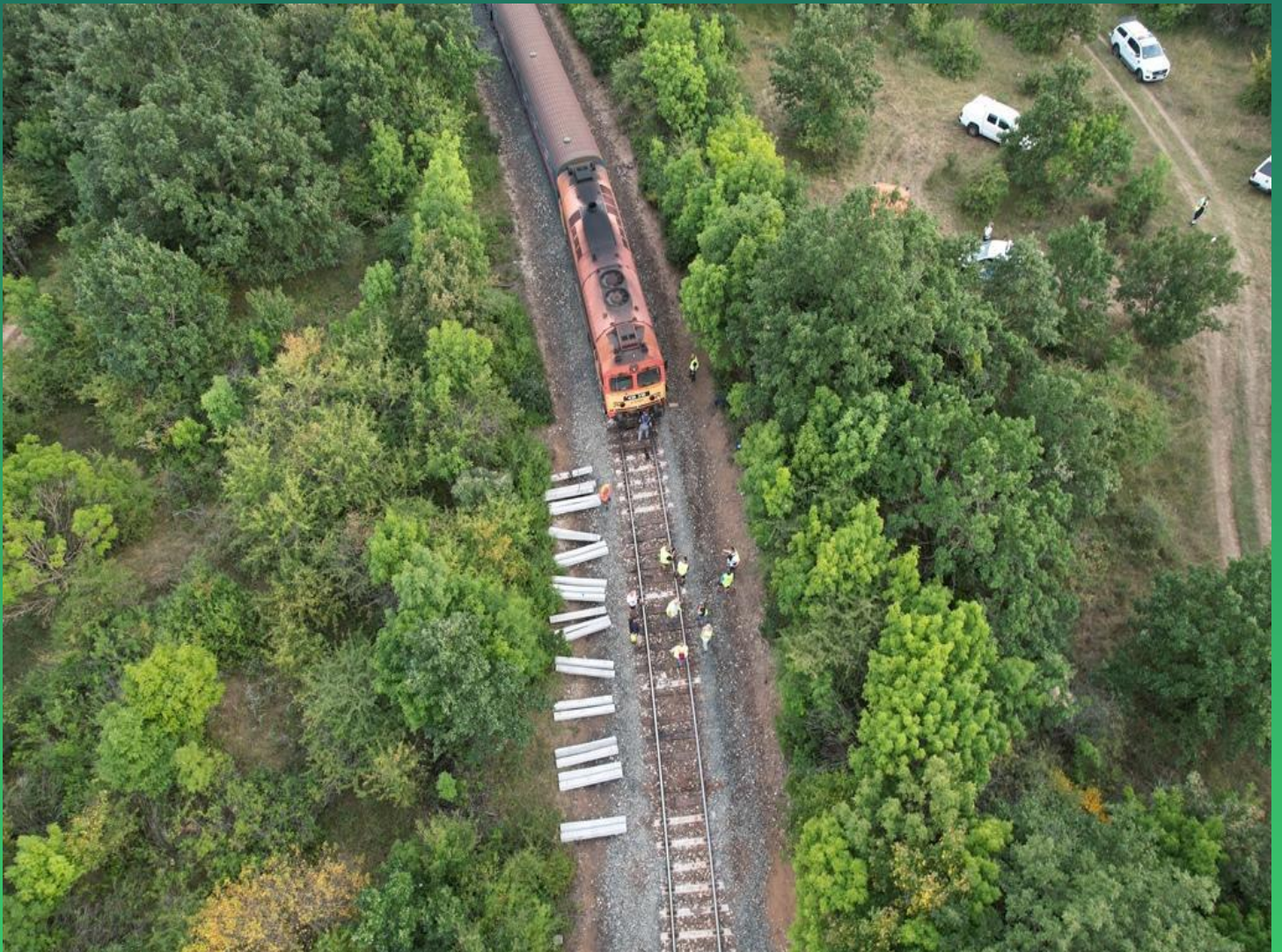




MINISTRY FOR
TRANSPORT AND PUBLIC WORKS
TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)



2023-0857-5
(HU-10443)

Railway accident / Derailment
Eplény - Veszprém, 28th August 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 28 August 2023, the front axle of the Class 418 locomotive pulling passenger train No. 39513, travelling from Veszprém to Győr, derailed at section marker 639+22 between Eplény and Veszprém stations. Two other derailments had also occurred at the same location in recent months.

The investigation established that, prior to the derailments, a directional fault had developed in the track and the rails were worn rough. The design of the locomotive also contributed to the occurrence, due to its greater wear on the rails and its bogie, which required a higher steering force. To better understand the locomotive's behaviour, running dynamics measurements were also carried out in November 2024, with the evaluation of these completed by the summer of 2025.

The track maintenance organisation detected a fault in the track on one occasion prior to the derailments, but was unable to carry out the repairs in time.

In view of the risks posed by the locomotives, the operation of Class 418 locomotives on the railway line was prohibited; the risk inherent in railway track maintenance can be managed by securing the necessary resources, and therefore the TSB is not issuing 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 directional fault in the track at the derailment site;
- b) the design of the locomotive's bogie suspension increases the locomotive's steering force requirements;
- c) the rails were severely worn due to abrasion, and this was not counteracted by rail lubrication; the abrasion effect of the derailed locomotive was greater than that of other types.

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) in the years prior to the incident, the proportion of locomotives classified as high-risk on the line had increased.

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 railway infrastructure manager detected the track fault at the site of the incident prior to the first derailment, but the measures taken proved insufficient;
- b) however, this was not the case before the subsequent derailments, even though the risk associated with that section of track was known.

5.2 Actions taken

As from 29 August 2023, the railway infrastructure manager banned the operation of Class 418 locomotives between Zirc and Veszprém stations.

On 19 September 2023 – that is, after the occurrence in question – during an on-site inspection, a trial installation site was designated by the Railway Infrastructure Directorate for a new type of Slovenian-made rail lubrication system at Zirc – Eplény station section at section markers 606–607. According to the manufacturer, this rail lubricator will be significantly more effective than previous models, exerting its lubricating effect over a distance of approximately 150–200 metres in both directions.

Installation was completed in early 2024, and initial experience confirms longer-lasting effectiveness.

5.3 Additional notes

Although not directly related to the incident, a risk-increasing factor is that, due to the design of this locomotive type, the vehicle body, if it starts to sway, may strike the bogie frame member, thereby increasing the risk of derailment.

5.4 Proven procedures, good practices

The fact that the train was travelling at a very low speed helped to mitigate the consequences of the occurrence and prevent a more serious outcome. As outlined in Chapter, this does not prevent derailment, but it did reduce the harmful consequences.

5.5 Lessons learnt

Long-term track-vehicle interactions (wear), the lack of sufficient rail lubrication, and the choice and proportion of vehicle types used to handle traffic all played a role in the incident and highlight that these factors can also pose a risk).

On the track maintenance side, the risk posed by the track defect had been identified prior to this incident; however, on this occasion, the speed restriction was no longer sufficient to prevent the derailment. It would have been essential to carry out remedial work that yielded meaningful results, and for the necessary resources to be available for this.

6. SAFETY RECOMMENDATION

Such occurrences can be avoided by carrying out track maintenance work, provided the necessary resources are available; furthermore, measures have been taken regarding the safety risk posed by the vehicle type, and therefore the Investigation Committee does not consider it justified to issue a safety recommendation.