similar errors. It is therefore necessary to adapt the track-inspection system to the operational circumstances.

In addition, if the appropriate technical state cannot be maintained, even for financial reasons, safety risks can be reduced by restrictions or by exclusion the non-compliant element.

6. SAFETY RECOMMENDATION

Such cases can be avoided by thoroughly inspecting the wooden sleepers and monitoring the track changes over time, which will allow early detection of such defects, provided that the detected defect is corrected. The basis for avoiding similar incidents is therefore the attention of track maintenance staff and the availability of resources or the introduction of restrictions. Therefore the IC does not consider it appropriate to issue a safety recommendation.