

MINISTRY OF CONSTRUCTION AND TRANSPORT TRANSPORTATION SAFETY BUREAU

# FINAL REPORT (EXTRACTION)



2022-0740-5 (HU-10256)

Railway accident / Collision Balatonfüred, 11<sup>th</sup> July 2022

## Translation

This document is the translation of Points 1, 5 and 6 of the 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 11 July 2022, at 13:35 pm, the passenger train № 19714 entering Balatonfüred station collided with the locomotive № 431-081 which was shunting in the upside switching zone. Five passengers of the passenger train were injured lightly in the accident.

During the investigation it was established that the locomotive № 431-081 stopped at 13:20 at the exit sign of track III of the station at the starting point, at which time the traffic controller instructed the locomotive to remain stationary. At 13:34 the traffic controller informed the driver that *after the arrival of train № 19714*, *he could roll out to the shunting limit signal, with the level crossing barriers closed*. The locomotive driver did not fully understand this communication and only partially repeated its content as an acknowledgement that he *would be departing and leaving space behind him beyond the closed barriers*. The traffic controller did not detect such misunderstanding of the order issued, so he acknowledged to the driver. Subsequently, the SR2 and SR4 station barriers were closed by the incoming train, and the driver of locomotive № 431-081 started to reverse in the direction of the starting point, thus entering the track of the incoming train № 19714 at 13:35 at Switch 2.

The Investigating Committee attributed the cause of the accident directly to the human factor in relation to the locomotive driver of the shunting movement and the traffic controller, who had not been communicating in a safety-critical manner. However, the fact that the locomotive driver of the train entering the station did not observe the speed limit in force at the place where the accident occurred contributed to the seriousness of the consequences of the accident. The lack of consistency between the station technology and the services provided by the safety equipment in relation to the volume of traffic was identified as a risk factor, not directly related to the occurrence of the incident, but increasing the risk.

The case has shown that the application of the principles of safety-critical communication is of fundamental interest in cases where movement authorisations are issued solely by radio and where drivers of railway vehicles cannot rely on signals from fixed signalling devices. In the course of the communication, not only must the messages be repeated, but the participants must always carefully check that the other party has understood them in the same way.

As such incidents can be avoided by following the rules on notices of authorisation to shunting and on communication on radio networks, and by taking due care of staff, the IC did not consider it justified to issue 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) the driver of locomotive № 431-081 started a reversing movement without authorisation (**Hiba! A hivatkozási forrás nem található.**); because
- b) there was a communication breakdown between the traffic controller and the driver of locomotive № 431-081 for the execution of the shunting movement (**Hiba! A hivatkozási forrás nem található.**):
  - the driver of the locomotive № 431-081 misunderstood prior information received from the traffic controller and interpreted it as a notification of authorisation to do the shunting (Hiba! A hivatkozási forrás nem található.);
  - the traffic controller did not check whether the information notice was understood and when the driver of the locomotive № 431-081 reproduced the part of the notice concerning the method of execution, omitting the first half-sentence containing the shunting restriction, he acknowledged it (**Hiba! A hivatkozási forrás nem található.**).

#### 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 driver of train № 19714 did not observe the speed limit at the location of the incident and was therefore unable to stop within the distance from the point of detection to the locomotive on his track, which significantly increased the severity of the consequences (**Hiba! A hivatkozási forrás nem található.**).

#### 5.1.3 Systemic factors

During the investigation, the IC identified no causal or contributing factors of organisational, management, social or regulatory nature which are likely to have an effect on similar or related occurrences in the future.

#### 5.2 Actions taken

In the course of the investigation, MÁV Zrt. informed the IC of the following measures taken in relation to railway safety:

- "Measures taken by the Veszprém Traffic Junction Headquarters: the station master of Balatonfüred station issued a warning order in the Book of Orders on 27 July 2022 (Hiba! A hivatkozási forrás nem található. - ed. IC).
- Measures taken by the regional traffic department: following a railway accident involving a moving train at Balatonfüred station on 11 July 2022, a consultation was held with MÁV-START Zrt. to ensure that the shunting movements were carried out as instructed. An inspection was carried out at Balatonfüred station by the regional traffic department manager.

Actions taken by the regional railway director: the Tapolca telecommunications section (as part of a mini project) installed one camera each on the up-side and down-side switching zones of Balatonfüred station to monitor shunting movements. The live image is visible from the traffic office and the adjacent loudspeaker recording room. The video images are not recorded."

### 5.3 Additional notes

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

 a) the development of traffic services for station signalling equipment has not always been implemented where it should have been, or the dependencies built in have not been consistently designed, which can be confusing for both station and locomotive crews in some cases (Hiba! A hivatkozási forrás nem található.).

#### 5.4 **Proven procedures, good practices**

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

- a) the driver of the locomotive № 431-081 decided to reverse and rolled back towards the platforms when the emergency was detected (Hiba! A hivatkozási forrás nem található.);
- b) the traffic controller was monitoring the movements on the safety equipment and therefore detected the departure of locomotive 431-081 and tried to radio to stop the reversing (**Hiba! A hivatkozási forrás nem található.**).

#### 5.5 Lessons learnt

The case has shown that the application of the principles of safety-critical communication is of fundamental interest in cases where movement authorisations are issued solely by radio and where drivers of railway vehicles cannot rely on signals from fixed signalling devices. In a given situation, in order to avoid misinterpretation of the instructions given, which could easily lead to an accident situation, or even an accident, it is not only necessary to repeat the information given, but also to ensure that the other party in the conversation has understood it in the same way (**Hiba! A hivatkozási forrás nem található.**).

The case also serves as a lesson for the future that it is extremely important to design technical equipment with due care and attention and to favour uniform design solutions, because certain design/construction compromises may have a negative impact on transport safety in use later on (Hiba! A hivatkozási forrás nem található.).

## 6. SAFETY RECOMMENDATION

Such occurrences can be avoided by following the notices of authorisation relating to reversing and on distribution on radio systems, and by paying due care and attention by staff, and the IC therefore does not consider it justified to issue a safety recommendation.