



MINISTRY OF
CONSTRUCTION AND TRANSPORT
TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)



2025-0073-5
(HU-10656)

Railway accident / Derailment
Szeged-Rendező (Switch № 411), 25th January 2025

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

At 13:42 on 25 January 2025, carriages 13 and 14 of train no. 40762-1, departing from track I at Szeged-Rendező station, derailed at switch no. 411. The derailed vehicles blocked railway lines 140 and 136 for more than three days, and traffic on railway line 135 was impossible for four days.

The investigation revealed that switch No. 411 was switched while the train was moving, after the switch operator and the traffic controller released the locked track while the train was moving. This was made possible by a fault in the safety equipment, which did not prevent premature releasing of the track.

The IC identified as a contributing factor that the main inspection of the safety installation due in 2023 had not been carried out; the fault had not been identified or rectified earlier.

The TSB issues a safety recommendation

- the main inspection of the safety equipment and
- the maintenance and design of the safety installation

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) Switch No. 411 was switched while the train was moving;
- b) which was made possible by the fact that the switch operator was not at the designated train reception point; the switch operator and the traffic controller released the track while the train was moving;
- c) because the safety installation had a fault that prevented it from preventing the early release of the track.

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) the fault in the safety installation had not been detected or repaired previously.

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) there is no procedure in place for cases where the main inspection of the safety installation is not carried out on time;
- b) the railway infrastructure operator did not ensure that the tasks to be performed by the personnel carrying out the main inspection of the safety installation were in line with the available inspection capacity;
- c) the acceptability of the risk associated with the SH safety installation in relation to this incident is based on an assessment made 67 years ago.

5.2 Actions taken

In the months following the incident, the safety installation was dismantled due to its previously planned replacement, regardless of the incident.

5.3 Additional notes

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

- a) the maintenance staff of the safety installation are not sufficiently familiar with its design;
- b) the main inspection of the safety installation due in 2023 was not carried out;
- c) the staff intervened in the safety installation after the incident, thereby altering the scene of the accident;

- d) maintenance personnel do not pay sufficient attention to the importance of the human-machine interface.

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

Although the safety installation involved in the incident, which is more than 100 years old, is capable of preventing such incidents, it only provides a low level of safety, which is appropriate for the age of its development. The safety of the equipment also relies heavily on the compliance of the operating personnel, which, however, was not fully provided at the time of this incident, given the risks and limitations inherent in the human factor.

The incident also highlights the human factors involved in accident investigation, in that overconfidence in safety installation can hinder the detection of faults in that installation.

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 safety recommendations may be addressed to the Railway Authority Department, Ministry of Construction and Transport (ÉKM VHF), other offices and authorities, the European Union Agency for Railways (ERA) and another EU Member State. The organisations responsible for introduction (those implementing the safety recommendations) are, within their own areas of responsibility, the railway undertakings, infrastructure managers, maintenance organisations and other actors in the railway industry. 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 BA2025-0073-5-01

During its investigation, the IC found that the main inspection of the safety installation had not been carried out on time and that the rules did not specify the procedures and restrictions to be followed in such cases. The TSB therefore issues the following safety recommendation:

Number: **BA2025-0073-5-01**

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

Responsible for introduction: **Railway undertakings applying TB.1 Instruction**

The TSB recommends that the TB.1 Instruction to be renewed should specify the necessary measures and/or restrictions in the event that the main inspection of the safety installation is not carried out by the deadline.

If the recommendation is accepted and implemented, it will ensure that there is sufficient interest in carrying out the main inspections and/or that the risks of not carrying them out are offset.

6.2 BA2025-0073-5-02

During the investigation, the IC found that a technical fault in the safety installation that had led to the incident allowed the signalman to switch the points while a train was passing. This fault is not self-revealing, i.e. cannot be detected under normal operating conditions, and maintenance limitations also contribute to the fault remaining undetected for a longer period of time. As a result, the Siemens-Halske equipment and the light signal-based mechanical safety devices based on it cannot even ensure the safety level of the era in which they were manufactured (early

1900s). Although the safety device involved in the incident was replaced at the time of the investigation (as part of an ongoing development), a large number of safety devices operating on the same principle are still in use on the domestic railway network, and their replacement is not expected in the foreseeable future. The TSB therefore issues the following safety recommendation:

Number: **BA2025-0073-5-02**

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

Responsible for introduction: **Railway undertakings operating Siemens-Halske safety installations**

The TSB recommends reviewing and modifying Siemens-Halske system (or system-based) safety installations and/or their maintenance systems to ensure that a contact failure in the release block does not lead to the failure of mechanical protection preventing the early release of the track.

If this recommendation is accepted and implemented, the risk of accidents caused by incorrect switch settings can be reduced for similar safety devices operating on the network.

6.3 BA2025-0073-5-03

During the investigation, the IC found that the acceptability of the risk associated with the SH safety device in the present case was based on a document from 1958. However, in the meantime, a number of factors influencing the risk and its acceptability have changed, and therefore the TSB issues the following safety recommendation:

Number: **BA2025-0073-5-03**

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

Responsible for introduction: **Railway undertakings operating Siemens-Halske safety installations**

The TSB recommends reviewing and analysing the risks associated with Siemens-Halske system safety installations (and equipment based on this system) and taking the necessary risk mitigation measures.

If the recommendation is accepted and implemented, the risks associated with similar safety installations operating on the network can be reduced.