MINISTRY FOR
INNOVATION AND TECHNOLOGY

TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)

2020-0304-5
(HU-10007)

Railway Accident / Derailment
Püspökladány, 22 March 2020

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

The locomotive and 5 wagons of the freight train № 47481-2 from Miskolc-Rendező station to Dej (Romania), scheduled to cross the state border at Biharkeresztes, derailed in the switching zone of Püspökladány station during departure.

The investigation found that the direct cause of the derailment was the fracture of a rail of the track which had probably originated in an earlier crack in the railhead. There is an examination method which is able to demonstrate superficial cracks, but, in line with track supervision requirements, that method is not used at the turnout concerned.

In addition, the locomotive driver exceeded the speed limit specified for the departure track and, although the speed limit did not apply to the turnout, the train should have been moving at a lower speed there too, because of the length of the train. The track would probably not have fractured in the case of a lower speed (or only under a train coming later on).

TSB issues a safety recommendation relating to risk assessment for track supervision requirements.

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 rail fractured due to the loading from the locomotive, as cracks may have been formed on its surface contacting the wheel flange during its wear (**Hiba! A hivatkozási forrás nem található.**);
b) The locomotive driver exceeded the speed limit by 75% in the given situation (**Hiba! A hivatkozási forrás nem található.**).

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: the IC found no such factors.

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 eddy current examination method which could detect track defects like the one which led to the accident concerned is not used for the turnout involved in the accident as it is classified in the group B (**Hiba! A hivatkozási forrás nem található.**);

5.2 Actions taken

According to information from MÁV Zrt., the last ultrasound test (carried out pursuant to the D.10 Railway Track Diagnostics Instruction № 788/2017/MAV in effect at the time of the occurrence) detected no defect in the installation tested. On grounds of those results, they saw no reason to modify the frequency of measurement.

The testing team of the undertaking assigned to carry out measurement performs testing according to its usual schedule. During the inspection of the line, the linemen pay particular attention to detect rail defects appearing on the surface.

In its comment made to the Draft Report, MÁV Zrt. stated that they had taken action to modify their low-speed stretch register.

5.3 Proven procedures, good practices

The IC identified no factors which would have mitigated the consequences of the occurrence or would have helped avoiding a more serious outcome.

5.4 Lessons learnt

On the basis of investigation findings, the fracture of the rail started out of an earlier superficial crack of the rail. Such cracks, however, can only be detected by a test method which is not used for the turnout concerned.

Therefore, further risk assessment is needed to decide whether extension of the crack testing methods (to the turnout concerned and similar turnouts, even if in the function of strain, loads, or service time since installation) available would bring comparable advantages in the field of safety.

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.

6.1 BA2020-0304-5-01

The investigation found that superficial cracks had been formed on the rail which had probably led to the fracture causing the occurrence. There is an examination method which is able to demonstrate superficial cracks, but it is not used at the turnout involved in the occurrence. Therefore TSB issues the following safety recommendation:

Number: **BA2020-0304-5-01**

Addressee: **Railway Authority Division, Ministry for Innovation and Technology**

Responsible for **TSB recommends Railway Authority Division, Ministry for Innovation and Technology to consider performing risk assessment with the safety management system at work in order to find out whether it stands to reason to extend superficial crack tests to a lower class of turnouts or to a group determined on the basis of operation circumstances (frequency of use, loads, service time since installation, etc.); and the track supervision system may be amended accordingly.**

By acceptance and expected implementation of the safety recommendation, if such test methods are really suitable for detecting the defects, the superficial which may lead to fracture cam be identified on time.