MINISTRY FOR
TECHNOLOGY AND INDUSTRIAL
TRANSPORTATION SAFETY BUREAU

FINAL REPORT (EXTRACTION)

2021-1110-5
(HU-10148)

Railway incident / SPAD
Császárszállás (Signal V4), 21st October 2021

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 21 October 2021, at dawn, a freight train was planned to wait on track IV at Császárszállás station in order to be overtaken by a passenger train. However, the incoming freight train did not stop at the station, but passed the V4 exit signal at danger without authorisation and burst the № 7 switch open.

The driver probably fell asleep for a short time while entering the station, but stopped the train himself after passing the exit signal, and the train control system did not intervene.

The background to the incident was that the driver had started his night duty in more tiring and stressful conditions than usual, and then, due to a vehicle fault, his train had been running at a near-steady, monotonous, slow pace for about an hour.

The station's safety installation is not designed to stop trains in the event of signal pass at danger on non-through main tracks. This design weakness is known to the infrastructure manager, but no measures have been taken to compensate for it.

The TSB issued a safety recommendation on the review of the "equipped for train control" classification of tracks.

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 locomotive driver most likely failed to apply the brakes in time due to a micro-sleep; the reason for this was that he
   - had been alert for a long time without adequate rest,
   - had been involved in persistent monotonous driving immediately before the incident.

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 train control system did not stop the train when it passed an exit signal at danger, because the design of the safety equipment used at the station is not suitable on all tracks to stop the train in the case of SPAD, but may even give a signal that is explicitly misleading in such a case;
b) because of the non trailable two-way switch, the damage to the opened switch was greater than it would have been elsewhere.

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 infrastructure manager does not consider the shortcomings of the safety installation (resulting from its design) as a risk to be managed.

5.2 Actions taken

Based on the tests carried out, the infrastructure manager concluded that the equipment worked as expected and as designed.

He indicated, however, that if the final report makes any recommendations on the safety installation, they will be taken into account and appropriate steps will be taken on any further measures deemed necessary.

5.3 Additional notes

No risk-increasing factors were identified by the IC that could not be linked to the occurrence of the occurrence.

5.4 Proven procedures, good practices

The traffic controller informed the locomotive driver of the expected stop in advance, which, as shown in the final report, may have contributed to avoiding a more serious outcome.

5.5 Lessons learnt

The accumulation of circumstances, even independent of each other, which make the driver more tired than usual, can together lead to a high probability of a driver's attention lapse, e.g. due to a short sleep.

In such cases, a safety installation that can intervene in place of the driver if necessary is more important, at least to mitigate the consequences, than the system that was in use at the time of the incident.

If it fails to do that by design, it is a safety management task to manage the resulting risk, for example

- by modifying the design,
- by taking technological measures to compensate for design deficiencies,
- or, in extreme cases, by consciously taking the risk.

6. SAFETY RECOMMENDATION

6.1 BA2021-1110-5-01

During the investigation, the IC found that, although the information service of continuous signalling on the affected station track is functioning, but the design of the continuous signalling of the associated switching zone prevents the affected function from stopping a train passing an exit signal at danger. Therefore, there is no generally well-functioning train control on the track, whereas the Station Instructions state that there is.

The TSB therefore issues the following safety recommendation:

number: **BA2021-1110-5-01**

addressee: **Railway Aurthority Division, Ministry for Technology and Innovation**

responsible for introduction: **MÁV Zrt.**

The TSB recommends MÁV Zrt. to consider reviewing the criteria used to determine the classification of station tracks as "equipped for train control", taking into account whether those tracks perform the train control functions on which the relevant rules and instructions are based. On this basis, the necessary measures should be taken to ensure that the Station Instructions include correct information on the suitability of the tracks for continuous signalling.

By acceptance and expected implementation of the safety recommendation, on tracks where the safety features of continuous signalling are not implemented, risks can be reduced by following the rules for tracks not equipped for continuous signalling.