



MINISTRY FOR
INNOVATION AND TECHNOLOGY

TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)



2020-1144-5
(HU-6373)

Railway Accident / Derailment
Budakalász, 14 November 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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Transportation Safety Bureau, Ministry for Innovation and Technology
2/A. Kőér str. Budapest H-1103, Hungary
www.kbsz.hu
kbszvasut@itm.gov.hu

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1. SUMMARY

On 14 November 2020, works were underway in track possession on the left track between Békásmegyer and Budakalász stations. For that reason, odd-numbered trains left Budakalász station on the wrong (right-hand side) track along the crossover provided by the switches nos. 12 and 6. The third wagon of the train no. 4015 leaving the station at 12:52 pm derailed on the track section between the two switches. No one was injured.

The technical investigation included a review of the track vehicle dimensions relevant from the transport safety aspect, and track maintenance processes were also reviewed.

Plane distortion exceeding the track possession limit value was found in the track at the location of the derailment, but the track had been used with no limitation. The plane distortion occurred as a consequence of previous track maintenance works, but it was not detected, because the checking measurements following the works did not include the track section concerned (it is not required actually).

The vehicle contributed to the occurrence to some extent, due to its novel wheel flanges and because its wheel loads were slightly asymmetric.

Additionally, the investigation found inconsistency in the regulation of the frequency of track measurement, although it is not related to the case.

Therefore, TSB issues a safety recommendation relating to extension of the scope of inspection measurements and to reviewing the frequency of track measurement.

5. CONCLUSIONS

5.1 Summary

5.1.1 Causal factors

Any action, omission, event or condition, or a combination thereof that if corrected, eliminated, or avoided would have prevented the occurrence, in all likelihood:

- a) There was a plane distortion exceeding the dimension limit D at the location of the derailment, but the track was not excluded from traffic and speed limit was not introduced either;
- b) Sleepers were replaced and adjusted in the turnouts linked to the track, which increased the plane distortion of the linked track section as a side effect, but it was not detected because the linked track was not measured and adjusted after the sleeper replacement;
- c) The right-hand side track is sagged in the switching zone and, accordingly, the short crossover between the two tracks is a sensitive part of the line.

5.1.2 Contributing factors

Any action, omission, event or condition that affects an occurrence by increasing its likelihood, accelerating the effect in time or increasing the severity of the consequences, but the elimination of which would not have prevented the occurrence:

- a) The track maintenance organisation has no objective measured data of the crossover;
- b) The vehicle's wheel load difference exceeded the limit;
- c) The vehicle had novel wheel flanges.

5.1.3 Systemic factors

Any causal or contributing factor of an organisational, managerial, societal or regulatory nature that is likely to affect similar and related occurrences in the future, including, in particular the regulatory framework conditions, the design and application of the safety management system, skills of the staff, procedures and maintenance:

- a) The track maintenance rules do not require inspection of the track geometry in cases where the track itself was not disassembled but its geometry changed.

5.2 Actions taken

After the occurrence, sleepers in the track were replaced, partly because of the damages related to the occurrence, and it was adjusted in several steeps, thus eliminating the anomaly which had led to the occurrence.

The adjustment of the height of the two connected tracks is also planned within the framework of a more extensive maintenance effort, which will have a favourable effect on the levelling of the crossover section.

5.3 Other factors

Other factors which cannot be linked to the case but increase risk:

- a) The track supervision rules specify sufficiently frequent track measurement only for a limited range of tracks **(Hiba! A hivatkozási forrás nem található.)**.

5.4 Proven procedures, good practices

The IC identified no factors or acts which would have mitigated the consequences of the occurrence or would have helped avoiding more a serious outcome. However, it was found (although independently of the case) that the practice compensates for the shortcomings of the regulation regarding the frequency of measurement of the tracks on the open lines, i.e. measurements were carried out more often than required.

5.5 Lessons learnt

Track repair works may lead to impairment of other track parameters, even outside the area of such works. However, the returning of a defective track into service may be prevented by taking that into account during track measurements and examinations carried out on completion of such works.

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 BA2020-1144-5-01

The IC found during the investigation that, due to the inconsistent use of terminology, P.2 Instruction requires infrequent track measurement for open line tracks and crossovers used by trains (everyday practice does not follow the instruction in the case of open lines: measurements are carried out more frequently).

Number: **BA2020-1144-5-01**

Addressee: **MÁV-HÉV Zrt.**

Responsible for introduction: **MÁV-HÉV Zrt.**

TSB recommends MÁV-HÉV Zrt. to consider reviewing the requirements for the frequency of track measurements in the track supervision rules applicable to the MÁV-HÉV railway infrastructure, in order to provide sufficient frequency of the assessment of tracks used by trains, with due attention to the definitions of the terms used relating to the tracks.

By acceptance and expected implementation of the safety recommendation, the track maintenance organisation may obtain a realistic picture of the state of the tracks, based on exact rules.

6.2 BA2020-1144-5-02

The IC found during the investigation that certain parameters of adjacent track sections (e.g. plane distortion) may also change during track repair works, but follow-up measurements are only carried out in the track sections where works have actually been done. As certain defects generated during such repair works may remain hidden, TSB issues the following safety recommendation:

Number: **BA2020-1144-5-02**

Addressee: **MÁV-HÉV Zrt.**

Responsible for introduction: **MÁV-HÉV Zrt.**

TSB recommends adjustment of the track supervision rules and practice on the MÁV-HÉV railway infrastructure in such manner that the follow-up measurements carried out on completion of track repairs should also cover an appropriate length of such adjacent track sections which were not worked on but may have conceded geometric changes due to such works.

By acceptance and expected implementation of the safety recommendation, accidents caused by errors due to repair works in adjacent track sections may be eliminated.