

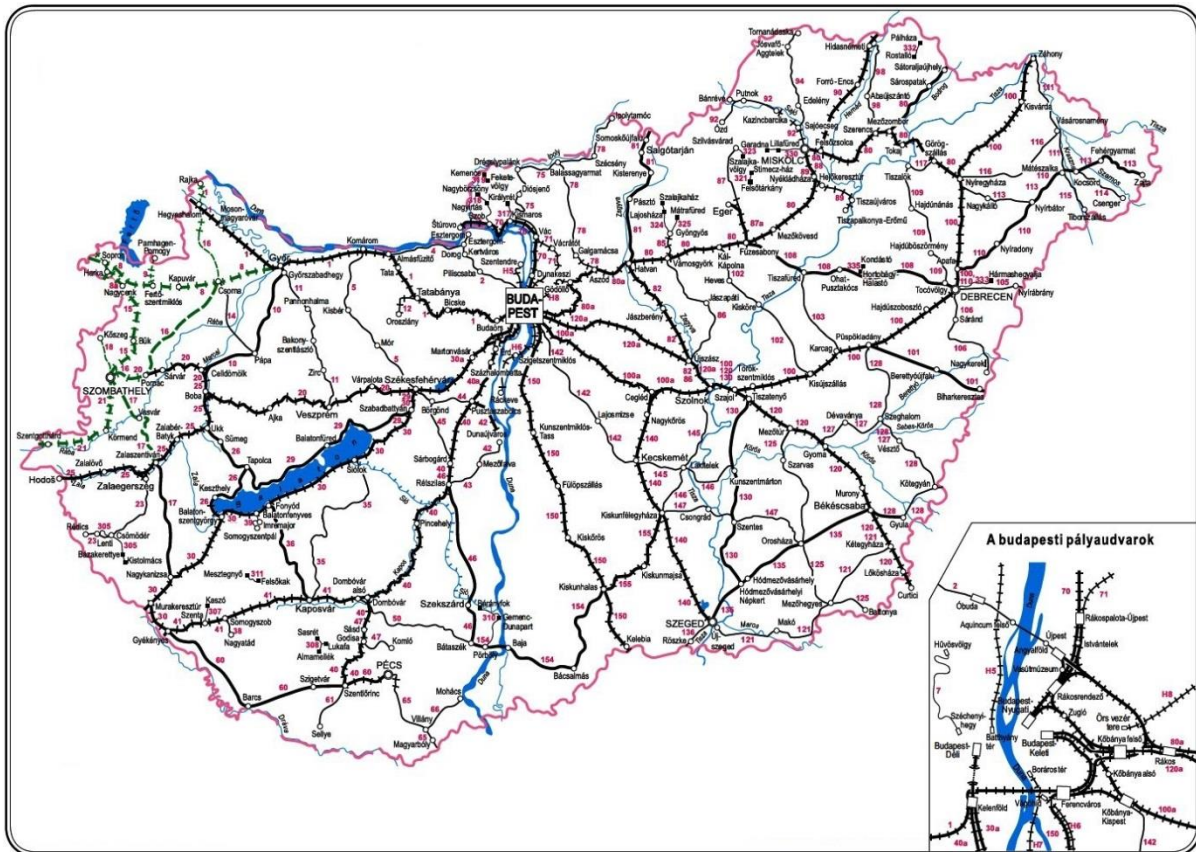
Ministry of  
Construction and Transport

**ANNUAL REPORT 2022**  
**Transportation Safety Bureau**  
**Hungary**

## TABLE OF CONTENTS

RAILWAY NETWORK IN HUNGARY .....	3
SUMMARY .....	4
1. INTRODUCTION.....	6
1.1 Organisation of TSB Hungary.....	8
1.2 Organisational flow of TSB Hungary.....	9
2. INVESTIGATION PROCESS.....	11
2.1 Independent basis of the investigations .....	11
2.2 Accident investigation philosophy of TSB Hungary.....	11
2.3 The investigation process of TSB Hungary.....	12
3. OVERVIEW OF THE YEAR 2022 .....	13
3.1 About notifications .....	13
3.2 About investigations.....	14
3.3 Safety Investigations started in 2022.....	16
4. INVESTIGATIONS COMPLETED IN 2022 WITH THE ISSUED RECOMMENDATIONS ..	20
4.1 Investigations closed in 2022 .....	21
4.2 Safety Recommendations issued in 2022 .....	57
5. OTHER ACTIVITIES.....	65

## RAILWAY NETWORK OF HUNGARY



### Basic data of the infrastructure: 8350 km rail network

<u>National lines:</u>	7685 km
	IM: MÁV Co. (94%), GYSEV Co. (6%)
	Trans-European network: 2830 km (37%)
<u>Regional lines:</u>	320 km (100% narrow gauge)
<u>Suburban lines:</u>	136 km (IM: MÁV-HÉV Co.)
<u>Local tramway network:</u>	209 km in Budapest, Debrecen, Miskolc, Szeged

<u>Level crossings:</u>	6041 (48% active, 52% passive)
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## SUMMARY

Hungary fully implemented all essential requirements concerning accident investigation of the Railway Safety Directive 2004/49/EC and 2016/798/EC in its national law.

Transportation Safety Bureau of Hungary (TSB) was established on 1<sup>st</sup> January 2006 as the legal successor of Civil Aviation Safety Bureau (founded in 2002). TSB operates in a multimodal form. Its main duty is the independent safety investigation of aviation, railway and marine accidents and incidents. Within the organisational framework of TSB, the Railway Department began to operate on 1<sup>st</sup> March 2006.

Pursuant to Government Decree 230/2016. (VII. 29.) on the assignment of a Transportation Safety Body and the termination of Transportation Safety Bureau with legal succession, the independent organisational status (as a central authority) of Transportation Safety Bureau was terminated with an effect of 1 September 2016, and TSB was integrated in Ministry of National Development (from 2018: Ministry of Innovation and Technology) as a division. As part of this integration, the functions supporting the operation of the organisation (finance, communication, law, IT, HR) were wound up, and their responsibilities were transferred to the Ministry and other entities and units of public administration. As a result of such reorganisation, the Railway Department of TSB, which used to work with a clear professional profile dedicated to railway, became Railway and Duty Service Unit. The year 2017 was the first full year of our operation in the new form of organisation.

In 2022, there was an organizational change at TSB. From 1<sup>st</sup> December 2022, with the termination of the Ministry of Innovation and Technology (where the TSB formerly operated) hereinafter TSB operates in the Ministry of Construction and Transport, under the supervision of the Secretary of State responsible for transportation.

In 2022, there was no occurrence (serious accident) on the railways which the Railway Department of TSB was, pursuant to the regulations, obliged to investigate.

TSB decided at its own discretion to conduct independent safety investigation into 26 occurrences.

During the year of 2022, TSB published 34 final reports, including 23 safety recommendations. 20 of these recommendations have been accepted, 2 were rejected, and 1 was left without response. 1 of the accepted recommendations has been implemented; implementation of 19 more recommendations is in progress.

At its own discretion, TSB deepened the scope of the safety investigation in some investigations of occurrences classified as signals passed at danger (SPADs), taking into consideration hazards and high frequency of these cases with an otherwise fortunate outcome. Based on previous positive experiences, TSB monitored with particular consideration the occurrences related to level crossings (LC accidents) and to persons injured by railway vehicles, initiating safety investigations in cases that appeared to be instructive. In 2022, we laid great emphasis on revealing the root causes of the occurrences, especially in the aspects of human and organisational factors for example fatigue, safety critical communication etc. In 2022, we also set out the lessons learnt in the area of safety culture if we found it necessary and possible.

Article 22(7) of Directive (EU) 2016/798 of the European Parliament and of the Council on railway safety provides for the operation of a common peer review programme for Member States' accident investigation bodies. In accordance with the timetable, the evaluation of the Hungarian accident investigation body took place in 2022, where the TSB hosted representatives of the NIB Network and ERA in a three-day programme and made itself available for the process evaluation.

Abbreviations	
HU	Hungary
IC	Investigating Committee
LC	Level crossing
MÁV Co.	Hungarian State Railways Plc.
NIB	National Investigation Body
NSA	National Safety Authority (the National Safety Authority of Hungary)
RSD	Railway Safety Directive (Directive (EU) 2016/798)
SPAD	Signal passed at danger
TSB	Transportation Safety Bureau of Hungary (the NIB HU)

## 1. INTRODUCTION

The Transportation Safety Bureau of Hungary (TSB) as a multimodal organisation for the investigation of accidents was established on 1<sup>st</sup> January 2006.

The Annual Report 2021 of TSB - in accordance with Article 24 (3) of the Railway Safety Directive 2016/798/EC - gives an account on the following:

- the implementation of 2004/49/EC and 2016/798/EC Railway Safety Directive into the Hungarian law,
- the relations of TSB with other concerned organisations,
- the philosophy and process of the independent safety investigation at TSB,
- the overview of the past 12 months from transport safety point of view,
- the experiences of the independent safety investigations carried out by TSB,
- the safety recommendations issued by TSB and the provisions made in relation to the recommendations, and
- the participation of TSB in the work of the European Railway Agency.

### **Legal basis - The implementation of the Safety Directive in the Hungarian law:**

Hungary implemented all essential requirements concerning accident investigation of Railway Safety Directive 2004/49/EC and later 2016/798/EC in Act CLXXXIV of 2005 on the safety investigation of aviation, rail and marine accidents and incidents. Based on the Directive, Transportation Safety Bureau was established on 1<sup>st</sup> January 2006 and – as a multimodal organisation - is responsible for the independent safety investigation of aviation, railway and marine accidents and incidents.

The detailed regulations of the safety investigation are included in the decrees of Act CLXXXIV of 2005 which were separately issued for the three modes of transport by the Minister of transport. The decree on the regulation of the safety investigation of serious railway accidents, railway accidents and incidents (7/2006 GKM) was issued on 27<sup>th</sup> February 2006.

Powers of TSB have been extended: previously, the scope of TSB activity had not included investigations of accidents and incidents occurred on local railways. Serious accidents are not frequent on these railways (underground railway, cogwheel railway, tram – Budapest, Miskolc, Debrecen, Szeged), nevertheless, related hazards are high, considering the high number of passengers transported daily. Extension of the investigation scope by including these railway systems was justified by this hazard, completion of the safety investigations additionally generated being possible by an allocation of minor extra resources.

Act CLXXXIV of 2005 on the safety investigation of aviation, rail and marine accidents and incidents was also amended parallel to this, the amendment concerning TSB activity by introducing the institution of accident investigation of the operator in the railway sector as well. Positive experiences of the accident investigation system of the operator, well established in the aviation sector, can be effectively applied to enhance safety in the railway sector also. Therefore, according to the new regulation for occurrences not included in the serious accidents category required to be investigated by the National Investigation Body (NIB), in case NIB takes decision on not conducting a safety investigation of the occurrence, the safety unit of the railway undertaking will be requested to conduct the investigation of the operator and inform NIB on the results in a report.

This regulation does not aim the duplication the safety system, it does not concern investigations required by the safety management system (SMS). Its objective is to ensure that reports, being issued anyway by the accident services of railway undertakings, would be forwarded to NIB, furthermore, authorizes NIB to request additions, when necessary, to these reports – by this, the regulation helps NIB in collecting data on safety issues. Involving organisations already actors of the SMS in the activity of NIB does not require extra resources (HR, etc.) on either side, nevertheless, it broadens significantly the information base of NIB activity and, by this, the enhancement possibilities of railway safety.

These rules were implemented into the decree on the regulation of the safety investigation of serious railway accidents, railway accidents and incidents (7/2006 GKM) issued on 27<sup>th</sup> February 2006, the new number of this decree: 24/2012 NFM issued on 8<sup>th</sup> May 2012.

Within the organisational framework of TSB, the Railway Department began to operate on 1<sup>st</sup> March 2006 pursuant to the regulations.

**The national Act guarantees the complete independence of TSB from all other actors of the concerned transport sector.** The Act defines the objective of the independent safety investigation as follows:

‘The objective of the independent safety investigation is to reveal the causes and circumstances of serious railway accidents, accidents and incidents and to initiate the necessary technical measures and make recommendations in order to prevent similar cases in the future.’ It also states that ‘it is not the purpose of the investigation carried out by TSB to apportion blame or legal liability’.

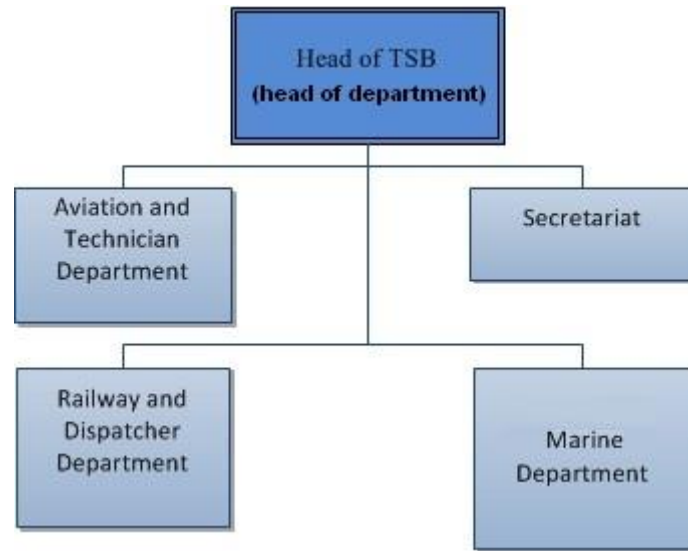
The Act contains the rights and responsibilities of the investigators defined in the Safety Directive.

According to the national regulations:

- All aviation, railway and marine occurrences shall be reported to TSB.
- The members of the Investigating Committee of TSB are authorized to be present at the site of any occurrence and to conduct the safety investigation parallel with the police investigation (if there is one).
- Based on the results of the investigation, TSB is entitled to issue safety recommendations and recommend immediate preventive actions before the completion of the investigation, if necessary. The implementation of safety recommendations is not obligatory, however, the addressees must report to TSB once a year whether they have accepted or rejected them. (The addressees must forthwith respond to the recommended immediate preventive actions.)
- The anonymity of the relevant parties is guaranteed. TSB shall make public the final reports on the results of the investigation. However, the final report shall not contain data based on which the relevant parties can be identified. The final report shall not be used in criminal procedures.

## 1.1 Organisation of TSB Hungary

The organisation and relations of the multi-modal NIB is shown in organogram.



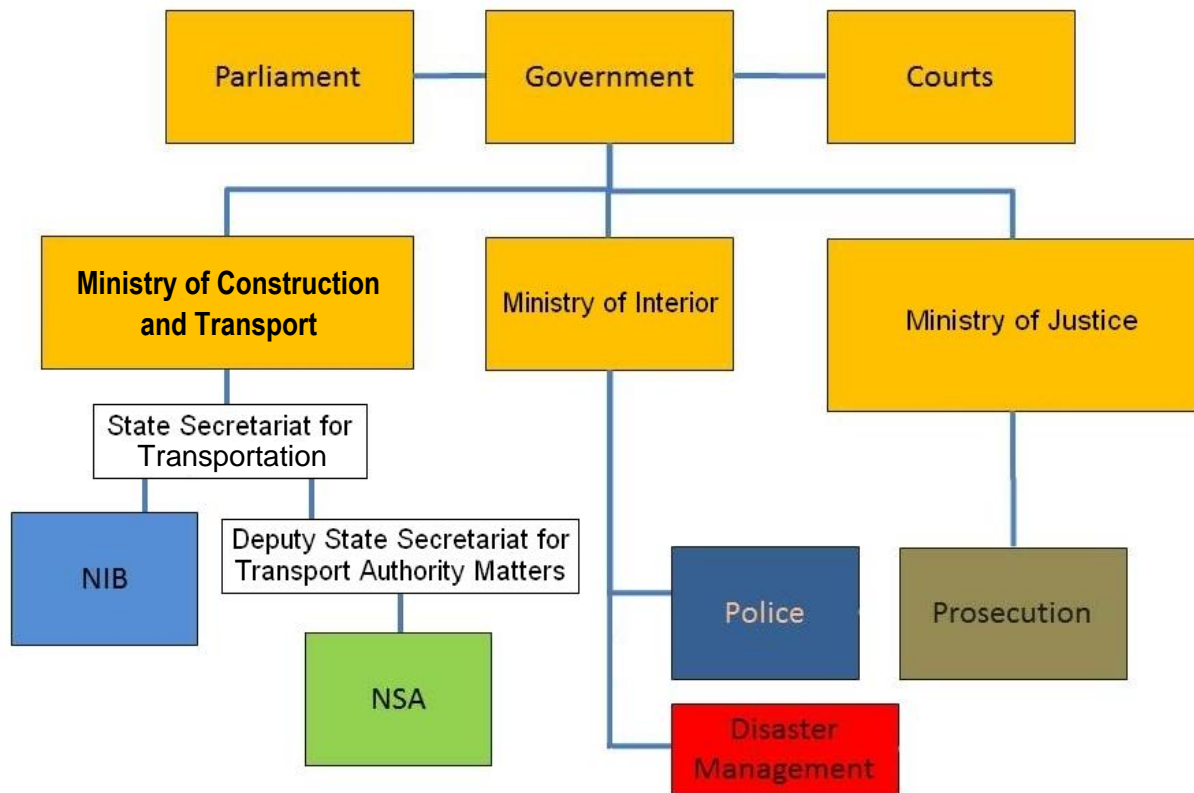
The organisation of the TSB

- TSB regards prevention as the main objective of its activity. TSB endeavours to share the findings, the results and the experiences of the safety investigations with a wide circle of organisations in the profession as well as with the civil sector.
- TSB was established on 1st January 2006. The Aviation Department and the 24/7 Duty Services operated from the beginning of 2006 and the other departments and units grew gradually during the year. The Railway and the Marine Department began to work officially on 1st March 2006.
- As the TSB is integrated in Ministry of Construction and Transport as a division the Head of the TSB is a Head of Department in the structure of the Ministry.
- The Railway Department consists of 7 investigators 6 dispatchers and the Head of Railway and Dispatcher Department (who is the chief railway investigator).



## 1.2 Organisational flow of TSB Hungary

The following chart shows the system of organisational relations of NIB HU:



### System of organisational relations

- Within Ministry of Construction and Transport, NSA is ranked Deputy State Secretariat, and TSB (the NIB) is a Division. Accordingly, NSA is positioned at another level, the addressee of the safety recommendations is different within the same entity, and supervision is common at the ministerial level.
- The Ministry of Construction and Transport is the national regulator.
- Based on the outcome of the investigations, TSB may issue safety recommendations to the National Safety Authority (NSA). The implementation of safety recommendations is not mandatory; the addressees however are obliged to compile an annual report on their response (acceptation, implementation, or refusal).
- TSB is part of the Ministry of Construction and Transport. The Head of TSB works under direct supervision of the State Secretary. According to the national law, the Minister shall not instruct TSB in matters concerning the independent safety investigations, but, according to the organisational rules, the Minister has the power to do so.
- TSB reports to the government annually on the activities of TSB, the lessons learned from the independent safety investigations, the processes and trends concerning transportation safety.
- The general rules regarding the operation of the railways are currently defined by the state-owned MÁV Co., the largest infrastructure manager in Hungary. The National Safety Authority only assents to the amendments to the rules.

- TSB is authorized to get access to all data relevant to the occurrence in question (including data stored on data recorders).
- The Investigating Committee of TSB may conduct its on-site investigation simultaneously with the police investigation.
- TSB and the police may help each other's work with exchange of factual data and results of expert analyses. The Investigating Committee (IC) may withhold information obtained in the course of the investigation from other authorities in occurrences when the owner of the information would have had the right to do so.
- TSB, the police and the disaster management mutually inform each other about the received notifications.

## 2. INVESTIGATION PROCESS

### 2.1 Independent basis of the investigations

Pursuant to national law, TSB is independent of all persons and organisations whose interests are contrary to the duties of the investigating organisation, in particular:

- authorities granting permission to put vehicles into service,
- authorities granting permission and controlling the operation and the maintenance of the vehicles,
- authorities issuing driving licences,
- the organisation operating the transport infrastructure,
- transport companies,
- railway undertakings,
- the organisation determining railway tariffs,
- the organisation distributing routes,
- the safety authority, and
- all regulators in the field of railways.

Under the national law, the civil servants of TSB shall not be the owners, senior officials or employees of the above mentioned organisations.

The Director-General and the Investigating Committee of TSB shall not be instructed in their scope of duties concerning the safety investigation.

Functional independence of TSB remained intact during its operation within the Ministry.

### 2.2 Accident investigation philosophy of TSB Hungary

**Under the Hungarian regulations, TSB shall investigate serious railway accidents.**

The definition of ‘serious accident’ under the national regulations - in accordance with the Railway Safety Directive 2016/798/EC – is as follows:

*‘Any train collision or derailment of trains, resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment of at least HUF 500 million and any other similar accident with an obvious impact on railway safety regulation or the management of safety’.*

Apart from serious accidents, the national regulations permit TSB to investigate other occurrences – at its own discretion – that may have an impact on the safety of rail transport as well as on the regulations and management of railway safety.

**TSB availed itself of the opportunity provided by the regulations to decide which occurrences – apart from serious accidents – are to be investigated. TSB based its decisions regarding which occurrences require investigation on the following fundamental principles:**

- occurrences resulting in serious injuries to persons, extensive material damage and/or hindering railway transport significantly,

- **the latent danger of the occurrence can be considered significant – irrespective of its actual consequences,**
- **accidents or incidents recurring at the same site or in the same manner**

**should be investigated.**

When deciding which occurrences to investigate - besides the ones with serious consequences - it helps a great deal that the Railway Department regularly requests information from railway undertakings and relevant authorities on occurrences which are not investigated in details. The collection and evaluation of these data provides the possibility to be able to discover recurrence and certain tendencies in the accidents. These observations can create basis for further investigations.

In order to increase efficiency in decision making, it is necessary to gain as much information as possible. The institution of accident investigation of the operator has been introduced in the railway sector as well. Positive experiences of the accident investigation system of the operator, well established in the aviation sector, can be effectively applied to enhance safety in the railway sector also. Therefore, according to the new regulation for occurrences not included in the serious accidents category required to be investigated by NIB, in case NIB takes decision on not conducting a safety investigation of the occurrence, the safety unit of the railway undertaking will be requested to conduct the investigation of the operator and inform NIB on the results in a report.

## 2.3 The investigation process of TSB Hungary

The Duty Services of TSB (dispatchers) receive the notifications of the occurrences 24 hours a day.

The members of the Investigating Committee (IC) are appointed by the Head of TSB or by his deputy on duty. The IC consists at least two accident investigators. In case of more serious or complicated occurrences, one of the heads of department on duty TSB may be present on the site.

If an occurrence is not obliged to be investigated under the law, the head of the concerned department advises the Head of TSB to decide whether or not to conduct an investigation.

The Investigating Committee carries out the site survey (parallel with other authorities) and decides on the direction of the investigation, the required technical and technological examinations as well as selecting the organisations and/or experts to be initiated in the investigation if necessary.

Other processes are the same as those specified in the ERA guide relating to technical investigations: collecting of data, investigative interviews, analysis etc.

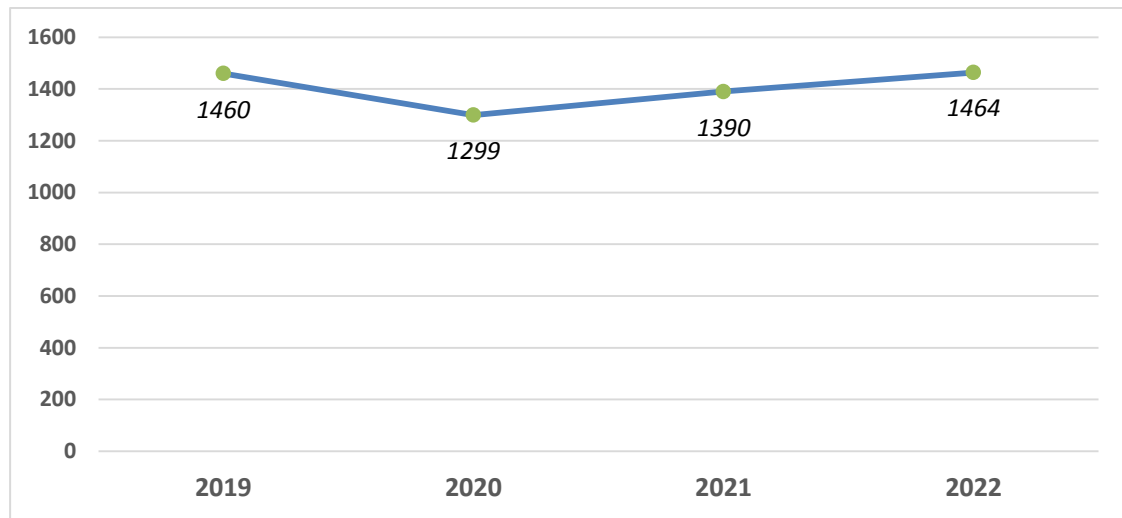
The draft reports on the occurrences are discussed by a board made up of the heads of departments.

The relevant parties of the investigation may make reflections on the draft report within 60 days from the date of receipt which is to be evaluated when compiling the final report. After this 60-day-period, TSB convenes a meeting for a final discussion with the participation of the representatives of the persons and organisations concerned. The purpose of the final discussions is that all concerned parties can hear the comments sent in reflection to the draft report as well as the viewpoint of TSB regarding the comments before the completion and publication of the final report. According to Hungarian law, the investigators may decide whether or not to include the parties' comments in the final report, the comments of an NIB of a Member State have to be included. Subsequently, the final report is made public.

All the three major departments of TSB have a separate 'Investigators' Manual' which lays down the methodological and technical requirements based on which the investigations shall be conducted by the investigators of TSB, taking the special characteristics of the given mode of transport into account.

### 3. OVERVIEW OF THE YEAR 2022

#### 3.1 About notifications



**Number of notifications received by TSB**

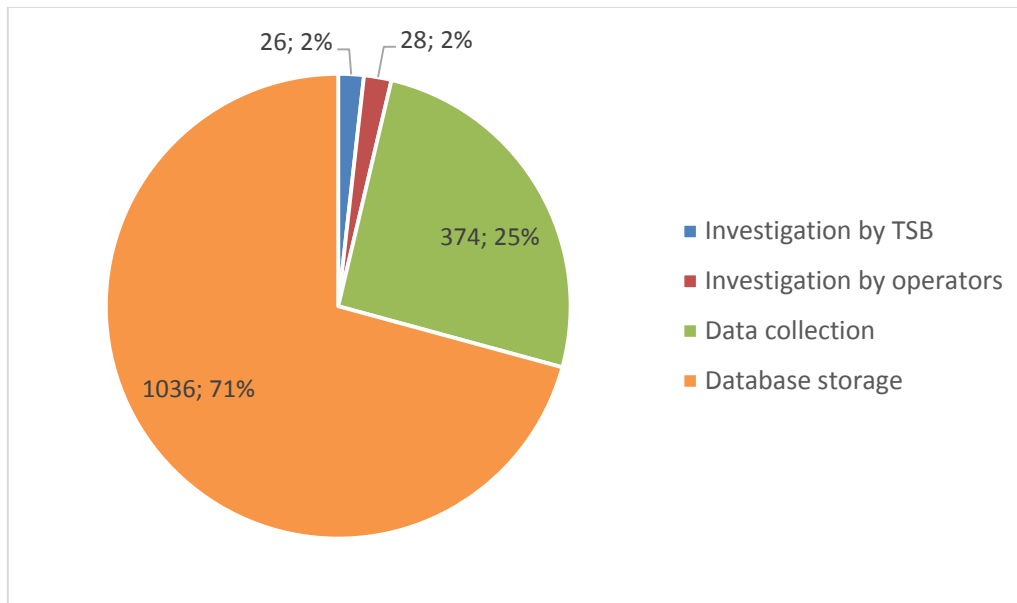
In 2022, the on-call service received a total of 1464 notifications in the field of rail transport, 74 more (about 5%) than in the previous year, but the number of notifications shows stagnation for a period of three years. The 5 % increase is roughly the same as the increase in the previous year, but neither this nor the three-year stagnation can be taken as a basis for any major conclusions, as the number of railway occurrences remains stable in terms of magnitude.

The more significant decrease in the number of notifications in previous years was mainly due to fewer notifications from local and suburban networks, while the slight increase from 2020 onwards was roughly evenly distributed between the different networks.

The figures show that the willingness to report is excellent, with practically all incidents that come to the attention of the operators being reported to the TSB.

Thanks to these notifications, the Railway & Duty Service Unit of TSB has up-to-date information on the nature of the occurrences on the suburban and urban rail network, in addition to the national rail system. This allows safety investigations to be launched into incidents which are rare but which could have serious consequences or which are recurrent in terms of location and nature. In the case of less serious occurrences, an operator investigation will be ordered, so that experience can be gained which will be a very effective means of improving railway safety.

### 3.2 About investigations



#### Activities what followed the notifications in 2022

In 2022, the TSB decided to perform an immediate *on site survey* (based on data in the notifications) on 38 occasions; such surveys were usually performed by a team of two members. 29 of the 38 site surveys (76%) affected the national railway network, which shows that the consequences of the accidents and incidents in such networks are more serious, and that the investigation into such accidents/incidents is more likely to require detailed data collection at the scene.

*Detailed data collection was performed* on 374 occasions in total. A purpose of detailed data collection was to find out whether the occurrence may offer such lessons to learn which justify the performing of a full investigation by us. In these cases, we asked the railway companies for information and data, and decided on the investigation on the basis of such inputs. Another form of detailed data collection is when we ask the competent authorities for information relating to whether a case where a person by a vehicle was a suicide or an accident caused by rolling stock in motion. This is needed because, pursuant to the relevant EU regulation, classification must be made on the basis of a decision of the authorities.

In 2022, TSB commenced a *full safety investigation* in 26 cases. With regard to the nature of the given occurrence, an investigating committee of 2 to 3 members is appointed to perform the investigation. When staffing an investigating committee, we ensure that investigators with relevant professional knowledge and experience be available in each committee for a successful investigation. Such areas of expertise are, for instance: traffic control, mechanics, infrastructure or human and organisational factors. The investigating committee is chaired by a member appointed by the Head of TSB, and such chair is responsible for successful and timely completion of the investigation. Compared to the headcount (avg. 6 investigators), it can be seen that an investigator had to chair 4 to 5 investigating committees on average in 2022. This number significantly exceeds the quantity of 2 investigations/year (what was specified by European Union Agency for Railways in an activity assessment report on the operation of TSB in 2012).

In 2022, TSB requested railway operators (infrastructure managers and railway undertakings) to investigate 28 occurrences. According to national legislation in the railway sector, since 2012 – similarly to aviation – TSB has the opportunity to request information from operators on the causes of railway occurrences which need no investigation by TSB but may offer a lesson to learn in connection

with general safety on rail transport. The conditions of an investigation by the operator are given: in order to meet the personal requirement to perform an investigation by operators, accident investigating training sessions are running since 2013 with the contribution of investigators of TSB. Until today over 200 people (accident investigators of railway operators) were involved and completed the courses. An advantage of this practice is that we gain more detailed information from the reports made of the investigations performed by the operators, and we are also informed on the preventive safety recommendations of the railway companies.

### 3.3 Safety Investigations started in 2022

**Table: Safety investigations started by TSB on the field of railway transportation in 2022**

Date	Description of occurrence	Classification
1 Jan	The passenger train No. 9797 collided with a car between <i>Badacsonytördemic-Szigliget</i> and <i>Tapolca</i> stations, in the level crossing AS1159 with operating active protection system. Of the 5 people in the car, 4 were killed and 1 suffered serious injuries; no occupant on the train was injured.	Railway accident
10 Jan	At <i>Gödöllő</i> station, the train No. 23028 (locomotive running solo) passed the second exit signal at danger without authorization by about 50 metres and stopped at the shunting limit signal between Tracks I and II. The passenger train No. IC658, which was entering Track II of the station, stopped with emergency braking, 125 metre away from the train No. 23028. No one was injured.	Railway incident
10 Jan	The freight train No. 47920, which ran away without crew at <i>Barca</i> station (about 20 km from the Hungarian border in Slovakia), entered the country (Hungary), passed through <i>Hidasnémeti</i> station on an unoccupied track and, due to the terrain, stopped on the line about 5 km later. There were no injuries during the incident.	Railway incident
16 Jan	At <i>Bősárkány</i> station, the train No. 39880 (locomotive running solo) passed the exit signal at danger without authorization, burst the switch No. 1 open and passed the unmanaged (open) SR1 level crossing, then stopped. No one was injured.	Railway incident
21 Jan	The train No. E5 departed without authorization on turnout track II (which is blocked from passenger traffic) at <i>Kőbánya-Kispest</i> station on the <i>Budapest Metro line M3</i> , collided with the train No. E18, which was departing from Track III with proper signalling. Both vehicles derailed and the access platform net to them was pushed against the train No. E7 stationary on Track I. There were no personal injuries, but there was considerable damage to property.	Railway accident
26 March	At <i>Maklár</i> station, the passenger train No. 5525 departed, then stopped in the switching zone in front of the incorrectly positioned switch No. 2. After the situation was clarified, the switch were repositioned and the train continued to run. No one was injured.	Railway incident
5 April	Between <i>Mindszent</i> and <i>Hódmezővásárhelyi Népkert</i> stations, the passenger train No. 32610 collided with a van in the level crossing AS187 equipped with warning lights. The DMU of the train derailed and tipped on its side. 5 people in the lorry were killed and 2 seriously injured, while 4 of the 17 people on board were seriously injured and 11 suffered minor injuries.	Railway incident



Date	Description of occurrence	Classification
13 May	At <i>Zalaszentmihály-Pacsá</i> station the 2 <sup>nd</sup> and 3 <sup>rd</sup> car of the departing freight train No. 44791-2 derailed on the No. 7 switch. No one was injured.	Railway accident
14 June	The passenger train No. 37011 left <i>Magyarbánhegyes</i> station without authorization and ran towards the passenger train No. 37036 coming from <i>Medgyesegyháza</i> station (opposite direction) on the single track. The traffic controller at the traffic control center detected the incident via the IT system and ordered the drivers to stop the trains by mobile phone, which was done in time. No one was injured in the incident.	Railway incident
26 June	The carriages of train No. 32421, which was arrived at <i>Mátészalka</i> station previously, ran away during the walk-around of the engine, together with the 2 cleaners who were working in the wagons. The wagons stopped due to terrain at <i>Kocsord alsó</i> station, about 6 km away. No one was injured.	Railway incident
30 June	At <i>Budapest-Keleti</i> station, during a high-degree heat alert, the power supply equipment of one of the carriages of the passenger train No. EN462 failed. Even its battery set was discharged, so it was decided to detach it. The doors were closed and the wagon (without openable windows) was pulled out towards the maintenance base where the shunting operations were finished. Approximately half an hour later, suffering from breathlessness, a passenger broke a window; the doors were pushed open and some people left the train through the service area. No one was injured.	Railway incident
10 July	The freight train No. 48400 crashed into the freight train No. 45286 between <i>Biatorbágy</i> and <i>Herceghalom</i> stations (the stationary train No. 45286 was caught up by the train No. 48400). No one was injured in the accident.	Railway accident
11 July	The passenger train No. 19714 entering <i>Balatonfüred</i> station collided with a shunting locomotive in the switching area. The accident caused minor injuries to 5 passengers of the train.	Railway accident
28 July	At <i>Vonyarcvashegy</i> station, the freight train No. 95725 passed the entry signal at danger without authorization, and stopped about 85 metres after the signal. In the meantime, the passenger train No. 19608 entered the station from the opposite direction. No one was injured.	Railway incident
25 Aug	On the line between <i>Miskolc-Rendező</i> and <i>Nyékládháza</i> stations, a wagon of the freight train No. 48205 derailed with a bogie, and about 5 km later, it got back on the track on a switch. During this time, the train damaged about 9000 concrete sleepers, 2 level crossings with warning lights and 1 switch. No one was injured, but there was considerable damage to property.	Railway accident

Date	Description of occurrence	Classification
30 Aug	On the line between <i>Karcag</i> and <i>Püspökladány</i> stations, a wagon of the freight train No. 45499-2 derailed with a bogie, and the train stopped about 1.2 km later. During this time, about 2000 concrete sleepers and 1 level crossing with warning lights were damaged. No one was injured, but there was considerable damage to property.	Railway accident
5 Sept	Between <i>Kunfehértó</i> and <i>Kiskunhalas</i> stations, the passenger train No. 7809 collided with a car in an unprotected level crossing. 7 people in the car were killed and the locomotive driver of the train was slightly injured in the accident.	Railway accident
14 Oct	Between <i>Aszód</i> and <i>Galgamácsa</i> stations, the passenger train No. 35517 collided with a truck carrying fertiliser in an unprotected level crossing. As a result of the collision, the DMU of the train derailed with two axles and then got back on the track with one axle. The accident resulted in serious injuries to 6 people on board and minor injuries to 14 people.	Railway accident
17 Oct and 21 Oct	A fire broke out in the engine compartment of an underground train (EMU) at the <i>Deák Ferenc tér</i> and <i>Széchenyi fürdő</i> stations of <i>Budapest Metro line M1</i> . In each case, the driver extinguished the fire with a powder fire extinguisher. No one was injured.	Railway accidents
21 Oct	At <i>Kaposvár</i> station, the departing train No. 14879 (locomotive running solo) derailed with one axle. No one was injured in the accident.	Railway accident
24 Oct	On the single track between <i>Vámospércs</i> and <i>Nyírábrány</i> stations, the train No. 26869 (locomotive running solo) and the passenger train No. 6826 moved towards each other. After mobile phone notifications from traffic controllers, they stopped about 1 km from each other. No one was injured.	Railway incident
9 Nov	In <i>Budapest</i> , between the <i>Egressy út/Hungária körút</i> and <i>Puskás Ferenc Stadion</i> stops, a tram caught up with another tram and collided with it. The accident resulted in minor injuries to 5 people and significant damage to property.	Railway accident
13 Nov	At <i>Beled</i> station, the freight train No. 48982-1 passed the exit signal at danger without authorization by about 150 metres. Meanwhile, the passenger train No. 39820, coming from the opposite direction, stopped in front of the entry signal, about 400 m away from the freight train. No one was injured.	Railway incident
19 Nov	The rim came off a wheel of the 11 <sup>th</sup> carriage of the freight train No. 92759, and the moving train damaged the track in several places between <i>Győr</i> and <i>Komárom</i> stations, finally derailed on a switch at <i>Komárom</i> station. No one was injured.	Railway accident

Date	Description of occurrence	Classification
19 Dec	In <i>Budapest</i> , a tram was leaving from <i>Boráros tér</i> stop while it was caught up and hit on the rear by another tram. The accident caused serious injuries to 2 people and minor injuries to 4 others, and significant damage to property.	Railway accident

## 4. INVESTIGATIONS COMPLETED IN 2022 WITH THE ISSUED RECOMMENDATIONS

In 2022, **34 final reports were compiled and published** on the website of TSB.

### **Investigations completed in 2022 by the occurrence type:**

The final reports issued in 2022 analysed occurrences of the following types:

- |                           |                |
|---------------------------|----------------|
| • Trains collision        | 1 occurrence   |
| • Train derailment        | 10 occurrences |
| • Accident at LC          | 4 occurrences  |
| • SPAD                    | 10 occurrences |
| • Collision with obstacle | 3 occurrences  |
| • Runaway                 | 1 occurrence   |
| • Other                   | 5 occurrences  |

### **Investigations completed in 2022 by the classification and the amount of damages:**

Among the occurrences of which the final report was published in 2022, there were no serious or major accidents (equal to Article 20(1) of RSD). Thus these investigations were discretionary investigations what were not required by Directive 2016/792 and not required by national law.

Among the occurrences of which the final report was published in 2022, the damages related to the accident exceeded EUR 150,000 in 6 case, but there were no cases where it exceeded EUR 2 Million.

### **Average time to complete investigations:**

Among the investigations of which the final report was published in 2022, the average time to complete them was 13 months. The shortest time to publish an investigation report was 6 months and the longest was 22 months (in some cases it took time - longer than usual - for experts and specialists to prepare their reports).

### **Safety Recommendations issued in 2022:**

During the year of 2022, **TSB issued 23 safety recommendations.**

20 of these recommendations have been accepted, 2 were rejected, and 1 was left without response. 1 of the accepted recommendations has been reported as implemented; implementation of 19 more recommendations is in progress.

## INVESTIGATIONS CLOSED IN 2022

**SUMMARY OF OCCURRENCE № HU-6310**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>27 July 2020 (09:28)</i>
<i>Location:</i>	<i>Piliscsaba (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>The train no. 2077 passed the signal of Piliscsaba station at danger. Eventually the train was stopped by the engine driver. No one was injured.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the engine driver did not control the speed of the train on the basis of the signal aspect on the distant signal</i></li><li><i>the main indicator's display is not visible from the required distance</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li><i>despite the lack of sighting distance for the main signal, no repeating signal has been installed</i></li><li><i>no train control system is in place on the busy single-track railway line</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<u><i>Recommendation(s):</i></u>	<b><i>The NIB recommends to the NSA to oblige MÁV Zrt., the railway network operator, to provide the conditions stipulated in the OVSZ Volume I (National Rules of Railways) for the "B" home signal of Piliscsaba station.</i></b>





**SUMMARY OF OCCURRENCE № HU-6341**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>16 Aug 2020 (14:10)</i>
<i>Location:</i>	<i>Szakály-Hőgyész - Kurd (line)</i>
<i>Occurrence type:</i>	<i>Train derailment</i>
<i>Movement type:</i>	<i>Freight train</i>
<i>Description:</i>	<i>The train no. 85811 derailed between Szakály-Hőgyész and Kurd stations. No one was injured.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage 150.000 – 2.000.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) RCH Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the independent track geometry errors on the short section were within different error limits, but their combined effect generated a lateral rocking motion in the vehicles of the train with a high centre of gravity, which led to the derailment of the last three wagons in the train</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li><i>the independent track geometry errors were recorded separately and their possible combined effect was not investigated</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the data from the mechanical track measurements are not compared with previous measurements, and therefore a continuous deterioration of the errors cannot surface until the action value is reached</i></li></ul>
<u><i>Recommendation(s):</i></u>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10171**

*Grade:* *Railway accident*  
*Date and time:* *26 Sept 2020 (00:15)*  
*Location:* *Sopron (station)*  
*Occurrence type:* *Train derailment*  
*Movement type:* *Freight train*  
*Description:* *The train no. 42338 derailed at Sopron station. No one was injured.*  
*Consequences:* *0 fatality / 0 serious injury*  
*Total damage < 150.000 EUR*  
*Parties:* *GYSEV Zrt. (IM)*  
*GYSEV CARGO Zrt. (RU)*

*Direct cause(s):*

- *when the electric brakes were applied, the wagons at the front of the train were pushed by the vehicles behind them, resulting in increased longitudinal forces on the vehicles. For vehicles travelling on the curve, some of the longitudinal forces were converted into lateral forces*
- *the buffer parts of the vehicle involved in the incident (buffers, buffer tube stems and buffer discs) were unlubricated and had indentations on their surfaces which prevented the contact surfaces from sliding easily over each other, thereby increasing the lateral forces on the vehicles when travelling in a curve, which could not be counteracted by the downward force generated by the relatively low mass of the cars*

*Contributory factor(s):**Underlying cause(s):*

- *the train had a mixture of light and heavy wagon groups*
- *the Technical Instruction No. E.12 on the service of wagons in force at the time of the occurrence does not require that the workers carrying out the inspection of buffer casings, buffer tube stems and buffer discs should check that the parts are free from scratches or that they are adequately lubricated*

*Recommendation(s):*

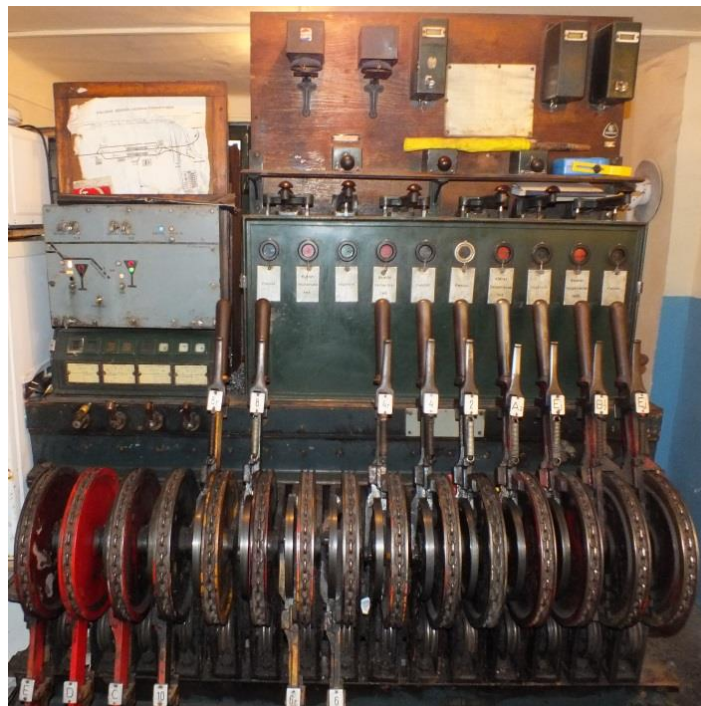
***The NIB recommends the NSA to consider pay attention to the lubrication of buffers of wagons in reversible trains during its regular inspections.***





**SUMMARY OF OCCURRENCE № HU-6374**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>25 Nov 2020 (06:30)</i>
<i>Location:</i>	<i>Vácrátót (station)</i>
<i>Occurrence type:</i>	<i>Wrong side signalling failure</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>The passenger train no. 2517 opened up a switch at Vácrátót station due to signalling failure: the train was leaving the station during an authorized movement. No one was injured.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li>on the safety installation, it was possible to set the movement from Track III independently of the position of the turnout 2, i.e. after setting the other turnouts to the correct position, the route lever could be turned even if the turnout 2 was not in the correct position</li> <li>the switchman, when setting up the track for train 2517, put switch 2 in a siding setting instead of straight setting</li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li>the required quarterly maintenance tasks on the safety installation could not be carried out due to lack of resources and the fault was not detected</li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li>the maintenance and operation of technically outdated safety installation is an increasing challenge for the railway network operator, and the replacement of this equipment would be a satisfactory solution</li> </ul>
<u><i>Recommendation(s):</i></u>	<b>The NIB recommends the NSA to consider reviewing whether the processes set out in the safety management system of MÁV Zrt. in the field of maintenance and main inspection of safety equipment are feasible and implemented in practice, and taking the necessary measures if any shortcomings are identified.</b>



**SUMMARY OF OCCURRENCE № HU-10011**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>17 Jan 2021 (10:45)</i>
<i>Location:</i>	<i>Murakeresztúr (station)</i>
<i>Occurrence type:</i>	<i>Train derailment</i>
<i>Movement type:</i>	<i>Freight train</i>
<i>Description:</i>	<i>The locomotive of freight train no. 45998 carrying containers entered the I. track of the station while the wagons of the train continued on the II. track. The two wagons behind the locomotive derailed with 4-4 axles and the container on the first wagon fell off. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage 150.000 – 2.000.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) PKP CARGO (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li><i>• both switch tongues pressed closely against the stock rail after disconnection of the connection rod and the switch tongue caused by the absence of locking of the pin</i></li><li><i>• the turnout must be kept closed on a continuous basis therefore no inspection of its serviceability is required when the route is set up, despite the fact that it is situated in a main track and may be exposed to train speeds up to 100 km/h</i></li><li><i>• the track maintenance system did not detect the lack of the locking wires for a relatively long period of time</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li><i>• the track maintenance personnel do not know exactly the requirements relating to the turnouts and/or are not sufficiently motivated to perform thorough inspections</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li><i>• there were quite a lot of inadequately maintained turnouts along the railway network at the time of the accident</i></li><li><i>• the track maintenance organisation is not able to perform adequate track maintenance, due to shortage of resources</i></li></ul>
<u><i>Recommendation(s):</i></u>	<b><i>NIB recommends to NSA considering a risk assessment relating to the conditions of keeping the switches continuously in closed position and, depending on the results, modifies the related rules as necessary.</i></b>



**SUMMARY OF OCCURRENCE № HU-10009**

<b>Grade:</b>	<i>Railway accident</i>
<b>Date and time:</b>	<i>25 Jan 2021 (09:45)</i>
<b>Location:</b>	<i>Kerta elágazás (junction)</i>
<b>Occurrence type:</b>	<i>Collision of train with obstacle within the clearance gauge</i>
<b>Movement type:</b>	<i>Freight train</i>
<b>Description:</b>	<i>At Kerta junction, the freight train no. 42002 collided with a sleeper-screw driver. No injuries occurred, because the track workers could manage to leave the structure gauge of the track in the last moment before the collision.</i>
<b>Consequences:</b>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<b>Parties:</b>	<i>MÁV Zrt. (IM) METRANS DANUBIA (RU)</i>
<b><u>Direct cause(s):</u></b>	<ul style="list-style-type: none"> <li><i>when the freight train arrived, the sleeper-screw driver machine was working within the gauge of the train's track, and since no watchman was employed, when the train was detected, the people working on the track did not have enough time to remove the machine from the track gauge;</i></li> <li><i>the track workers were not aware of the arrival of the freight train, so they did not expect it, because no notification had previously been requested for trains running between Kerta junction - Jánosháza junction</i></li> <li><i>the trackmen did not inform the traffic liaison officer that they were working inside the entry signal "YK3"</i></li> <li><i>the locomotive driver was not notified of the work within the drift limit, because there was no caution sign "Working on the track!" on the delta track, so the driver did not expect the presence of trackmen</i></li> </ul>
<b><u>Contributory factor(s):</u></b>	<ul style="list-style-type: none"> <li><i>from the driver's point of view, the visibility of the trackmen was impaired by the curve of the delta track and the low sun altitude due to which he viewed the area against the light</i></li> <li><i>the chief traffic manager at Boba station did not notify the traffic liaison officer of the arrival of the freight train, as previously agreed</i></li> </ul>
<b><u>Underlying cause(s):</u></b>	<ul style="list-style-type: none"> <li><i>the place of work had already been designated inaccurately and inconsistently when the work was ordered, and this was not discovered until the accident occurred</i></li> </ul>
<b><u>Recommendation(s):</u></b>	<i>none</i>





**SUMMARY OF OCCURRENCE № HU-10012**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>1 Febr 2021 (12:00)</i>
<i>Location:</i>	<i>Tatabánya (station)</i>
<i>Occurrence type:</i>	<i>Train derailment</i>
<i>Movement type:</i>	<i>Long distance passenger train</i>
<i>Description:</i>	<i>The front carriage of InterCity train no. 934 derailed with one bogey and the train broke up while it was leaving Tatabánya station. A passenger of the train suffered minor injuries.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage 150.000 – 2.000.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li>the locomotive driver was travelling at a significantly higher speed than the speed limit, despite an exit signal authorising him to proceed at reduced speed</li> <li>the train was passing through the points in the diverging position at a speed of about 110 km/h, so the dynamic forces acting on the vehicles caused the train to derail and break up</li> <li>the train control system for the train was not suitable to prevent speeding and to force the train to run at reduced speed</li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li>the driver misinterpreted the prior notification of the track possession and stored it in his memory with an erroneous information content, which led to a false situational awareness when he departed</li> <li>the driver's actions at the time of the incident may have been influenced by personal stressors that may have prevented him from becoming aware of the information needed to perform the task at hand</li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li>on those lines where ETCS is used in addition to the existing 75 Hz train control system, the regulatory environment allows the choice of train control mode and railway undertakings do not prefer to use ETCS</li> </ul>
<u><i>Recommendation(s):</i></u>	<b>The NIB recommends that the Deputy State Secretariat for Transport Strategy of the Ministry of Construction and Transport, as the technical preparatory body for transport legislation, to consider assessing the readiness of railway undertakings using the national rail network to implement the ETCS system for the purpose of preparing decisions. On the basis of the results of the assessment, consider preparing an impact study on the measures to be taken to ensure that railway undertakings are able to fully comply with a regulatory environment that would require the use of ETCS.</b>



**SUMMARY OF OCCURRENCE № HU-10032**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>14 Febr 2021 (04:35)</i>
<i>Location:</i>	<i>Pécel (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Locomotive running solo</i>
<i>Description:</i>	<i>Train of locomotives no. 14523 passed entry signal at danger „D” of Pécel station without permission and stopped at the station’s end point switch area. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MMV Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the locomotive did not develop a sufficient braking effect during braking due to a single, non-reproducible and non-determinable malfunction of the braking system</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li><i>as the exact cause of the poor braking effect during braking was not determined, the IC could not clearly identify contributing factors that increased the likelihood of the incident occurring or accelerated the effects and worsened the consequences, but it is likely that the winter weather may have contributed to the braking problem</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<u><i>Recommendation(s):</i></u>	<b><i>The NIB recommends to NSA to consider reviewing whether the braking equipment of the 240 series locomotives in operation in Hungary complies with the requirements set out in the legislation and in the type certificate or authorisation for placing in service.</i></b>



**SUMMARY OF OCCURRENCE № HU-10061**

*Grade:* *Railway accident*  
*Date and time:* *25 March 2021 (06:28)*  
*Location:* *Budapest-Nyugati (station)*  
*Occurrence type:* *Train derailment*  
*Movement type:* *Locomotive running solo*  
*Description:* *Service train no. 20627 derailed on point no. 2/a while entering Budapest-Nyugati station. No injuries occurred.*  
*Consequences:* *0 fatality / 0 serious injury*  
*No damage (0 EUR)*  
*Parties:* *MÁV Zrt. (IM)*  
*MÁV-START Zrt. (RU)*

Direct cause(s):

- *the traffic control staff on duty at the train regulating signal box II authorised the train to enter the station area on an unenclosed track with the "M" signal at danger, and therefore the safety equipment did not monitor the traffic safety conditions*
- *one switchman, contrary to what is described in the ÁVU, did not observe the train in the window when it was entering, so he could not see where the train was and did not tell the switchman operating the equipment which switches could be changed*
- *the switchman setting the points shifted points 2/a under the incoming train after the first bogie had passed but before the second bogie, diverted the second bogie and caused it to derail*

Contributory factor(s):

- *at Budapest-Nyugati station there are several vacancies for pointsmen. The more experienced pointsman at the train regulating signal box II was on his ninth shift in eleven days on the day of the accident, i.e. the weekly rest period required by the Mt. 106§ (Annex 1), had not been granted to him, and therefore his concentration was impaired due to fatigue. The less experienced pointsman manager had only two and a half months' experience*
- *the pointsman training courses (for which future shunters were trained) were suspended or not started due to the epidemic situation, resulting in a permanent shortage of pointsmen at the station*

Underlying cause(s):

- *the results of the post-accident checks showed that some technologically non-compliant work practices used at the time of the accident were accepted and used by workers before the accident*

Recommendation(s): *none*





**SUMMARY OF OCCURRENCE № HU-10043**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>5 April 2021 (13:06)</i>
<i>Location:</i>	<i>Nagykanizsa (station)</i>
<i>Occurrence type:</i>	<i>Wrong side signalling failure</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 8905 entering Nagykanizsa station accidentally arrived on the occupied track no. II. instead of track no. I. which was locked for this train. The train stopped in a distance of about 50 meters from the InterCity train no. 855, which was waiting for departure. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<i><u>Direct cause(s):</u></i>	<ul style="list-style-type: none"> <li>• <i>for the train no. 8905, the switch number 67 was incorrectly positioned, which was not detected by the safety equipment</i></li> <li>• <i>the switchmen did not check the serviceability of switch No 67 by test setting when setting the track for the train No. 8905</i></li> </ul>
<i><u>Contributory factor(s):</u></i>	<ul style="list-style-type: none"> <li>• <i>the station shunting unit burst the switch No. 67 open when pulling it out from Track II, because the switch operators did not set it in the correct position, the shunting crew did not detect the bursting of the switch open</i></li> </ul>
<i><u>Underlying cause(s):</u></i>	<ul style="list-style-type: none"> <li>• <i>none</i></li> </ul>
<i><u>Recommendation(s):</u></i>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10048**

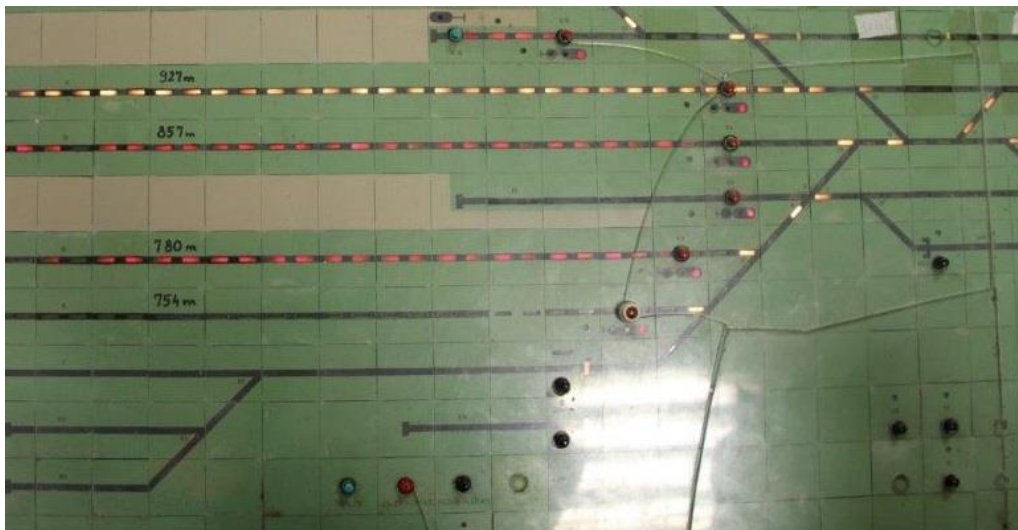
<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>7 April 2021 (17:35)</i>
<i>Location:</i>	<i>Rákosrendező (station)</i>
<i>Occurrence type:</i>	<i>Unauthorised train movement other than signal passed at danger</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 2376 stopped at Rákosrendező station due to a technical malfunction. After turning away the malfunction, the train departed without permission. It trailed a point and harmed the locked route of train no. 2386. Train no. 2386 stopped immediately. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<i><u>Direct cause(s):</u></i>	<ul style="list-style-type: none"><li><i>the locomotive driver of the train No 2376, which had stopped at Rákosrendező station due to a technical fault, left without authorisation after the fault had been rectified</i></li></ul>
<i><u>Contributory factor(s):</u></i>	<ul style="list-style-type: none"><li><i>the communication between the parties directly involved in the resolution of the situation caused by the inserviceability, i.e. the driver of the train No. 2376 and the traffic controller of the Rákosrendező station, was insufficient in terms of quantity and content</i></li><li><i>due to his inexperience, the locomotive driver of the train No 2376 was too busy trying to rectify the fault and clear the track and</i></li></ul>
<i><u>Underlying cause(s):</u></i>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<i><u>Recommendation(s):</u></i>	<i>none</i>





**SUMMARY OF OCCURRENCE № HU-10170**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>10 April 2021</i>
<i>Location:</i>	<i>Bicske (station)</i>
<i>Occurrence type:</i>	<i>Operational event</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 4951 entering Bicske station near subsidiary signal, arrived to track no. IV., which was occupied by train no. 4948. The distance between the two trains was 200 meters. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the traffic controller switched the points before the approaching train</i></li> <li><i>the forced unlocking of the track which had not been unlocked automatically after the train which had previously been running did not take place as required by the Points Operation Rules, the unlocking process took place before the train which was just entering, so the switches became adjustable</i></li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li><i>the abnormal operation was not detected by the traffic controller</i></li> <li><i>a long-known fault in the safety equipment is that it sometimes fails to indicate track occupancy correctly on the control panel</i></li> <li><i>switch No 5, which, for an unknown reason, was released when the train entered, partially unblocked the track</i></li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the disturbances in the feedback of occasional occupancy from the safety installation due to a busy signal are familiar to the staff and tolerated by the safety installation service</i></li> </ul>
<u><i>Recommendation(s):</i></u>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10054**

<b>Grade:</b>	<i>Railway incident</i>
<b>Date and time:</b>	<i>17 May 2021 (11:16)</i>
<b>Location:</b>	<i>Gödöllő (station)</i>
<b>Occurrence type:</b>	<i>Signal passed at danger</i>
<b>Movement type:</b>	<i>Regional passenger train</i>
<b>Description:</b>	<i>Train no. 3135 departed from Gödöllő station without permission, passed the exit signal at danger and trailed point no. 22. No injuries occurred.</i>
<b>Consequences:</b>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<b>Parties:</b>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<b><u>Direct cause(s):</u></b>	<ul style="list-style-type: none"> <li>the locomotive driver departed in his train without authorisation and without a signal at the exit signal to authorise the train to proceed</li> </ul>
<b><u>Contributory factor(s):</u></b>	<ul style="list-style-type: none"> <li>after a change of direction, signalling does not operate for the passing train until the route control from that track is done, therefore no emergency braking occurs when a train is passing a signal at danger</li> <li>the unintentional movements of the outer traffic controller briefly resembled a "Call" signal (green circle in the picture)</li> <li>the train crew interpreted the unintentional movements of the traffic controller as a "Call" signal (red circle in the picture)</li> </ul>
<b><u>Underlying cause(s):</u></b>	<ul style="list-style-type: none"> <li>none</li> </ul>
<b><u>Recommendation(s):</u></b>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10060**

<b>Grade:</b>	<i>Railway incident</i>
<b>Date and time:</b>	<i>9 June 2021 (13:11)</i>
<b>Location:</b>	<i>Püspökladány (station)</i>
<b>Occurrence type:</b>	<i>Signal passed at danger</i>
<b>Movement type:</b>	<i>Regional passenger train</i>
<b>Description:</b>	<i>Train no. 6105 entering Püspökladány failed to stop at the designated place near the platform and passed „K4” exit signal at danger. No injuries occurred.</i>
<b>Consequences:</b>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<b>Parties:</b>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<b><u>Direct cause(s):</u></b>	<ul style="list-style-type: none"><li><i>the locomotive driver did not reset the tap changer (controller) while he was braking the train</i></li><li><i>the traction force exerted by the locomotive was at some point greater than the braking force exerted by the braking system, due to the tap changer remaining in position 16</i></li><li><i>the train therefore passed the individual exit signal K4 at danger</i></li></ul>
<b><u>Contributory factor(s):</u></b>	<ul style="list-style-type: none"><li><i>the locomotive driver was looking in the rear-view mirror at the open entrance door of a vehicle in the train when entering the station and therefore did not notice that the tap changer switch remained in position 16</i></li><li><i>the locomotive is not equipped with a main line pressure switch to prevent traction in the event of inadequate main line pressure monitored by the EVM (train control equipment)</i></li></ul>
<b><u>Underlying cause(s):</u></b>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<b><u>Recommendation(s):</u></b>	<i>none</i>





**SUMMARY OF OCCURRENCE № HU-10066**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>15 June 2021 (22:18)</i>
<i>Location:</i>	<i>Sározd (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 4018 departed after a scheduled stop from Sározd station and passed the „V2” exit signal at danger without permission. The train stopped in a distance of 228 meters from train of locomotives no. 28279, which was waiting near the entry signal. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the locomotive driver did not stop the train before the exit signal at danger because his level of situational awareness was reduced and he was not aware of the signal aspect</i></li> <li><i>the chief ticket inspector gave the "Ready to depart" signal despite the exit signal giving the danger aspect</i></li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li><i>the locomotive driver's level of situational awareness was reduced by mobile phoning during the entry</i></li> <li><i>the train control equipment used could not force the train to stop before the main signal giving the "Stop!" signal or to pass in front of it at a speed of up to 40 km/h</i></li> <li><i>the chief ticket inspector was called for duty from his day off and was therefore more tired than usual</i></li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>none</i></li> </ul>
<u><i>Recommendation(s):</i></u>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10070**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>18 June 2021 (09:03)</i>
<i>Location:</i>	<i>Mosonszolnok - Jánossomorja (line)</i>
<i>Occurrence type:</i>	<i>Collision of train with obstacle within the clearance gauge</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 39847 collided with a sleeper-screw driver between Mosonszolnok and Jánossomorja stations. No injuries occurred, because the track workers could manage to escape from the structure gauge in the last moment before the crash.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>GYSEV Zrt. (IM) GYSEV Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the foreman on watch did not detect the train coming from a sufficient distance and therefore did not warn the workers in time to leave the track clearance and remove the machinery</i></li><li><i>the visible track section length was about a third of the standard stopping distance</i></li><li><i>the safety coverage of the working area was not in accordance with the rules (the watchman had other activities in addition to watching and did not display the "Work in progress on the track!" sign)</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li><i>the work area was not assessed in advance for visibility when planning the work</i></li><li><i>the foreman only requested notification of freight trains when calling in for work, because he relied on his own knowledge of the timetable for passenger trains</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<u><i>Recommendation(s):</i></u>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10198**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>25 June 2021 (18:02)</i>
<i>Location:</i>	<i>Zirc - Eplény (line)</i>
<i>Occurrence type:</i>	<i>Train derailment</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>The locomotive of train no. 39523 derailed with its front bogey's two axles between Zirc and Eplény stations. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li>• <i>there is a small-radius curve at the point of the derailment, causing a large amount of deflection force</i></li><li>• <i>there was a lot of friction between the rail and the wheel flange, and their contact surfaces were very rough</i></li><li>• <i>there was some track buckle due to the summer heat</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li>• <i>the great summer heat</i></li><li>• <i>excessive rail and wheel roughness</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li>• <i>none</i></li></ul>
<u><i>Recommendation(s):</i></u>	<b><i>NIB proposes reviewing the current track gauge system on line 11 and the combined operation of the track gauge technology for the locomotives of the series 418 and the effects of the train and locomotive rosters used, and taking technical and organisational measures as necessary.</i></b>



**SUMMARY OF OCCURRENCE № HU-10084**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>11 July 2021 (14:24)</i>
<i>Location:</i>	<i>Ferencváros (station)</i>
<i>Occurrence type:</i>	<i>Operational event</i>
<i>Movement type:</i>	<i>Freight train and regional passenger train</i>
<i>Description:</i>	<i>Freight train no. 66822 entered to Ferencváros station on a track which was occupied by train no. 3545. The freight train burst open a point and harmed the locked route of the passenger train, before it stopped at the switches.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) RCH Zrt. (RU) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li>• <i>the chief traffic manager made a mistake in identifying the train in front of the E signal, so he called the locomotive driver of the train with the supposed number, who actually was the locomotive driver of a train staying in a different position</i></li> <li>• <i>the instruction identified the train number but not the position of the train</i></li> <li>• <i>the driver accepted the authorisation which lacked the identification of the location</i></li> <li>• <i>the chief traffic manager did not send a subsidiary signal to the home signal</i></li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li>• <i>apparent occupation in the safety installation was probably caused by the rainy weather</i></li> <li>• <i>the authorisation for the train № 66822 was requested 33 minutes before departure, compared to the 10 minutes minimum</i></li> <li>• <i>there was no automated solution to assist the chief traffic manager with correctly identifying the train</i></li> <li>• <i>the driver did not detect the incorrect positioning and then the opening up of the switch № 82/b</i></li> <li>• <i>the malfunctioned computers in the control interface of the safety installation had not been repaired or replaced, which increased the tasks of the chief traffic manager by significantly increasing the chances of error</i></li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li>• <i>the logbooks used do not help to monitor the traffic situation, but are a source of distraction</i></li> <li>• <i>the communication rules (Instruction T.25) entered into force one day after publication, so no prior training of staff was possible; training was not provided until several months after entry into force, and the expected training regulations were not established until the draft report was prepared</i></li> </ul>
<u><i>Recommendation(s):</i></u>	<p><b><i>The NIB recommends reviewing the train identification procedures at Ferencváros station to see to what extent they allow continuous monitoring of trains in service; and, if necessary, introducing a logging system and/or train number tracking technology that allows traffic management staff to continuously monitor the exact location of trains moving on the network controlled by them.</i></b></p> <p><b><i>The NIB recommends carrying out a workload analysis of the traffic management staff of Ferencváros station, also from the point of view of how suitable the existing technology and equipment are to keep the workload below the critical level for the safe control of traffic (which is expected to increase in the future), or what changes and improvements could be made to make them suitable.</i></b></p>



***The NIB recommends reviewing the procedures for issuing instructions of MÁV Zrt., with a view on how it provides the necessary preparation before entry into force, taking into account that the instructions may affect several railway companies.***

***The NIB recommends that the safety management systems of railway undertakings using the national network should review the competence management in order to ensure that their training instructions contain the training requirements set out in Chapter 2.3 of Instruction T.25.***





**SUMMARY OF OCCURRENCE № HU-10088**

**Grade:** *Railway accident*

**Date and time:** *13 July 2021*

**Location:** *Rákospalota-Újpest (station)*

**Occurrence type:** *Train derailment*

**Movement type:** *Freight train*

**Description:** *The 16th wagon of freight train no. 45296 derailed and turned on its side on point no. 23 at Rákospalota-Újpest station, while the train was leaving the station.*

**Consequences:** *0 fatality / 0 serious injury  
Total damage 150.000 – 2.000.000 EUR*

**Parties:** *MÁV Zrt. (IM)  
TRAIN HUNGARY (RU)*

**Direct cause(s):**

- *the switch tongue in the switch № 23 was not properly aligned with the stock rail*
- *the wheels of the first freight wagon what derailed were worn, within limits but beyond the operational state so the wheels rolled up onto the switch tongue*

**Contributory factor(s):** • *none*

**Underlying cause(s):** • *none*

**Recommendation(s):** *none*



**SUMMARY OF OCCURRENCE № HU-10098**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>28 July 2021 (15:04)</i>
<i>Location:</i>	<i>Nagykáta (station)</i>
<i>Occurrence type:</i>	<i>Train derailment</i>
<i>Movement type:</i>	<i>Other</i>
<i>Description:</i>	<i>The 4th carriage of service train no. 23613 derailed with one axle while the train was leaving Nagykáta station. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the railway track has suffered gauge expansion due to a series of fractures of sleeper screws used for fixing the rails</i></li> <li><i>after the sleeper screws have been weakened by corrosion during their service life, and this had not been detected and corrected by the track supervision</i></li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li><i>none</i></li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the track supervision procedures in place do not allow the fault that led to the accident to be detected in time</i></li> <li><i>the measures necessary for detection and management are still in preparation, despite the fact that the TSB already issued a safety recommendation regarding this area on 9 January 2019</i></li> </ul>
<u><i>Recommendation(s):</i></u>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10224**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>9 Aug 2021 (10:04)</i>
<i>Location:</i>	<i>Kerepes - Mogyoród (line)</i>
<i>Occurrence type:</i>	<i>Trains collision</i>
<i>Movement type:</i>	<i>Locomotive running solo and commuter train</i>
<i>Description:</i>	<i>The locomotive no. CT02 crashed into the stationary passenger train no. 1082 which was broke down and staying on the line between Kerepes and Mogyoród stations on suburban railway line H8 of Budapest. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV-HÉV Zrt. (IM) MÁV-HÉV Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the braking distance was not sufficient despite rapid braking of the bank engine when the stationary passenger train was detected</i></li> <li><i>the driver of the bank engine had incorrect knowledge of the position of the passenger train and therefore approached the location of the incident at a speed higher than was safe in the actual situation</i></li> <li><i>the traffic manager at Kerepes station inaccurately determined the position of the train waiting for assistance for the banking train's crew</i></li> <li><i>the driver of the train № 1082 did not specify the exact location where his train had become unfit for service</i></li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li><i>none</i></li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the regulatory environment in force at the time of the accident did not impose any obligation to protect the train for the crew of trains stopping on the open line due to an extraordinary cause</i></li> <li><i>the regulations also do not impose specific content requirements on the determining of the position of trains stopped on an open line due to an extraordinary cause</i></li> </ul>
<u><i>Recommendation(s):</i></u>	<p><b><i>NIB recommends MÁV-HÉV Zrt. to develop a uniform standard for employees working in jobs related to railway safety in order to ensure that the designation of individual points on the network is always carried out in a uniform, clear reference system.</i></b></p> <p><b><i>NIB recommends MÁV-HÉV Zrt. to review its basic and periodic training topics for employees employed or intended to be employed in jobs related to railway safety in order to ensure that safety-critical communication is also consciously practised during training.</i></b></p>





**SUMMARY OF OCCURRENCE № HU-10109**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>20 Aug 2021 (16:36)</i>
<i>Location:</i>	<i>Tócsövölgy - Hajdúböszörmény (line)</i>
<i>Occurrence type:</i>	<i>Level crossing accident</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 36613 collided with a car at level crossing no. AS46 between Tócsövölgy and Hajdúböszörmény stations. The 2 persons travelling in the car suffered fatal injuries and died on the scene. The level crossing was protected with light signals and barriers that worked well by the time of the accident.</i>
<i>Consequences:</i>	<i>2 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<i><u>Direct cause(s):</u></i>	<ul style="list-style-type: none"><li><i>the driver of the car drove into the level crossing by driving around the half-barrier, despite the red "NO GO" signal from the light barrier</i></li></ul>
<i><u>Contributory factor(s):</u></i>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<i><u>Underlying cause(s):</u></i>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<i><u>Recommendation(s):</u></i>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10121**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>25 Aug 2021 (09:48)</i>
<i>Location:</i>	<i>Győr (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Freight train</i>
<i>Description:</i>	<i>Freight train no. 44284 passed the exit signal "V2" of Győr station at danger without permission and trailed point no. 5. The freight train also entered the locked route of train no. 9444 which was also exiting the station. The driver of the train recognised the danger and stopped his train by emergency braking. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) FLOYD (RU)</i>
<i><u>Direct cause(s):</u></i>	<ul style="list-style-type: none"> <li><i>the locomotive driver arrived at the station with his train without being prepared to stop</i></li> <li><i>he did not realize the meaning of the signal aspect at the entrance signal and tried to pass through the station according to the timetable</i></li> </ul>
<i><u>Contributory factor(s):</u></i>	<ul style="list-style-type: none"> <li><i>the release valve lever was disconnected, preventing the locomotive from braking during emergency braking, resulting in an increased stopping distance</i></li> </ul>
<i><u>Underlying cause(s):</u></i>	<ul style="list-style-type: none"> <li><i>none</i></li> </ul>
<i><u>Recommendation(s):</u></i>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-12345**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>11 Sept 2021 (20:37)</i>
<i>Location:</i>	<i>Bodrogkeresztúr (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 5228 passed exit signal „V2” of Bodrogkeresztúr station at danger without permission. The train trailed point no. 5 which was set for train no. 5221, running in the opposite direction. The driver of train no. 5221 was notified about the occurrence so the two trains stopped in a distance of about 2 kilometres from each other. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<i><u>Direct cause(s):</u></i>	<ul style="list-style-type: none"><li><i>the locomotive driver started the train despite the exit signal at danger, because his level of situational awareness was low and he noticed the signal too late</i></li><li><i>the chief ticket inspector gave the “Ready to depart” signal despite the exit signal showing the danger aspect</i></li></ul>
<i><u>Contributory factor(s):</u></i>	<ul style="list-style-type: none"><li><i>the locomotive driver’s level of situational awareness may have been negatively affected by a face-to-face conversation during the entry</i></li><li><i>the locomotive driver may have been in a hurry because the train was late</i></li><li><i>the locomotive driver’s activities were not supported by the train control system because its trackside elements were not installed during the upgrading of the railway line</i></li></ul>
<i><u>Underlying cause(s):</u></i>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<i><u>Recommendation(s):</u></i>	<i>none</i>





**SUMMARY OF OCCURRENCE № HU-10291**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>10 Oct 2021 (15:29)</i>
<i>Location:</i>	<i>Szeged-Rókus (station)</i>
<i>Occurrence type:</i>	<i>Train derailment</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Train no. 7726 forwarded a cold locomotive, which was attached behind the pulling locomotive. As the train entered Szeged-Rókus station, the cold locomotive derailed with 4 axles and the first carriage derailed with 2 axles on the closure panel of point no. 10, due to a rail breakage. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<i><u>Direct cause(s):</u></i>	<ul style="list-style-type: none"><li><i>when the train was entering the station, siding, the intermediate rail of the siding broke, causing the electric locomotive, which was in the train, to derail with four axles and the front two axles of the passenger car behind it</i></li></ul>
<i><u>Contributory factor(s):</u></i>	<ul style="list-style-type: none"><li><i>the condition of the timber sleepers of siding 10 has deteriorated, resulting in increased support spacing and significantly increased stress on the rails</i></li></ul>
<i><u>Underlying cause(s):</u></i>	<ul style="list-style-type: none"><li><i>the ultrasound scan used could not detect the fault that led to the accident</i></li></ul>
<i><u>Recommendation(s):</u></i>	<i>none</i>



**SUMMARY OF OCCURRENCE № HU-10139**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>15 Oct 2021 (13:13)</i>
<i>Location:</i>	<i>Miskolc-Rendező (station)</i>
<i>Occurrence type:</i>	<i>Train derailment</i>
<i>Movement type:</i>	<i>Freight train</i>
<i>Description:</i>	<i>Three empty cars of freight train no. 56554-1 derailed on point no. 505, while the train was entering Miskolc-Rendező station. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) RCH Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the wagon's separated assembly got stuck in the track elements and derailed the wagon</i></li><li><i>the braking system and its safety clevises were badly corroded and fell apart</i></li><li><i>the fault was not yet present at the time of the inspection of the wagon and its imminent occurrence was not detectable</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li><i>the condition of the wagon and its known defects were disregarded, or repairs were not carried out or were carried out incorrectly</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the maintenance system in place did not ensure good technical condition of the wagons</i></li><li><i>the railway company maintained the service contract with the wagon owner's partner even in the face of known risks that had existed for a long time and in large numbers</i></li></ul>
<u><i>Recommendation(s):</i></u>	<i>none</i>





**SUMMARY OF OCCURRENCE № HU-10148**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>21 Oct 2021 (04:52)</i>
<i>Location:</i>	<i>Császárszállás (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Freight train</i>
<i>Description:</i>	<i>Freight train no. 48402 passed the exit signal „V4” of track no. IV. at danger at Császárszállás station, and trailed point no. 7. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) RCH Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li>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 and had been involved in persistent monotonous driving immediately before the incident</li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li>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 passing the signal at danger, but may even give a signal that is explicitly misleading in such a case</li> <li>because of the non trailable two-way switch, the damage to the opened switch was greater than it would have been elsewhere</li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li>the infrastructure manager does not consider the shortcomings of the safety installation (resulting from its design) as a risk to be managed</li> </ul>
<u><i>Recommendation(s):</i></u>	<b>The NIB 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.</b>



**SUMMARY OF OCCURRENCE № HU-10151**

*Grade:* *Railway accident*  
*Date and time:* *6 Nov 2021 (08:00)*  
*Location:* *Pápa - Mezőlak (line)*  
*Occurrence type:* *Level crossing accident*  
*Movement type:* *Regional passenger train*  
*Description:* *Train no. 9600-1 crashed with a car at level crossing no. AS460, between Pápa and Mezőlak stations. The level crossing was flashing with a white light ("GO" signal) at the time of the accident. No injuries occurred.*  
*Consequences:* *0 fatality / 0 serious injury*  
*Total damage < 150.000 EUR*  
*Parties:* *MÁV Zrt. (IM)*  
*MÁV-START Zrt. (RU)*

*Direct cause(s):*

- the train detection track circuit of the warning lights did not detect the motor train because the vehicle's wheels were contaminated and the operating principle of the track circuit implies good electrical conduction between the wheel and the track*
- the technical system of the warnings lights is such that the train detection fault was hidden from the driver, so in the event of a fault he could not know that he should approach the crossing with caution*
- the driver of the road vehicle did not make sure that passage was not dangerous*

*Contributory factor(s):*

- falling autumn leaves could stick to the wheels of railway vehicles*
- the vehicle involved in this case is fitted with a wheel flange lubricating device, which makes the tread wet with oil and more likely to catch dirt, and has disc brakes, so the braking did not have a wheel-cleaning effect*
- short, light-weight trains increase the probability of train detection errors*

*Underlying cause(s):*

- the company recognised the risk associated with the accident, but was slow to address it*
- legislation allows the installation of level crossings where train detection faults are hidden from the driver*

*Recommendation(s):* **The NIB recommends NSA to consider obligating national infrastructure managers to perform a risk analysis to find out whether there is appropriate cooperation in all circumstances between**

- automatic warning light equipment designed with a train detection mode using 13 kHz track circuits, and**
- railway vehicles using disc brakes during their service braking,**

**and then, depending on the results of the analysis, take the necessary steps to prevent similar cases from recurring.**



**SUMMARY OF OCCURRENCE № HU-10161**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>7 Dec 2021 (23:30)</i>
<i>Location:</i>	<i>Szolnok B elágazás (junction)</i>
<i>Occurrence type:</i>	<i>Collision of train with obstacle</i>
<i>Movement type:</i>	<i>Freight train</i>
<i>Description:</i>	<i>Freight train no. 45999 passed signal „K” at danger with permission at Szolnok B elágazás junction, passed the point no. B4 towards a trap siding and crashed into the buffer with earth stabilization. No injuries occurred.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury Total damage 150.000 – 2.000.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MVÁ Kft. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the traffic controller at Post VI gave permission by telephone to the locomotive driver of the train No. 45999 to pass the signal at danger, even though he was not sure beyond reasonable doubt which signal the driver and his train were at</i></li> <li><i>the locomotive driver of the train No. 45999 started his train on the basis of the authorisation received by telephone from the traffic officer at Post VI and passed the "K" entry signal at Szolnok B junction at danger, despite the fact that he had received authorisation by telephone to pass not a main signal but a block signal</i></li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li><i>the locomotive driver had administrative (legal) knowledge of the line section concerned, but no real knowledge and experience</i></li> <li><i>environmental conditions and factors made it difficult for the locomotive driver to orientate and determine his position</i></li> <li><i>after passing the main signal at danger, the locomotive driver cancelled the "red" signal of the train control system and switched to "SHUNTING" mode</i></li> <li><i>at the time of the incident, the remote feedback of the junction's safety installation was not working, so the chief traffic controller was not able to ascertain the real position of the train No. 45999 and misinformed the locomotive driver about the operator of the signal concerned</i></li> <li><i>the professional knowledge of the people involved in the incident was incomplete, and therefore their professional behaviour and actions were also sloppy (the chief traffic controller mixed up the concepts of entrance and exit signals, the traffic controller at Post VI mixed up the locations of "entry" and "exit" tracks at the station, and the locomotive driver mixed up the colouring of the main signals and the automatic intermediate signals)</i></li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li><i>the railway undertaking employing the locomotive driver provided the driver with an unauthorised examination in line knowledge, including the section of line concerned</i></li> </ul>
<u><i>Recommendation(s):</i></u>	<b><i>The NIB recommends the NSA to check, acting in its official capacity, whether MVÁ Limited Liability Company allows its trainee drivers to take the line knowledge test only if the conditions laid down in the legislation are met. At the same time, the NIB recommends the NSA to extend the implementation of the recommendation to those railway undertakings which are not covered by this investigation.</i></b>

**SUMMARY OF OCCURRENCE № HU-10240**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>1 Jan 2022 (09:50)</i>
<i>Location:</i>	<i>Tapolca - Badacsonytördemic-Szigliget (line)</i>
<i>Occurrence type:</i>	<i>Level crossing accident</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>The passenger train No. 9797 collided with a car between Badacsonytördemic-Szigliget and Tapolca stations, in the level crossing AS1159 with operating active protection system. Of the 5 people in the car, 4 were killed and 1 suffered serious injuries; no occupant on the train was injured.</i>
<i>Consequences:</i>	<i>4 fatality / 1 serious injury Total damage &lt; 150.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<i><u>Direct cause(s):</u></i>	<ul style="list-style-type: none"><li><i>the driver of the road vehicle failed to stop at the “Warning! Level crossing!” sign, ignoring the red flashing light (“NO GO”) signal, and ran into the crossing at the time when the train arrived</i></li></ul>
<i><u>Contributory factor(s):</u></i>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<i><u>Underlying cause(s):</u></i>	<ul style="list-style-type: none"><li><i>none</i></li></ul>
<i><u>Recommendation(s):</u></i>	<i>none</i>





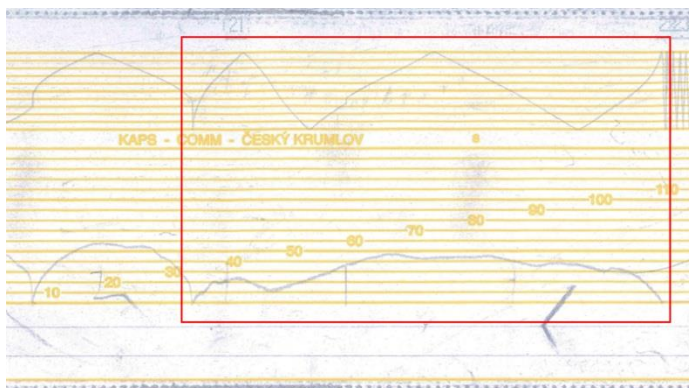
**SUMMARY OF OCCURRENCE № HU-10178**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>10 Jan 2022 (20:03)</i>
<i>Location:</i>	<i>Gödöllő (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Locomotive running solo and long distance passenger train</i>
<i>Description:</i>	<i>At Gödöllő station, the train No. 23028 (locomotive running solo) passed the second exit signal at danger without authorization by about 50 metres and stopped at the shunting limit signal between Tracks I and II. The passenger train No. IC658, which was entering Track II of the station, stopped with emergency braking, 125 metre away from the train No. 23028.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li>the locomotive driver of the train No. 23028 did not stop at the second exit sign "V1a" at danger because he did not detect it when approaching it or, if he did, he did not become aware of its meaning</li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li>the locomotive driver of the train No. 23028 misinterpreted, at least in part, the first exit signal aspect "V1" and failed to prepare to stop the train within half the actual stopping distance</li> <li>the locomotive driver of the train No. 23028 was not aware that he had passed a main signal at danger when the train was forced to brake by the train control system, so he started again after the main brake pipe had been filled up</li> <li>the locomotive driver of the train No. 23028 is presumed to have had a temporary loss of concentration below the critical level at the time of the incident, as evidenced by the fact that, at the periodic psychological fitness test ordered after the incident, his age corrected psychological state at the medical examinations was not stable and only partially met the required standards; additionally the misjudgement of the situation by him in his presumed distracted state may have facilitated by environmental factors such as the layout of the station track network and the track alignment</li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li>psychological testing is not a compulsory part of the periodic medical fitness assessment of locomotive drivers, therefore any age-related mental performance deterioration of employees can be hidden</li> </ul>
<u><i>Recommendation(s):</i></u>	<b>The NIB recommends that the Ministry of Construction and Transport, as the technical preparatory body for transport legislation, to consider proposing an amendment to Government Decree 203/2009 (IX.18.) on the health requirements and medical examination procedure for employees performing railway transport safety-related tasks, so that psychological examinations are included in the periodic medical examinations of railway vehicle drivers (locomotive drivers) with a specified periodicity.</b>



## SUMMARY OF OCCURRENCE № HU-10177

Grade:	Railway incident
Date and time:	10 Jan 2022 (21:32)
Location:	Hidasnémeti (station)
Occurrence type:	Runaway
Movement type:	Freight train
Description:	The freight train No. 47920 (1807 tons), which ran away without crew at Barca station (about 20 km from the Hungarian border in Slovakia), entered the country (Hungary), passed through Hidasnémeti station on an unoccupied track and, and due to the terrain, stopped on the line about 5 km later. There were no injuries during the incident.
Consequences:	0 fatality / 0 serious injury No damage (0 EUR)
Parties:	MÁV Zrt. (IM) PETROLSPED SLOVAKIA (RU)
<u>Direct cause(s):</u>	<ul style="list-style-type: none"> <li>the brake valve of the diesel locomotive, which was forwarded at the end of the train № 47920 closed but engaged, remained in the 'running' position, so during the walk-around check at Barca station (Slovakia), the main brake of the train set was filled up due to the refilling and the air brake got released</li> <li>in Hidasnémeti, the pre-departure brake test of the train № 47920 was unprofessional</li> <li>during the walk-around check at Barca station (Slovakia), the train № 47920 was not secured against running away</li> </ul>
<u>Contributory factor(s):</u>	<ul style="list-style-type: none"> <li>the railway company did not provide the necessary staff to carry out the brake test properly</li> <li>due to language difficulties, it was not possible to notify the Hungarian traffic management of the emergency in time</li> </ul>
<u>Underlying cause(s):</u>	<ul style="list-style-type: none"> <li>the infrastructure manager did not ensure that, in accordance with the local contract in force, a traffic manager with the necessary language skills is assigned to border-crossing traffic management</li> </ul>
<u>Recommendation(s):</u>	<p><b>NIB recommends MÁV Zrt. to review the fulfilment of the expected staff competences in its safety management system to ensure that the language skills of the staff and the applicable language under the border transition contracts are in line.</b></p> <p><b>NIB recommends MÁV Zrt. ensure that the audio recording of the communication equipment (including service mobile phones) used at Hidasnémeti station is properly implemented, including the purpose of making their voice material available. NSA should, where necessary, oblige the infrastructure manager to provide adequate voice recording services.</b></p>



**SUMMARY OF OCCURRENCE № HU-10184**

<i>Grade:</i>	<i>Railway incident</i>
<i>Date and time:</i>	<i>16 Jan 2022 (09:09)</i>
<i>Location:</i>	<i>Bősárkány (station)</i>
<i>Occurrence type:</i>	<i>Signal passed at danger</i>
<i>Movement type:</i>	<i>Locomotive running solo</i>
<i>Description:</i>	<i>At Bősárkány station, the train No. 39880 (locomotive running solo) passed the exit signal at danger without authorization, burst the switch No. 1 open and passed the unmanaged (open) SR1 level crossing, then stopped.</i>
<i>Consequences:</i>	<i>0 fatality / 0 serious injury No damage (0 EUR)</i>
<i>Parties:</i>	<i>GYSEV Zrt. (IM) TRAIN HUNGARY (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the “IAG” device that operates the servo motor for the tap changer failed, so the locomotive continued traction while the driver applied the brakes</i></li><li><i>the driver had previously started his train despite being informed of the unsafe operation of the tap changer</i></li></ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"><li><i>he locomotive driver did not realise that there were other options available to him to stop traction, such as the emergency stop switch, the main circuit breaker switch and the pantograph switch</i></li><li><i>the locomotive does not have a main brake pipe pressure switch to prevent traction in the event of inadequate main brake pipe pressure</i></li></ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"><li><i>the locomotive drivers’ valid knowledge of the vehicle type and their decades of driving experience do not necessarily reflect their confidence in handling vehicles, and knowledge is not always at a skill level</i></li></ul>
<u><i>Recommendation(s):</i></u>	<i>none</i>





**SUMMARY OF OCCURRENCE № HU-10217**

<i>Grade:</i>	<i>Railway accident</i>
<i>Date and time:</i>	<i>5 April 2022 (06:50)</i>
<i>Location:</i>	<i>Mindszent – Hódmezővásárhelyi Népkert (line)</i>
<i>Occurrence type:</i>	<i>Level crossing accident</i>
<i>Movement type:</i>	<i>Regional passenger train</i>
<i>Description:</i>	<i>Between Mindszent and Hódmezővásárhelyi Népkert stations, the passenger train No. 32610 collided with a van in the level crossing AS187 equipped with warning lights. The DMU of the train derailed and tipped on its side. 5 people in the lorry were killed and 2 seriously injured, while 4 people on board suffered seriously- and 11 more suffered minor injuries.</i>
<i>Consequences:</i>	<i>5 fatality / 6 serious injury Total damage 150.000 – 2.000.000 EUR</i>
<i>Parties:</i>	<i>MÁV Zrt. (IM) MÁV-START Zrt. (RU)</i>
<u><i>Direct cause(s):</i></u>	<ul style="list-style-type: none"> <li>the driver of the road vehicle entered the level crossing despite the flashing red light of the well-functioning warning light system</li> </ul>
<u><i>Contributory factor(s):</i></u>	<ul style="list-style-type: none"> <li>the unfavourable position of the sun made the checking of the warning lights difficult (but not impossible by their design)</li> <li>the unfavourable forces of the collision caused the railway vehicle to derail and turn over</li> <li>parts have been released in the passenger compartment of the overturned railway vehicle, partly due to a design defect and partly due to a maintenance-operation defect</li> </ul>
<u><i>Underlying cause(s):</i></u>	<ul style="list-style-type: none"> <li>the design of the railway vehicle does not allow for rapid evacuation/rescue of passengers from the wreck</li> </ul>
<u><i>Recommendation(s):</i></u>	<p><b>The NIB recommends Csongrád-Csanád County Government Office to review the construction of the railway crossing in section 187 on the Tiszatenyő-Szentes-Hódmezővásárhely railway line and to take the necessary measures to ensure visibility of the railway track as required by law.</b></p> <p><b>The NIB recommends that the technical certificates for the 117 series (Bzmot) motor vehicles be reviewed and, if necessary, amended to ensure that there are no unsecured parts in the passenger compartment that could cause injury to passengers if the vehicle derails or even turns over.</b></p> <p><b>The NIB recommends that the technical approvals of the Series 117 (Bzmot) motor vehicles and their trailers be reviewed and, if necessary, amended to ensure that the vehicles are fitted with the necessary emergency exits (doors and windows that can also be used as emergency exits) and that the vehicle is equipped with the necessary accessories.</b></p>





## SAFETY RECOMMENDATIONS ISSUED IN 2022

**BA2020-0722-5-01 (HU-6310):**

*During the inspection, the IC revealed that the required sighting distance is not ensured for the home signal "B" of Piliscsaba station, because the signal is visible from a distance of 130 metres instead of the minimum distance of 233 metres required by the OVSZ I. Therefore, the TSB issues the following safety recommendation:*

**The NIB recommends to the NSA to oblige MÁV Zrt., the railway network operator, to provide the conditions stipulated in the OVSZ Volume I (National Rules of Railways) for the "B" home signal of Piliscsaba station.**

*With the adoption and implementation of the recommendation, the "B" home signal of Piliscsaba station will be visible from a safe distance, thus reducing the risk of railway accidents.*

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**BA2020-0945-5-01 (HU-10171):**

*During the investigation, the IC found that there is a high risk that, despite the regulations, the lubrication of the buffer discs remains hidden for a long time, increasing the risk of derailment. Therefore, the TSB issues the following safety recommendation:*

**The NIB recommends the NSA to consider pay attention to the lubrication of buffers of wagons in reversible trains during its regular inspections.**

*With the adoption and implementation of the recommendation, it can be achieved that the owners, operators and users of wagons jointly prevent the unsafe use of unlubricated buffers.*

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**BA2020-1179-5-01 (HU-6374):**

*During the inspection, the IC revealed that the inspection and maintenance steps required for the maintenance of safety equipment on the railway network of MÁV Zrt. may be omitted in some cases, and that the deficiencies detected during the main inspections of safety equipment are not or not properly corrected; and therefore, the TSB issues the following safety recommendation:*

**The NIB recommends the NSA to consider reviewing whether the processes set out in the safety management system of MÁV Zrt. in the field of maintenance and main inspection of safety equipment are feasible and implemented in practice, and taking the necessary measures if any shortcomings are identified.**

*With the adoption and expected implementation of the recommendation, a good quality of periodic inspection and repair of safety devices can be achieved.*

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**BA2021-0039-5-01 (HU-10011):**

*The IC found during the investigation that the locally controlled switch involved had a technical defect which implied a dangerous consequence (both switch tongues being pressed closely against the stock rail) which could have been revealed during a serviceability check performed when setting the track route, but, due to the category of the switch (to be kept closed on a continuous basis), no such check is required. With regard to the speed limit of 100 km/h for the switch, and to the relative proximity of the switch to the pointsman's workstation, the IC's position is that the railway infrastructure manager takes too high risk.*

**NIB recommends to NSA considering a risk assessment relating to the conditions of keeping the switches continuously in closed position and, depending on the results, modifies the related rules as necessary.**

*By acceptance and expected implementation of the safety recommendation, similar accidents could be prevented or their frequency and severity could be reduced.*

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**BA2021-0079-5-01 (HU-10012):**

*To comply with the changing technical and regulatory environment, both in the light of the safety measures taken so far and those planned, may require complex and protracted preparations by railway undertakings. Maintaining safe, competitive, regular rail transport is also in the national economic interest. Therefore, the TSB issues the following recommendation:*

**The NIB recommends that the Deputy State Secretariat for Transport Strategy of the Ministry of Construction and Transport, as the technical preparatory body for transport legislation, to consider assessing the readiness of railway undertakings using the national rail network to implement the ETCS system for the purpose of preparing decisions. On the basis of the results of the assessment, consider preparing an impact study on the measures to be taken to ensure that railway undertakings are able to fully comply with a regulatory environment that would require the use of ETCS.**

*With the adoption and expected implementation of the recommendation, With the adoption and implementation of the proposal, the envisaged migration (use of ETCS instead of EVM) can be achieved in the shortest possible time and with the least possible organisational, technical and technological problems, thus making rail transport safer, if, in the future, a regulatory environment is created that requires the use of ETCS.*

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**BA2021-0132-5-01 (HU-10032):**

*During the investigation, the IC found that, when operating as a light engine, the braking performance of the 240 series locomotives may be insufficient when braking from the maximum authorised speed of 120 km/h as laid down in their authorisation. Therefore, the TSB issues the following safety recommendation:*

**The NIB recommends to NSA to consider reviewing whether the braking equipment of the 240 series locomotives in operation in Hungary complies with the requirements set out in the legislation and in the type certificate or authorisation for placing in service.**

*By acceptance and expected implementation of the safety recommendation regulations can be introduced to force Series 240 locomotives to run at speeds corresponding to their actual braking performance, thereby reducing the risk of accidents.*

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**BA2021-0616-5-01 (HU-10198):**

*The investigation explored that the track lubrication equipment on line 11 and the wheel flange lubrication equipment on locomotives of the series 418 did not have the desired effect, so the critical points of the curves and the wheel flanges did not receive sufficient lubricant and were worn due to dry friction. As a result, the friction coefficient between the vehicle flanges and the outer rails increased, causing the wheels to climb up the rails.*

**NIB proposes reviewing the current track gauge system on line 11 and the combined operation of the track gauge technology for the locomotives of the series 418 and the effects of the train and locomotive rosters used, and taking technical and organisational measures as necessary.**

*By acceptance and expected implementation of the safety recommendation, the risk of high friction wear and thus derailment caused by track and vehicle interaction can be reduced on the line concerned.*

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**BA2021-0682-5-01 (HU-10084):**

*During the investigation, the IC found that the chief traffic manager of Ferencváros station does not have at his disposal the supporting tools (appropriate logbooks, automatic train number tracking) to continuously and accurately monitor the trains moving on the track network under his control, and therefore the possibility of error is high. TSB therefore issues the following safety recommendation:*

**The NIB recommends reviewing the train identification procedures at Ferencváros station to see to what extent they allow continuous monitoring of trains in service; and, if necessary,**

**introducing a logging system and/or train number tracking technology that allows traffic management staff to continuously monitor the exact location of trains moving on the network controlled by them.**

*By acceptance and expected implementation of the safety recommendation, the risk of traffic management staff making mistakes about the position of trains can be reduced.*

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**BA2021-0682-5-02 (HU-10084):**

*During the investigation, the IC found that the job of the chief traffic manager of Ferencváros station entails a high risk of error due to the tasks to be performed, which require different mental models, and the ongoing transformation and development of the railway network connected to the station will even significantly increase the traffic to be managed.*

**The NIB recommends carrying out a workload analysis of the traffic management staff of Ferencváros station, also from the point of view of how suitable the existing technology and equipment are to keep the workload below the critical level for the safe control of traffic (which is expected to increase in the future), or what changes and improvements could be made to make them suitable.**

*By acceptance and expected implementation of the safety recommendation, future traffic growth will not increase the risk of accidents at the station due to traffic management errors.*

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**BA2021-0682-5-03 (HU-10084):**

*In the course of the investigation, the IC found that MÁV Zrt.'s Instruction No. T.25 – which also contains regulations directly related to the management of traffic – entered into force on the day following its issuance, thus the time necessary for the training and preparation of the personnel was not provided.*

**The NIB recommends reviewing the procedures for issuing instructions of MÁV Zrt., with a view on how it provides the necessary preparation before entry into force, taking into account that the instructions may affect several railway companies.**

*By acceptance and expected implementation of the safety recommendation, it can be ensured that all employees concerned will be aware of the instructions when they come into force and that safety-critical tasks are carried out in the same way.*

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**BA2021-0682-5-04 (HU-10084):**

*During the investigation, the IC found that the necessary changes to the training system of MÁV Zrt. and RCH Zrt. as required by Instruction No. T.25 had not been made even more than one year after its entry into force, until the draft final report was issued.*

**The NIB recommends that the safety management systems of railway undertakings using the national network should review the competence management in order to ensure that their training instructions contain the training requirements set out in Chapter 2.3 of Instruction T.25.**

*By acceptance and expected implementation of the safety recommendation, it can be ensured that the companies' instructions describing the training system are in line with the current knowledge base, thus laying the foundation for providing staff with up-to-date knowledge.*

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**BA2021-0797-5-01 (HU-10224):**

*During the investigation, the IC found that the system of instructions of MÁV-HÉV Zrt. did not specify in a precise manner the reference system to be used for the positioning of trains, therefore TSB issues the following safety recommendation:*

**NIB recommends MÁV-HÉV Zrt. to develop a uniform standard for employees working in jobs related to railway safety in order to ensure that the designation of individual points on the network is always carried out in a uniform, clear reference system.**

*If the safety recommendation is adopted and implemented, once the notices and provisions defining the location have been issued, it will be possible to avoid that the recipients of the notices and provisions inaccurately identify the designated location. In this way, occurrences similar to the accident that is the subject of this report can be avoided.*

**BA2021-0797-5-02 (HU-10224):**

*During the investigation, the IC found that the inaccurate positioning of a train stopped on an open line due to an extraordinary cause by its crew and inconsistent communication by the traffic crew posed a significant risk of an accident. In view of this, TSB issues the following safety recommendation:*

**NIB recommends MÁV-HÉV Zrt. to review its basic and periodic training topics for employees employed or intended to be employed in jobs related to railway safety in order to ensure that safety-critical communication is also consciously practised during training.**

*If the safety recommendation is adopted and implemented, the risk of loss of essential information needed to make the right decisions in traffic situations requiring operational decisions can be reduced.*

**BA2021-1110-5-01 (HU-10148):**

*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 NIB therefore issues the following safety recommendation:*

**The NIB 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.*

**BA2021-1166-5-01A (HU-10151):**

*The TSB issued an interim safety recommendation during the investigation, given the severity of the risk identified:*

**The NIB recommends NSA to consider obligating national infrastructure managers to perform a risk analysis to find out whether there is appropriate cooperation in all circumstances between**

- automatic warning light equipment designed with a train detection mode using 13 kHz track circuits, and
- railway vehicles using disc brakes during their service braking,

**and then, depending on the results of the analysis, take the necessary steps to prevent similar cases from recurring.**

*By acceptance and expected implementation of the safety recommendation, the risk of malfunctioning of similar types of automatic shunting equipment due to high shunt-resistance can be significantly reduced.*



**BA2021-1302-5-01 (HU-10161):**

*In the course of the investigation, the IC found that the locomotive driver involved in the incident participated in a line knowledge examination (in the framework of the locomotive driver training organized by MVÁ Limited Liability Company) where not all the required conditions were given, and thus had obtained his certificate authorising him to drive the railway vehicle at the place of the accident unlawfully. The TSB therefore issues the following safety recommendation:*

**The NIB recommends the NSA to check, acting in its official capacity, whether MVÁ Limited Liability Company allows its trainee drivers to take the line knowledge test only if the conditions laid down in the legislation are met. At the same time, the NIB recommends the NSA to extend the implementation of the recommendation to those railway undertakings which are not covered by this investigation.**

*With the adoption and expected implementation of the recommendation, the number of offences related to the unlawful acquisition of line recognition examinations can be reduced, thus ensuring the safety of rail transport on the national network.*

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**BA2022-0048-5-01 (HU-10178):**

*During the safety investigation, the Investigating Committee of the NIB found that, according to Government Decree 203/2009 (IX.18.) on the health requirements for employees performing railway transport safety-related work and the order of health examination, psychological examination is not a mandatory element in the periodic medical examination of train drivers, and the decision on necessity of it is left to the examining doctor. Given that the periodic examining doctor only meets the person examined during the periodic examinations, the need for psychological examinations may not always be revealed during such periodic examinations, although the mental state of individuals may change significantly over time due to changes in the circumstances affecting it. In this way, changes in the psychological state of drivers, which may also affect their work, are not always detected. Therefore, the NIB reiterates its safety recommendation previously issued as BA2014-720-5-1 and makes the following proposal:*

**The NIB recommends that the Deputy State Secretariat for Transport Strategy of the Ministry of Construction and Transport, as the technical preparatory body for transport legislation, to consider proposing an amendment to Government Decree 203/2009 (IX.18.) on the health requirements and medical examination procedure for employees performing railway transport safety-related tasks, so that psychological examinations are included in the periodic medical examinations of railway vehicle drivers (locomotive drivers) with a specified periodicity.**

*If the recommendation is adopted and implemented, locomotive drivers will also undergo psychological examinations as part of their periodic medical examinations, in line with European transport psychology practice, with a periodicity laid down by law. This will enable changes in their psychological state to be detected and revealed, and the evaluating doctor to identify and treat any negative trends, thus improving the overall safety of rail transport.*

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**BA2022-0049-5-01 (HU-10177):**

*During the investigation, the IC found that the traffic managers managing cross-border traffic do not speak the foreign language defined in the border traffic contract, while the IT solutions designed to overcome the language problems are not able to handle all traffic situations (e.g. emergencies).*

**NIB recommends MÁV Zrt. to review the fulfilment of the expected staff competences in its safety management system to ensure that the language skills of the staff and the applicable language under the border transition contracts are in line.**

*If the Recommendation is adopted and implemented, language problems will not hinder the observing of border transition rules and identification and management of international emergencies.*

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**BA2022-0049-5-02 (HU-10177):**

*In the course of the investigation, the IC found that the mobile phone used by the traffic controller in Hidasnémeti - even for traffic communication - was equipped with a voice recording service, but the recorded audio material was not accessible to the railway infrastructure manager, and thus to the IC. However, it can be inferred from the relevant instructions that voice recording is necessary, but that it will not achieve its purpose if access to it is hindered.*

**NIB recommends MÁV Zrt. ensure that the audio recording of the communication equipment (including service mobile phones) used at Hidasnémeti station is properly implemented, including the purpose of making their voice material available. NSA should, where necessary, oblige the infrastructure manager to provide adequate voice recording services.**

*If adopted and implemented, the Recommendation will facilitate the monitoring of station operations and the investigation of station incidents, and therefore make it easier to avoid their recurrence.*

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**BA2022-0381-5-01 (HU-10217):**

*During the inspection, the IC found that the view to the railway track is not ensured in the area of Mindszent settlement, at the level crossing in the railway section 187, during the foliage period, as required by Decree 20/1984 (XII. 21.) of the Ministry of Transport.*

**The NIB recommends Csongrád-Csanád County Government Office to review the construction of the railway crossing in section 187 on the Tiszatenyő-Szentes-Hódmezővásárhely railway line and to take the necessary measures to ensure visibility of the railway track as required by law.**

*By adopting and implementing this recommendation, it will be possible to ensure that drivers of road vehicles have the opportunity to ensure safe passage even in the event of a failure or poor visibility of the warning lights.*

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**BA2022-0381-5-02 (HU-10217):**

*During the investigation, the IC found that the passenger compartment floor of the Series 117 (Bzmot) motor train sets had unsecured and sharp, pointed-edged covers which, if the vehicle derailed and overturned, could cause injuries to passengers if they were dislodged; and could allow hot and flammable materials to enter the passenger compartment from the engine compartment.*

**The NIB recommends that the technical certificates for the 117 series (Bzmot) motor vehicles be reviewed and, if necessary, amended to ensure that there are no unsecured parts in the passenger compartment that could cause injury to passengers if the vehicle derails or even turns over.**

*By adopting and implementing this recommendation, it is possible to avoid the risk of passenger injuries being worsened by loose parts of the vehicle in the event of a derailment accident.*

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**BA2022-0381-5-03 (HU-10217):**

*During the investigation, the IC found that the rescue or escape of passengers from the Series 117 (Bzmot) motor train set and its trailers is difficult: the roof hatch cannot be opened, and there is no means of breaking the glass covering the emergency doors of the side windows and access doors.*

**The NIB recommends that the technical approvals of the Series 117 (Bzmot) motor vehicles and their trailers be reviewed and, if necessary, amended to ensure that the vehicles are fitted with the necessary emergency exits (doors and windows that can also be used as emergency exits) and that the vehicle is equipped with the necessary accessories.**

*If this recommendation is adopted and implemented, passengers in an accident with similar consequences can leave the vehicle more quickly, and can be rescued and receive medical care sooner.*

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**BA2022-0960-5-01A (HU-10310):**

*During the investigation, the Investigation Committee of the NIB found deficiencies in the design of the level crossings, the presence or visibility of the necessary traffic signs, and the obstructions in the relevant areas around the level crossing involved in the accident as well as at several other level crossings between Kunfehértó and Kiskunhalas stations. In addition, the Investigation Committee found that, of the level crossings located between the stations, the level crossings on Road No. 5412 and on dirt roads are not pre-marked by road signs. Chapter II, 9.9. 1 bb) of technical rules "The Design, Application and Placement of Road Signs" (JETSZ) published as an annex to GKM Decree 83/2004 (VI. 4.) on the Design, Application and Placement of Road Signs only requires in the case of a paved road crossing a standard gauge railway track, that, if the road is crossed by another paved road outside a built-up area within 150 m of the level crossing, the level crossing shall be indicated on this road by a "Road direction sign" indicating the method of protection of the crossing. However, in view of the seriousness of the accident that occurred, the Investigation Committee considers that, in order to prevent similar accidents in the future, it may be justified to include the danger signs on the Road No. 5412 for level crossings involving dirt roads also. In view of the above, the NIB has issued an interim safety recommendation during the investigation.*

**The NIB recommends to the Road Department of the Traffic, Technical Licensing and Consumer Protection Department of the Bács-Kiskun County Government Office to consider, in accordance with the provisions of Government Decree 382/2016 (XII. 2.) on the designation of the bodies performing official tasks related to traffic administration,**

- **obliging the road operator to review the traffic regulations for the crossings concerned and to make the necessary changes to eliminate the situation that is detrimental or dangerous to traffic safety, pursuant to Section 34 (2) of Act I of 1988 on Road Traffic, and**
- **ordering the felling of trees or other vegetation in the area of the sight triangles of the level crossings, in accordance with Chapter VIII, point 26.4(d) of the Technical Rules for Traffic Regulation, issued as an annex to KM Decree 20/1984 (XII. 21.) on Road Traffic Regulation and the Installation of Road Signs.**

*With the adoption and expected implementation of this recommendation, the risk of similar accidents can be reduced, thereby improving transport safety.*

## 5. OTHER ACTIVITIES

### International Cooperation

Following the pandemic situation in 2020-2021, the work of international organisations was relaunched in 2022, including participation in them. The European Railway Agency (ERA) will bring together the national accident investigation bodies in a working group (NIB Network). The head of the Railway & Duty Service Unit, TSB attended the plenary meeting of the international working group in France, and took part in two other plenary meetings held in the virtual space.

Article 22(7) of Directive (EU) 2016/798 of the European Parliament and of the Council on railway safety provides for the operation of a common peer review programme for Member States' accident investigation bodies. In accordance with the timetable, the evaluation of the Hungarian accident investigation body took place in 2022, where the TSB hosted representatives of the NIB Network and ERA in a three-day programme and made itself available for the process evaluation.

During the reporting period, the TSB did not participate, in cooperation with the foreign accident investigating body, in any investigation of railway incidents abroad but involving Hungarians. During an incident investigation – in connection with the unmanned freight train that ran away on 10 January 2022 at Barca, in Slovakian territory (near Hidasnémeti, Hungary) and then stopped at the Hungarian side of the railway line – the TSB offered its cooperation and requested the cooperation of its Slovakian counterpart who did not request it and did not provide a substantive response to our enquiries.

During the reporting period, there were no occurrences with significant involvement of foreign people or entities in Hungary where active cooperation with a foreign partner organisation would have been necessary.