MINISTRY OF
CONSTRUCTION AND TRANSPORT

TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)

2022-0917-5
(HU-10289)

Railway accident / Derailment
Nyékládháza - Miskolc-Rendező, 25th August 2022

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 25 August 2022, at 3:40 pm, between Nyékládháza and Miskolc-Rendező stations, the 13th wagon of the freight train № 48205 derailed with a bogie. The locomotive driver did not notice the derailment and continued the travel. Later, at Nyékládháza station, on the № 9 turnout, the wheels of the derailed bogie climbed back onto the track. The train was stopped for inspection first at Mezőkeresztes-Mezőnyárád and then at Mezőkövesd station.

The derailed bogie caused extensive damage to the railway track, including the track elements of two light barriers and a hot axle box detector.

At the site of the derailment, there were both directional and track surface defects at the same location, which had been discovered earlier during track inspection procedures and resulted in a speed restriction. The locomotive driver had exceeded the speed limit when driving over the defective track section, where the excessive dynamic load caused the wagon to derail.

The consequences were exacerbated by the locomotive driver's failure to identify that he was towing a derailed train, which damaged 5.5 km of track.

The choice of speed combined with the condition of the railway track resulted in derailment. Using mathematical methods, the investigation showed that the combined presence of track geometry errors poses increased risks through dynamic effects, and although some of the track inspection procedures used manage and evaluate errors together, this complex approach to evaluation can only be achieved intermittently. In the period between 2-3 measuring train measurements per year, the subjective methods of the track inspection organisation do not always allow for appropriate action.

The investigation also found that the train was allowed to run despite the fact that the locomotive driver did not have valid line knowledge and the train's documents did not show it was braked, although it actually was.

The TSB does not issue a safety recommendation, but as a lesson learntfrom the incident, it draws attention to

- the importance of the locomotive driver's disciplined and attentive behaviour,
- the risks inherent in subjective track inspection,
- the potential of IT management of train data to improve safety.

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 simultaneous directional and track surface defect (with the risk of derailment due to dynamic effects) at the same place on the railway track;
b) the driver exceeded the speed limit on the track fault;

therefore, due to the excessively increased dynamic load, the 13th freight wagon of the train derailed after passing through different track faults at the same location.

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) despite the fact that the anomaly that occurred (even if not specifically the fact of derailment) was recognisable from the locomotive driver's cab, the driver did not stop and check his train;
b) the track at the accident site is old and it has substructure defects which contribute to the formation of track geometry defects.

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 track inspection system mostly assesses track faults separately, and procedures for assessing the co-occurrence of faults are rare or subjective compared to how quickly the fault develops;
b) the substructure defect was detected, but the infrastructure manager has not resolved the problem for decades; there are no contracts for substructure inspections.

5.2 Actions taken

A vasúti társaságok a zárójelentés tervezetének elkészítéséig megtett intézkedésekről nem számoltak be.

5.3 Additional notes

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

a) the railway company employed the locomotive driver in such a way that he did not have a certified line knowledge on the section of line concerned by the incident, but he still served there regularly;
b) the locomotive driver left the scene of the accident;

c) the train was not braked according to the train load statement, but no action followed after the train was picked up.

5.4 Proven procedures, good practices

It helped to reduce the consequences of the occurrence and avoid a more serious outcome that

a) after detecting the faults in the signalling equipment, the traffic staff stopped the train and inspected it.

5.5 Lessons learnt

A dangerous track defect developed at the scene of the incident, where the train involved in the accident was travelling exceeding the speed limit.

Of the two problems, only the latter, speeding, was the one which was also in breach of specific rules, but the importance of requiring disciplined driver behaviour cannot hide the fact that the other direct cause of the incident, the track defect, can also reduce the likelihood of similar incidents occurring on the maintenance side.

Since the management of short term track defects is based on subjective assessments, which are heavily influenced by several factors, one such option is to apply a higher safety factor.

In addition to avoiding derailments, a key lesson is that the consequences of accidents that have already occurred can be effectively mitigated: with attentive driver work and timely detection of abnormal traffic, the damage could have been significantly less.

It cannot be linked to the occurrence of an incident, but in other circumstances it can prevent a serious risk if IT systems not only store train data, but also perform basic checks on it and indicate irregular data – for example, the relation of the required and actual braking.

6. SAFETY RECOMMENDATION

Such incidents can most likely be avoided by following the rules (speed limits) and taking into account the lessons learnt and therefore the IC does not consider it appropriate to issue a safety recommendation.