



REPUBLIC OF SERBIA,
CENTER FOR INVESTIGATION OF ACCIDENTS IN TRANSPORT,
SECTOR FOR INVESTIGATION OF ACCIDENTS IN RAILWAY TRAFFIC,
Nemanjina 11, 11000 Belgrade

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ANNUAL REPORT FOR 2021



Center for Investigation of Accidents in Transport (hereinafter referred to as CINS) is independent in its work and conducts independent accident investigations. The aim of an investigation is to identify the causes and the possibility of improving safety on the railways and to prevent accidents by issuing safety recommendations.

In accordance with the Article 33 of the Law on Investigation of Air, Railway and Waterborne Traffic Accidents (“Official Gazette of RS” No. 66/15 and 83/18) and the Article 23 of the Directive 2004/49/EC of the European Parliament and of the Council of EU (Railway Safety Directive), CINS drafted and published the Annual Report.

Annual report for 2021 consists of:

- Information on CINS
- Investigative procedure in the field of railway transport
- Investigations opened in 2021
- Investigations closed in 2021
- Issued safety recommendations
- Measures taken on the basis of the issued safety recommendations



Glossary:

RS	.....	Republic of Serbia
CINS	.....	Center for Investigation of Accidents in Transport
MGSI	.....	Ministry of Construction, Transport and Infrastructure
IŽS	.....	Serbian Railways Infrastructure
a.d.	.....	Joint-stock company
d.o.o.	.....	Ltd.
US	.....	Constitutional Court
JŽ	.....	Yugoslav Railways
ZJŽ	.....	Community of Yugoslav Railways
EMV	.....	Electro motor train
DMV	.....	Diesel motor train
DMK	.....	Diesel motor wagon
JP	.....	Public Enterprise
EPS	.....	Electrical Power Industry of Serbia
TENT	.....	Thermo Power Plant “Nikola Tesla”
EU	.....	European Union
MUP	.....	Ministry of Interior
NIS	.....	Oil Industry of Serbia
ŽRS	.....	Republic of Srpska Railways
PU	.....	Police Administration
OJT	Basic Public Prosecutor’s Office
SS	Safety signalling
TK	Telecommand
OJ	Organizational Unit



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1. CINS

1.1. Legal framework

The implementation of Directive 2004/49/EC of the European Parliament and the Council in the legislation of the RS was carried out by the adoption of the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18), and The Law on Railway Safety and Interoperability (“Official Gazette of RS” No. 41/18) and on the date of entry into force of the Law on Safety in Railway Traffic Interoperability (“Official Gazette of RS” No. 41/18), that is, on June 8th, 2018 the Law on Railway Safety and Interoperability (“Official Gazette of RS” no. 104/13, 66/15 - other laws, 92/15 and 113/17 - other law) ceases to be valid, except for the provision of Article 78, paragraph 1 point 5) subpoint (1), which ceases to, be valid after three years from the date of entry into force of this Law, i.e. on June 8th, 2021.

CINS, which includes the Sector for Investigation of Accidents in Railway Traffic, is a special organization that carries out the investigation following the serious accidents on the railway system. In addition to serious accidents, CINS can investigate other accidents and incidents, which could lead to serious accidents, including technical failure of structural subsystems or interoperability factors in accordance with the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18).

According to the Law on Safety in Railway Traffic (“Official Gazette of RS” No. 41/18), the manager and the railway undertaking must, independently of CINS, carry out tasks on investigating the causes and consequences of accidents and incidents in railway traffic, as well as the circumstances in which they have occurred.

According to the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18), CINS, Sector for Investigation of Accidents in Railway Traffic, conducts investigation independently from all parties and organizations competent for railway traffic. CINS conducts investigation following the serious accidents on the railway system with the aim of possible improvement of safety on the railway and prevention of accident.

Professional work related to investigation is independent of criminal investigations or other parallel investigations that determine responsibility or the degree of guilt.

The investigation and determining the causes of accidents does not aim to establish criminal, economic, misdemeanor, disciplinary, civil or other liability.



1.2. Role and purpose

According to the Law on the Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of the RS” No. 66/15 and 83/18), CINS was established, as of July 2015, as a special organization whose competence is the performance of professional work related to the investigation of accidents and serious accidents in air traffic, serious accidents, other accidents and incidents in railway traffic, very serious maritime accidents, serious maritime accidents, maritime accidents, maritime incidents, serious inland navigation incidents and inland navigation incidents in waterborne traffic. CINS has the status of a legal entity, and the headquarters of CINS is in Belgrade.

Sector for Investigation of Accidents in Railway Traffic carries out tasks that are within the competence of CINS, regarding railway traffic with the aim of possible improvement of safety on the railway by issuing safety recommendations.

According to Article 35 of the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18), CINS issues safety recommendations based on data analysis and the results of the conducted investigation. Recommendations are sent to the Directorate for Railways, and in case it is necessary to other authorities and organizations in the RS, as well as to interested authorities and organizations of other countries and international organizations. The Directorate for Railways takes measures to take safety recommendations into account and to act on them. The Directorate for Railways and other authorities and organizations, except for the authorities and organizations of other countries and international organizations, are obliged to take the necessary measures in order to ensure that the safety recommendations of CINS are taken into account in an appropriate manner and, depending on the case, act on them. The Directorate for Railways and other authorities and organizations, except for the authorities and organizations of other countries and international organizations, are obliged to submit at least once a year a report to CINS on the measures taken or planned to be taken based on the safety recommendations issued in the previous year, and no later than July 31st of the current year.

Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18), does not apply to underground railways (metros), trams and other types of light railway.

Basic tasks of CINS, Sector for Investigation of Accidents in Railway Traffic, are:

- Investigation of serious accidents, other accidents and incidents occurring on the railways system
- Preparation of final reports on conducted specific investigations that may contain safety recommendations aiming to improve safety of railway traffic.

CINS performs other tasks stipulated by the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18).

1.3. Organization of CINS

Within CINS, the following basic internal units are established: Sector for Investigation of Accidents in Air Traffic, Sector for Investigation of Accidents in Railway Traffic and Sector for Investigation of Accidents in Waterborne Traffic. Within CINS, a specific internal unit outside the Sectors, General Affairs Department, has been established.

CINS's structure has been presented in Figure 1.3.1.

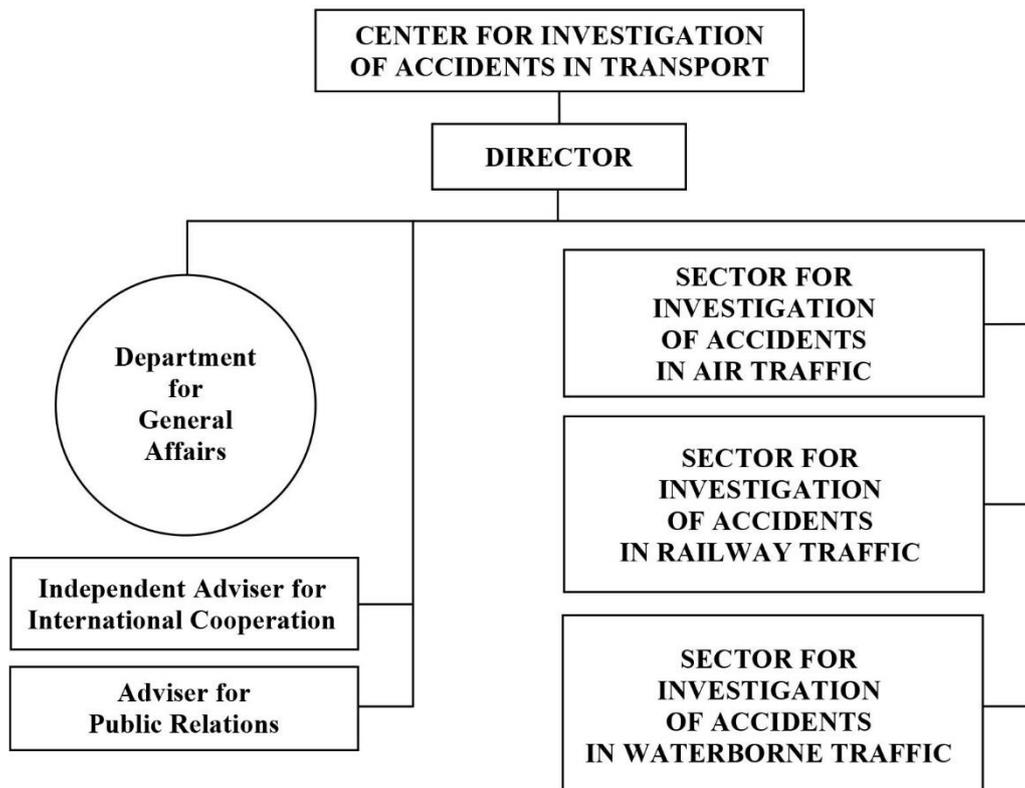


Figure 1.3.1: CINS's structure

Sector for Investigations of Accidents in Railway Traffic has become operational since 26.06.2017. With the new Rulebook on internal organization and systematization of workplaces No. 110-00-5/2021-04 of 13.05.2021., which came into force on 14.06.2021., within the Sector for Investigation of Accidents in Railway Traffic the following four work positions have been systematized: Head of the Sector for Investigation of Accidents in Railway Traffic - Main Investigator for Railway Traffic, Senior Adviser for Coordination of Investigation and Railway Accidents Analysis, Senior Adviser for Coordination of Investigation and Railway Accidents Analysis and Independent Adviser for Investigation and Railway Accidents Analysis.



Sector for Investigation of Accidents in Railway Traffic in 2021 employed:

1. Head of the Sector for Investigation of Accidents in Railway Traffic - Main Investigator in Railway Traffic,
2. Senior Adviser for Coordination of Investigation and Railway Accidents Analysis and
3. Senior Adviser for Coordination of Investigation and Railway Accidents Analysis.

CINS, Sector for Investigations of Accidents in Railway Traffic, is independent in its work and independent of all other bodies and organisations competent for railway traffic (MGSI, the Directorate for Railways), as well as of all legal and natural persons whose interests may be in conflict with the tasks and entitlements of CINS.

1.4. Organisations competent for the railway system

Organisations competent for the railway system in RS are MGSI, the Directorate for Railways and CINS.

MGSI carries out state administration affairs related to the regulation and ensuring of the transport system. MGSI is in charge of drafting laws passed by a legislative body. The legislative body in the RS is the National Assembly. MGSI sets the legal framework by developing the railway regulations and implementing of EU legislation. MGSI also carries out supervision of internal and international transport and also intermodal transport, regulation and safety of the technical and technological traffic system.

The Directorate for Railways carries out administration affairs in the field of railway determined by the Law on Railway (“Official Gazette of RS” No. 41/18), Law on Railway Traffic Safety (“Official Gazette of RS” No. 41/18) and the Law on Interoperability of the Railway System (“Official Gazette of RS” No. 41/18). The Directorate for Railways carries out tasks of regulating the railway services market and activities in the field of regulation of safety and interoperability of railway traffic. The Directorate for Railways is competent to issue, suspend and withdraw the license for railway infrastructure management and the license for traffic, enact bylaws, participate in international cooperation in the field of railway traffic which is realized by MGSI.

CINS is a special organisation which performs state administration affairs in the field of investigation of accidents and incidents in accordance with the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18). CINS is responsible for performing professional activities related to investigation of accidents and serious incidents in air traffic; serious accidents, other accidents and incidents in railway traffic; very serious maritime accidents, serious maritime accidents, maritime accidents, maritime incidents, serious inland navigation incidents and inland navigation incidents in waterborne traffic.



2. INVESTIGATIVE PROCEDURE IN THE FIELD OF RAILWAY TRAFFIC

2.1. Accidents and incidents being investigated

According to the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18), CINS conducts investigation after serious accidents on the railway system with a view of possible improvement of railway safety and the prevention of new accidents caused by the same or similar causes.

In addition to serious accidents, CINS may also investigate other accidents and incidents that could lead to serious accidents, including the technical failure of structural subsystems or interoperability constituents.

CINS has discretion to decide whether to open investigation of other accidents and incidents. The scope of investigations and the procedure of conduction of these investigations is determined by CINS.

According to the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18), accidents and incidents may be:

1. Serious accident in railway traffic is a collision or derailment of the train which results in the death of at least one person or serious injury to five or more persons or causing great material damage to the railway vehicles, railway infrastructure, or the environment, as well as other similar accident which has an obvious impact on railway safety or the safety management.
2. Accident in railway traffic is undesirable or unintended sudden event or a specific sequence of such events, which has detrimental effects (collisions, derailments, an overtaking of the train, level crossing accidents, accidents with the participation of individuals caused by railway vehicles in motion, fires, etc.).
3. Incident in the railway traffic is an event that is associated with the railway transportation or shunting composition and adversely affects the safety of the traffic.

Great damage in rail transport is the damage that CINS, upon accessing the accident site, assesses in the amount of at least two million euro.

Investigation refers to a process which includes the data collection and analysis, making conclusions, including the determination of causes and depending on the case, issuing safety recommendations with the aim of prevention of serious accidents in railway traffic.

Fatal injury is injury caused to a person in a serious accident in the railway traffic, resulting in the death of that person within 30 days from the injuries inflicted during serious accident in railway traffic.

Seriously injured person is any injured person who is hospitalized for more than 24 hours due to the consequences of an accident, excluding attempted suicides.



2.2. Organisations involved in investigative process

Investigation of serious accidents, other accidents and incidents on the railway system can be performed by different organizations and business entities in accordance with their legal obligations, as follows:

- Infrastructure Manager and Railway Undertakings, pursuant to the Law on Safety in the Railway Traffic (“Official Gazette of RS” No. 41/18) and with their safety management systems (SMS) deal with determining the causes and taking measures based on the results of investigation.

- CINS investigates serious accidents, other accidents and incidents with the aim of determining the causes and issuing safety recommendations in order to improve safety of the railway system.

- The Public Prosecutor's Office and Police investigate an accident or incident in order to determine liability for committed infringement or criminal offense.

2.3. The approach of CINS to an investigation

CINS, that is, the Sector for Investigation of Accidents in Railway Traffic carries out an investigation to determine the causes in order to issue safety recommendations in terms of preventive actions aiming to reduce the number of accidents and incidents and improve safety of the railway system. Investigations carried out by the CINS do not seek to determine liability.

CINS is on standby 24 hours, 7 days a week.

For the purpose of the investigation of any accident or incident Director of CINS forms by the Decision a Working Group led by the Main Investigator in Railway Traffic and for the members of the working group other employees of CINS i.e. the Sector for Investigation of Accidents in Railway Traffic are appointed, which participate in the affairs of the investigation of accidents and incidents, as well as other professionals outside CINS, in accordance with the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18).

Upon receiving notification of an accident or an incident on the railway system, CINS decides whether to go on the site of the accident or incident or not. At the site of the occurrence of the accident or incident, CINS will conduct an investigation and check the collected facts and procedures, undertaken by the Infrastructure Manager and Railway Undertaking (if in the investigation of the accident or incident one of them or both are involved).

The decision to launch an investigation can be made immediately after the reception of notification of accident or incident occurred or after all relevant facts necessary for making the decision to initiate the investigation of an accident or incident are collected.

After an investigation has been initiated, not later than seven days from the date of decision, CINS, Sector for Investigation of Accidents in Railway Traffic shall inform the MGSI and The European Union Agency for Railways (ERA) on initiated investigation, in accordance with the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic (“Official Gazette of RS” No. 66/15 and 83/18).



Upon completion of the investigation, CINS publishes the Final Report and safety recommendation on its website www.cins.gov.rs. The Report form is in accordance with the Rulebook on the Content of the Final Report on Investigations of Accidents and Incidents in Railway Traffic (“Official Gazette of RS” No. 89/15).

3. INVESTIGATIONS OPENED IN 2021

The Sector for Investigation of Accidents in Railway Traffic became functional on 06.26.2017. In 2021, a total of 2 (two) investigations were initiated.

Basic data on the investigations initiated by the Sector for Investigation of Accidents in Railway Traffic in Railway Traffic in 2021 are shown in table 3.1.

Table 3.1: Review of investigation initiated in 2021

TYPE OF ACCIDENT OR INCIDENT	No.	[%]
Serious accidents	2	100.0
Accidents	0	0.0
Incidents	0	0.0
Total:	2	100.0

Basic data on fatally injured and injured people for investigations which Sector for Investigation of Accidents in Railway Traffic has initiated in 2021 are shown in Table 3.2.

Table 3.2: Review of fatally injured and injured people for investigations initiated in 2021

	Passengers	Railway staff	Third parties	Total
Fatally injured	-	2	-	2
Seriously injured	-	-	-	-
Slightly injured	-	-	-	-

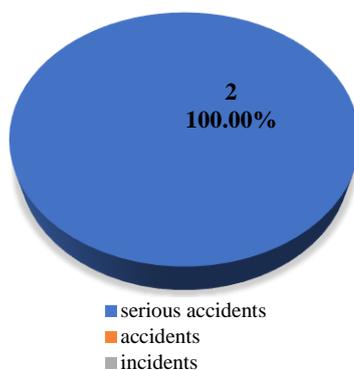


Figure 3.1: Investigations initiated in 2021

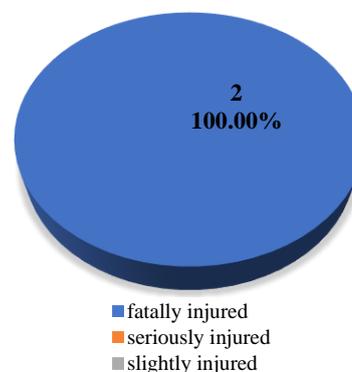


Figure 3.2: Fatally injured and injured in 2021



3.1. Overtaking of the pulled shunting composition on the railway worker

On 03.02.2021. at 08:29 on the main arterial line No. 103: (Belgrade Center) - Rakovica - Jajinci - Mala Krsna - Velika Plana, at the Mala Krsna station, while performing shunting work, on the second station track, there occurred an overtaking of the pulled shunting composition of the railway undertaking "Srbija Kargo" a.d. (locomotive 441-510 and 6 (six) loaded wagons of the Ea series (five wagons of the Eas-z series and one wagon of the Eanoss series)), on an auxiliary worker at the Mala Krsna station employed by the public railway infrastructure manager "IŽS" a.d.

The place of occurrence of the serious accident in question is located on the second station track of Mala Krsna station, on the section of the track between the external train dispatcher office and switch block 2, in the vicinity of the operating ramp next to the first station track where the warehouse of the company "Total Reciklaža" Požarevac is located, based in Mala Krsna.

As part of the shunting work for the purpose of proper formation of the gross for the planned train that was on the third station track, the pulled shunting composition of the railway undertaking "Srbija Kargo" a.d. (locomotive 441-510 and 6 (six) loaded wagons of series Ea), started driving on the second station track from the office of the train dispatcher in the direction of switch block 2. The shunting composition consisted of a train driver, employed by the railway undertaking "Srbija Kargo" a.d. (he was located in the driver's cab "A", next to the gross, on the right side, seen in the direction of the shunting composition) and the shunter, employed by the manager of the public railway infrastructure "IŽS" a.d. (he was on the steps next to the driver's cab, on the train driver's side). According to the Business Order of the Mala Krsna Station, Part I, the role of shunting operator was performed by the external train dispatcher.

The railway worker, auxiliary worker at the Mala Krsna station, employed by the manager of the public railway infrastructure "IŽS" a.d. was moving on the second station track in the direction from the station facility to the switch block 2 of the Mala Krsna station, in the same direction and at the same time as the pulled shunting composition, with its back turned to the oncoming shunting composition. The auxiliary worker was moving in the stated direction due to the arrival at the switch block 2 of the Mala Krsna station, in order to perform cleaning and lubrication of the switches and the level crossing.

Under these conditions, there occurred an overtaking of the pulled shunting composition on the auxiliary worker. The overtaking occurred in such a way with the head of the locomotive 441-510 (locomotive dozer blade) hitting the auxiliary worker, who fell off the track from the impact, after which the entire shunting composition crossed over him. On that occasion, the auxiliary worker suffered severe bodily injuries, from which he died on the spot.

Since the staff on the shunting composition did not notice that there was an overtaking, the pulled shunting composition continued driving until it got off the second station track and stopped at the switch block 2, where it was planned as part of the shunting work. The occurrence of the serious accident in question was first noticed by the train driver and the shunter who were on the locomotive 444-023, which was shunting along the second track from the direction of the train dispatcher's office in the direction of the switch block 2, just behind the shunting composition involved in the serious accident.

In the serious accident in question, there was no material damage on the railway vehicles, infrastructure and the property of the third parties.

The appearance of the serious accident site, after the overtaking of the shunting composition on the railway worker, is shown in Figure 3.1.1.



Figure 3.1.1: The appearance of the serious accident site after the overtaking of a shunting composition on a railway worker (view from direction of the switch block 2 to the station facility)

The interruption of traffic at Mala Krsna station lasted until 03.02.2021. at 13:00.

Category: Serious accident

Fatally injured and injured: 1 fatally injured

Material damage: N/A

3.2. Overtaking of the pushed shunting composition on the railway worker

On 12.07.2021. at 07:43 in the area of the industrial railway JP “EPS” Branch TENT from Obrenovac, in the station Obrenovac, during the shunting work, on the second station track, there occurred an overtaking of the pushed shunting composition (locomotive 443-06 and 2 (two) wagons of type Arbel series Faboo), owned by JP “EPS” Branch TENT from Obrenovac, on a railway worker employed in “Pro Tent” d.o.o. from Obrenovac. The railway worker was in the area of the switch No. 17 in the profile of the second track of the Obrenovac station, when he was hit by a pushed shunting composition, which was moving on the second track from the direction of the entrance switches towards the second turnout track. On that occasion, the railway worker suffered severe bodily injuries, from which he died on the spot.



Fatally injured worker, railway worker employed in “Pro Tent” d.o.o. from Obrenovac was in the area of switch No. 17 in the profile of the second track due to cleaning and lubrication of the switches. No material damage was caused to the railway vehicles, infrastructure and property of third parties in the serious accident in question.

The place of occurrence of the serious accident in question is located on the second track of the Obrenovac station, at the switch No.17, in the immediate vicinity of the facility where the office of the unloading train dispatcher is located - “OB1”.

As part of the shunting work at the Obrenovac station, in order to transfer the Arbel type Faboo series wagons from the fourth turnout track to the second turnout track, the shunting composition (locomotive 443-06 and 2 (two) Arbel type wagons, Faboo series) started driving from the station part of the railway track moving along the second station track from the direction of the entrance switches in the direction of the second turnout track. Only the train driver, employed by the JP “EPS” Branch TENT from Obrenovac, was on the shunting composition (he was in the driver cab of the shunting locomotive 443-06).

Railway worker, employed in “Pro Tent” d.o.o. from Obrenovac, immediately before the occurrence of the serious accident, was in the area of the switch No.17 in the profile of the second station track, performing the work of cleaning the switches. While cleaning the switch No. 17, the railway worker turned his back on the oncoming pushed shunting composition.

Under these conditions, there occurred a collision of the pushed shunting composition on the railway worker. The collision occurred when the front of the shunting composition (middle of the front part of the Arbel type wagon, Faboo series individual No. 43 72 6531 314-2) hit a railway worker in the area of his back, who from the impact fell into the track, after which the entire shunting composition crossed over him. On that occasion, the railway worker suffered severe bodily injuries, from which he died on the spot.

Since the train driver on the pushed shunting train did not notice that there occurred a collision, the pushed shunting composition continued driving all the way to the second turnout track, near the place where it was planned as part of the shunting task. The train dispatcher for unloading - “OB1”, was the first to notice the occurrence of the serious accident in question, who was in his office in the facility located between the second and third track near the switch No. 17, ie near the place of occurrence of the serious accident in question.

The appearance of the place of the serious accident, after the collision of the pushed shunting composition on the railway worker, is shown in Figure 3.2.1.

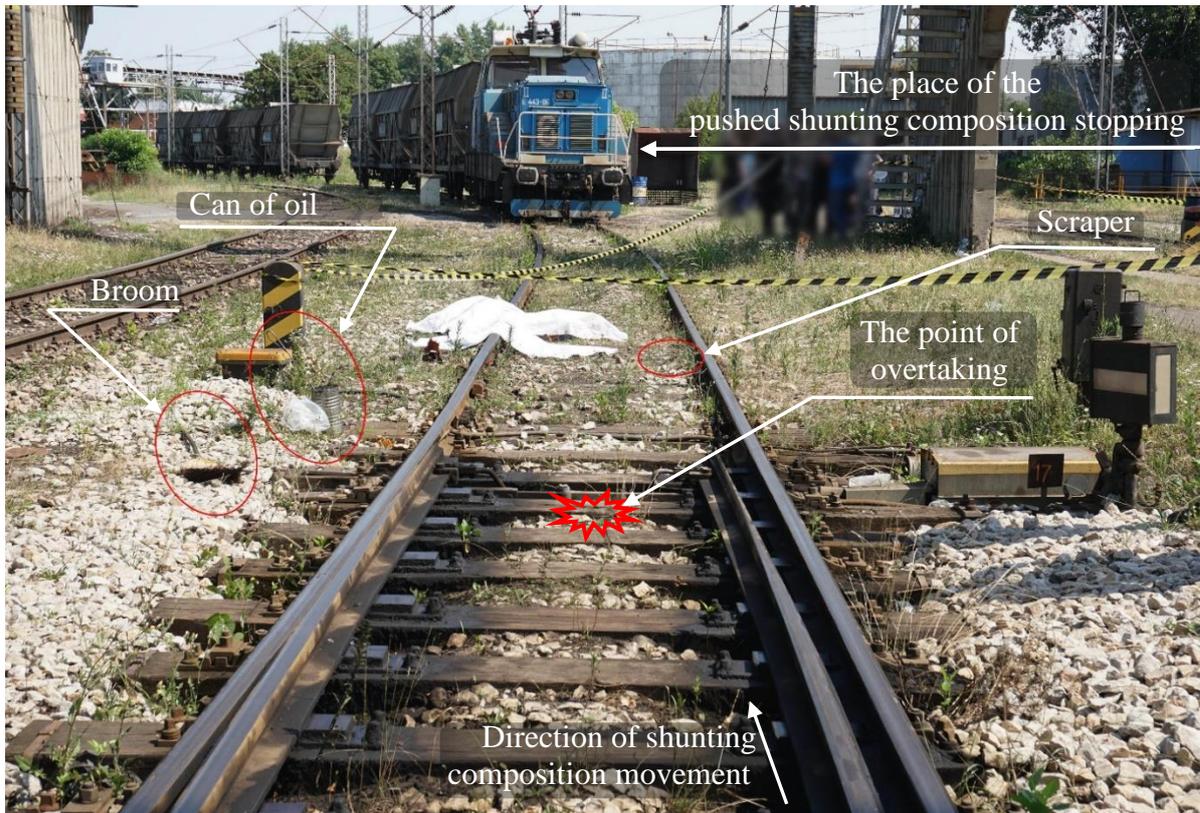


Figure 3.2.1: The appearance of the place of the serious accident after the overtaking of the pushed shunting composition on the railway worker (view from the direction of the second track to the second turnout track)

Due to this serious accident, the traffic was not interrupted at the station Obrenovac.

Category: Serious accident
Fatally injured and injured: 1 fatally injured
Material damage: N/A



4. INVESTIGATION REPORTS COMPLETED IN 2021

4.1. On the level crossing, overtaking of the train No. 45403 on the road passenger vehicle

4.1.1. Short description of the serious accident

On 25.07.2020. at 10:55 on the regional railway line 211: Ruma - Šabac - Junction Donja Borina - state border - (Zvornik Novi), at the level crossing, secured with road traffic signs and the zone of necessary visibility, located between the crossing point Štitar and the station Petlovača at km 20+647, overtaking of the train No. 45403 (railway undertaking “Srbija Kargo” a.d.) on the road passenger vehicle of brand Ford type Focus of license plates SM 063-DZ occurred.

The level crossing is located on the open track, in the settlement Petlovača (municipality of Šabac). It is secured with the traffic signs on the road and the zone of necessary visibility.

Road passenger vehicle of the brand Ford type Focus with license plates SM 063-DZ was moving along the state road IIA rank, marking 136: Majur - Bogatić - Petlovača from the direction of the intersection with the state road IB rank, marking 26: Belgrade - Obrenovac - Šabac - Loznica - state border with Bosnia and Herzegovina (border crossing Mali Zvornik) in the direction to the settlement Zminjak. Upon encountering the level crossing at km 20+647, the road passenger vehicle entered the track profile in the area of the level crossing just before the train arrived.

The train No. 45403 was moving along the regional line No. 211: Ruma - Šabac - Junction Donja Borina - state border - (Zvornik Novi), from the direction of the crossing point Štitar in the direction to the station Petlovača. The train operated on the route Ruma - Brasina - Zvornik Novi (ŽRS). The train composition consisted of the train locomotive series 661-033 and 24 empty wagons of the series Eas. During the drive of the train No. 45403 on the open track between the crossing point Štitar and the station Petlovača, upon encountering the level crossing at km 20+647, it came to overtaking of the train on the road passenger vehicle, which has, just before the train arrived, entered the track profile. Overtaking occurred when the left part of the front of the train locomotive 661-033 (left buffer) hit the front right side of the road passenger vehicle (seen in the direction of the train, i.e., the road passenger vehicle).

After the overtaking, the train No. 45403 continued its movement in the length of 145 m, after which it stopped, so that the front of the 661-033 series locomotive was found at km 20+792, with the longer part of the locomotive box ahead. On that occasion, no vehicle derailed out of the composition of the train No. 45403 (see Figure 4.1.1.1.).

After the impact, the train threw the road passenger vehicle next to the track, to the left in relation to the direction of the train, after which the road passenger vehicle continued moving along the track for approximately 30 m, after which it stopped. The road passenger vehicle was found on the left side of the track, seen in the direction of the train, i.e. in the direction of increasing stationing of the track, in a position parallel to the track, i.e. the train (see Figure 4.1.1.2.).



Figure 4.1.1.1: View of the train No. 45403 after the serious accident
(view in direction opposite to the direction of train movement)



Figure 4.1.1.2: View of the train No. 45403 and the road passenger vehicle after the serious accident
(view in the direction of train movement)

In this serious accident, 2 (two) people were fatally injured and 2 (two) people were seriously injured. All the fatally and seriously injured people were in the road passenger vehicle.

Members of the Emergency Medical Service of the Šabac Health Center, members of MUP RS, the Police Directorate, PU in Šabac, the Traffic Police Department in Šabac and members of the OJT in Šabac went to the serious accident site.



In this serious accident there were no damages on the railway vehicles and infrastructure.

Due to the mentioned serious accident, the traffic between the crossing point Štitar and the station Petlovača was interrupted until 16:30 (on 25.07.2020.)

Category:	Serious accident
Fatally injured and injured:	2 fatally injured, 2 seriously injured (fatally injured and injured persons were in the road passenger vehicle)
Material damage:	N/A

4.1.2. Serious accident causes determined by investigation

Direct and immediate cause of the occurrence of the respective serious accident is that the road passenger vehicle was on track just before arrival of the train No. 45403, thus creating dangerous situation related to the occurrence of this serious accident.

Direct cause of this serious accident is noncompliance with the Provisions from the Articles 100 and 132 of the Law on Road Traffic Safety (“Official Gazette of RS” No. 41/2009, 53/2010, 101/2011, 32/2013 - decision US, 55/2014, 96/2015 - other law, 9/2016 - decision US, 24/2018, 41/2018, 41/2018 - other law, 87/2018 and 23/2019) by the driver of the road passenger vehicle.

The fact that the prescribed zone of necessary visibility and necessary visibility were not provided does not in any way diminish the obligation of the driver of a road passenger vehicle, as he was obliged to respect traffic signs I-33: “Crossing of the road with railway line without barriers or half-barriers”, I-35: “Approaching the point of crossing of the road and the railway line”, I-34: “St. Andrew’s cross” and II-2: “Obligation of stopping”, to adjust the speed of the road vehicle, stand in front of the level crossing and make sure that the train is approaching. In case the driver of the road passenger vehicle acted in this way, he had the opportunity to see the approaching train.

The fact that on the level crossing in question the zone of necessary visibility and necessary visibility were not provided (bearing in mind the vegetation in the railway belt which is in the zone of necessary visibility, in the part of the zone of necessary visibility which includes the railway belt and in the part of the zone of necessary visibility which does not include the railway belt), could have contributed that the driver of the road passenger vehicle when approaching the level crossing not notice the train in a timely manner. The zone of necessary visibility and the necessary visibility were not maintained and provided by the railway infrastructure manager and the road manager, which is contrary to Article 56 of the Law on Railways (“Official Gazette of RS” No. 41/2018) and Article 38 of the Law on Roads (“Official Gazette of RS”, No. 41/2018 and 95/2018 - other law).

Article 69 of the Law on Railways (“Official Gazette of RS” No. 41/2018) defines that the railway infrastructure manager maintains part of the level crossing, while other parts of the road on both sides of the road, including the necessary visibility zone outside the width of the level crossing, are maintained by the road manager in a way that enables safe and undisturbed railway traffic. According to the Article 69 of the Law on Railways (“Official Gazette of RS” No. 41/2018) only the maintenance of the road crossing width of 3 meters from the track axis was taken into account (the width of the road crossing is defined in Article 2, paragraph 1, item 54) and the railway belt is defined in Article 2, paragraph 1, item 52) of the Law on Railways



(“Official Gazette of RS” No. 41/2018)), and not the maintenance of the part of the zone of necessary visibility next to the crossing of road and track in the zone of the railway belt width of 6 to 8 m from the track axis, which the railway infrastructure manager is obliged to maintain in accordance with Article 56 of the Law on Railways (“Official Gazette of RS” No. 41/2018). The inconsistency of Articles 56 and 69 of the Law on Railways (“Official Gazette of RS” No. 41/2018) in terms of the obligations of the railway infrastructure manager is stated. Also, Article 69 of the Law on Railways (“Official Gazette of RS” No. 41/2018) does not clearly define the obligation of railway infrastructure manager and road manager in terms of maintaining the necessary visibility zone (part of the necessary visibility zone which includes the railway belt and part of the required necessary zone which does not include the railway belt).

Article 68 of the Law on Roads (“Official Gazette of RS”, No. 41/2018 and 95/2018 - other law) defines only maintenance - arranging green areas (grass mowing, clearing shrubs and cutting of trees) in the road land. Article 68 does not define maintenance - arranging of green areas (grass mowing, clearing shrubs and cutting of trees) in the zone of necessary visibility at the points of crossing of railways and roads. Only maintenance is defined - arranging green areas (grass mowing, clearing shrubs and cutting of trees) in the road land, which is defined for the area outside the settlement in the width of 1 m next to the road, which does not include the zone of necessary visibility at the crossing of railway and road. Article 38 of the Law on Roads (“Official Gazette of RS”, No. 41/2018 and 95/2018 - other law) defines the obligation to provide the zone of necessary visibility in accordance with the regulations. The inconsistency of Articles 38 and 68 of the Law on Roads (“Official Gazette of RS”, No. 41/2018 and 95/2018 - other law), in terms of providing the zone of necessary visibility by the road manager, is stated.

The stated inaccuracy in the clear distribution of responsibilities for maintaining the necessary visibility zone could have affected the fact that the necessary visibility zone at this level crossing was not provided, which could have contributed to the driver of the road passenger vehicle not spotting the train on time while approaching the level crossing.

4.1.3. Additional observations on deficiencies and shortcomings established during the investigation, but without relevance for conclusions about the causes

According to provisions of the Article 153, Paragraph 2 of the Law on Road Traffic Safety (“Official Gazette of RS” No. 41/2009, 53/2010, 101/2011, 32/2013 - decision US, 55/2014, 96/2015 - other law, 9/2016 - decision US, 24/2018, 41/2018, 41/2018 - other law and 87/2018), at the crossing of the road with a modern road pavement (asphalt, concrete, cube, etc.) over the railway, traffic lights must be placed announcing the approach of the train. In the case in question, the road was with an asphalt road pavement, and at the crossing of the road in question, no traffic lights were placed announcing the approach of the train.

Provision stated of the Article 153, Paragraph 2 of the Law on Road Traffic Safety (“Official Gazette of RS” No. 41/2009, 53/2010, 101/2011, 32/2013 - decision US, 55/2014, 96/2015 - other law, 9/2016 - decision US, 24/2018, 41/2018, 41/2018 - other law and 87/2018), does not exist in the Law on Railway Traffic Safety (“Official Gazette of RS” No. 41/2018) and in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and measures to secure safe traffic (“Official Gazette of RS” No. 89/2016). By Article 97, Paragraph 1 of the Law on Road Traffic Safety (“Official Gazette of RS” 41/2018) it is foreseen that the conditions for crossing of the railway line, in terms of the place where the crossing can be made and measure



for ensuring safe regulation of traffic at the road crossings depend on the traffic density, visibility of the railway, the speed of driving on the railway and the road and the local conditions.

Provisions of the Article 10 and 11 of the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and measures to secure safe traffic ("Official Gazette of RS" No. 89/2016) define that measures to ensure safe traffic at road crossings depend on traffic density, visibility of the railway, speed on the track and road and local conditions in accordance with the law governing railway safety and interoperability and that traffic signs on the road and zone the necessary visibility provide the traffic at the intersection of the railway and the road at the level of the track, if the maximum allowed speed on the railway is up to 100 km/h and if the traffic is not provided at the road crossing: by light traffic signs and traffic signs on the road; automatic barriers with light traffic signs and traffic signs on the road or barriers and traffic signs on the road. This Rulebook does not prescribe the obligation to install traffic lights that indicate the approach of the train, depending on the type of pavement barrier.

In the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and measures to secure safe traffic ("Official Gazette of RS" No. 89/2016), the provisions related to point B from Article 14 (point in front of the traffic sign indicating the place where the road crosses the railway) and Article 15 (place of the road where the zone of necessary visibility begins) are not in accordance with each other and with the content of Annex 6 of the same Rulebook. In the drawing in Annex 6, point B is marked next to the traffic sign indicating the place of crossing the road over the railway (traffic sign: I-34: "St. Andrew's cross") and the traffic sign: II-2: "Obligation of stopping", while in the text below the drawing it is stated that the point B is located on the length of a stopping distance of the road passenger vehicle in front of the traffic signs denoting the point of crossing of the road over the railway line (traffic sign: I-34: "St. Andrew's cross").

In the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and measures to secure safe traffic ("Official Gazette of RS" No. 89/2016), the formula is given and the methodology for calculating the value (length) of the required visibility (LPPP) is precisely explained, but the methodology for determining (calculating) the elements of the required visibility zone given in Annex 9 is not explained (d_{pz} - length of stopping of the railway vehicle and S_{pzv} - length of approaching of the railway vehicle).

For the the traffic sign: II-2: "Obligation of stopping", in the Article 33, Paragraph 1, under 2) of the Rulebook on traffic signalization ("Official Gazette of RS" No. 85/17, that was valid at the time of occurrence of the serious accident in question), it is defined that it is placed in the immediate vicinity of the intersection, preferably at the point of visibility, where the vehicle must stop in order to give way to other vehicles moving on the road it encounters. According to Article 25, Paragraph 1 under 2) of the same Rulebook, traffic sign II-2: "Obligation of stopping", means an order to the driver that he must stop the vehicle and give priority to the passage of vehicles moving on the road he encounters.

At the level crossing in question the traffic sign II-2: "Obligation of stopping", is place in front of the crossing of the road over the railway line at the same level on the same supporter as the traffic sign I-34: "St. Andrew's cross" (at a place behind which there is no intersection in the immediate vicinity). This placement of the aforementioned traffic sign is not in accordance with the provision of Article 33, Paragraph 1, under 2) of the Rulebook on Traffic Signalization ("Official Gazette of RS", No. 85/17, that was valid at the time of occurrence of



the serious accident in question).

Fully respecting the provisions of Article 100 and Article 132, paragraph 4 of the Law on Road Traffic Safety (“Official Gazette of RS” No. 41/2009, 53/2010, 101/2011, 32/2013 - decision US, 55/2014, 96/2015 - other law, 9/2016 - decision US, 24/2018, 41/2018, 41/2018 - other law, 87/2018 and 23/2019) and Article 17, Article 18, Paragraph 1 under 28), 29) and 30) and Article 23, Paragraph 1, under 5), 6) and 7) of the Rulebook on Traffic Signalization (“Official Gazette of RS” No. 85/17), we consider that at level crossings, in addition to the installation of danger signs, installation of traffic sign II-2: “Obligation of stopping” (which is one of the signs of explicit orders by which road users are made aware of prohibitions, restrictions and obligations), would positively affect the safety of both types of traffic (railway and road).

4.1.4. Issued safety recommendations

To the Ministry of Construction, Transport and Infrastructure SR_01/21, SR_02/21, SR_03/21, SR_04/21, SR_05/21, SR_06/21, SR_07/21 and SR_08/21 are issued:

- SR_01/21** Ministry of Construction, Transport and Infrastructure to harmonize the provisions of Article 69 with the provisions of Article 56 in the Law on Railways (“Official Gazette of RS” No. 41/2018) in terms of the obligation of railway infrastructure manager to maintain the necessary visibility zone at the crossings of the railway line and the road in terms of defining the distance from the track axis (track belt) at which the infrastructure manager has the obligation to remove vegetation.
- SR_02/21** Ministry of Construction, Transport and Infrastructure to clearly define in the Law on Railways (“Official Gazette of RS” No. 41/2018) in Article 69 the obligations of railway infrastructure manager and road manager in terms of maintaining the necessary visibility zone (part of the necessary visibility zone which includes the railway belt and part of the necessary visibility zone which does not include the railway belt).
- SR_03/21** Ministry of Construction, Transport and Infrastructure, in the Law on Roads (“Official Gazette of RS”, No. 41/2018 and 95/2018 - other law) in Article 68 to define (supplement) maintenance - landscaping of green areas (grass mowing, clearing shrubs and cutting of trees) in the zone of necessary visibility at the points of crossing of the railway line and the road, in accordance with Article 38, which defines the obligation to provide the zone of necessary visibility in accordance with the regulations.
- SR_04/21** Ministry of Construction, Transport and Infrastructure, to define in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette RS”, No. 89/2016) the methodology (method) for determining (calculating) the elements of the zone of necessary visibility given in the Annex 9 (d_{pz} - length of stopping the road vehicle and $Spzv$ - length of approaching the railway vehicle).



SR_05/21 Ministry of Construction, Transport and Infrastructure, to define in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette RS”, No. 89/2016) the procedure in the case when there is the necessary visibility according to the definition from Article 2, Paragraph 1 under 12) of this Rulebook and it is not possible to provide the zone of necessary visibility. In particular, it should be borne in mind that the installation of traffic sign II-2: “Obligation of stopping” while providing the necessary visibility, allows safe passage of road vehicles over the crossing.

SR_06/21 Ministry of Construction, Transport and Infrastructure, to make corrections in the expression in Article 14 of the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette of RS” No. 89/2016):

$$t_v = \frac{m + n + d + s}{V_p} \cdot 3,6 \quad [s]$$

so that in front of s there is a sign “-” and not the sign “+”.

SR_07/21 Ministry of Construction, Transport and Infrastructure to harmonize, in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette of RS” No. 89/2016), the description of the position of point B given in Article 14, Article 15 and Annex 6.

SR_08/21 Ministry of Construction, Transport and Infrastructure to consider the possibility that in the Law on Road Traffic Safety (“Official Gazette of RS” No. 41/2009, 53/2010, 101/2011, 32/2013 - decision US, 55/2014, 96/2015 - other law, 9/2016 - decision US, 24/2018, 41/2018, 41/2018 - other law and 87/2018) Article 153, Paragraph 2 reformulates and harmonizes with the Article 97, Paragraph 1 of the Law on Railway Traffic Safety (“Official Gazette of RS” No. 41/2018) in terms of more precise provisions for the installation of traffic lights.

To the Directorate for Railways SR_09/21, SR_10/21 and SR_11/21 are issued:

SR_09/21 “IŽS”a.d. to consider a change in the level of insurance (introduction of active signallization) for the level crossing in question, or solve the problem in some other way. Due to the existence of facilities near the level crossing and the curve on the railway, the necessary visibility zone is not provided, and due to the abundant vegetation in the infrastructure belt and thus in the railway belt, the necessary visibility is not provided (see sections 2.2.3 and 3.4.2.). It is also a fact that the level crossing in question is a crossing of a regional line and a state road of IIA rank.



SR_10/21 “IŽS”a.d. to make a professionally based risk assessment at road crossings. Bearing in mind that accidents at road crossings (observing each crossing separately) are rare events, risk assessment cannot be performed only on the basis of the number of accidents that occurred at individual road crossings. Risk assessment, as a precautionary measure, should be performed collectively for all road crossings according to all relevant parameters, regardless of whether accidents have occurred at them or not.

SR_11/21 “IŽS”a.d. to make an act “Program for solving road crossings” according to the previously done risk assessment at road crossings, in order to take appropriate activities with the aim to raise the level of traffic safety.

4.2. Derailment of the train No. 45022

4.2.1. Short description of the serious accident

On 28.11.2020. at 19:27 on the main arterial line 102: Belgrade Center - Junction “G” - Rakovica - Mladenovac -Lapovo - Niš - Preševo - state border - (Tabanovce), during the drive in direction from the station Jagodina to the station Bagrdan, on the open line at km 123+670 it came to derailment of the train No. 45022 (railway undertaking “Srbija Kargo”a.d.) with a total of eight wagons of series Z. From the train composition, viewed from the train locomotive, 193-916, there derailed: fifth wagon-tank of series Zacs-z No. 33 72 7867 810-3 with two axles of the second bogie (they remained on their wheels in the track zone), seventh wagon-tank of series Zacs-z No. 33 72 7865 013-8 with all axles (they overturned on its side, seen in the direction of the train movement), eighth wagon-tank of series Zacs-z No. 33 72 7867 853-3 with all axles (overturned on its side to the left, seen in the direction of the train movement), ninth wagon-tank of series Zacs-z No. 33 72 7867 846-7 with all axles (overturned on its side to the right, seen in the direction of the train movement), tenth wagon-tank of series Zacs-z No. 33 72 7865 005-4 with all axles (remained upright, on its wheels, in the track zone, rotated), eleventh wagon-tank of Zacs-z series No. 33 72 7865 009-6 with all axles (tilted to the left and rotated to the right relative to the longitudinal axis of the track, viewed in the direction of train movement), twelfth wagon-tank of series Zacs-z No. 33 72 7865 010-4 with all axles (tilted to the left and rotated to the left relative to the longitudinal axis of the track, viewed in the direction of train movement) and thirteenth wagon-tank of the series Zacs-z No. 33 87 7868 736-2 with two axles of the second bogie (they remained on their wheels in the track zone).

After derailment, train crossed approximately another 110 m, after which it stopped (the exact distance could not be determined due to damages to the railway line and railway vehicles).

There exists a damage on the railway infrastructure and the vehicles. In this serious accident there were no fatally injured or injured.

The view of the accident site (the point of derailment) is shown in Figure No. 4.2.1.1.



Figure 4.2.1.1: View of the accident site (the point of derailment)

Due to leakage of sulfuric acid (a substance that can endanger human health and is dangerous for the environment during uncontrolled release), members of the police and the fire and rescue brigade came to the accident site upon invitation.

Since there were no fatally injured nor injured people in this accident, there was no need to hire an emergency medical service.

Remediation of the consequences of this accident was performed by engaging professional services and resources of “IŽS” a.d. and “Srbija Kargo” a.d. with the assistance of members of the fire and rescue service.

Due to this accident, members of MUP RS, the Police Directorate, PU Jagodina, Traffic Police Department Jagodina, the Traffic Police Office on the state road IA rank, members of MUP RS, the Police Directorate, Sector for Emergency Situations, Emergency Situations Department in Jagodina and members of MUP RS, the Police Directorate, PU in Jagodina, Criminal Police Department, Economic Crime Sector came to the accident site.

Due to this accident, the interruption of railway traffic between the stations Bagrdan and Jagodina lasted until 01.12.2020. at 22:00, when the line was opened for traffic of trains (the right track of the double-track railway was open for traffic and the traffic between the stations Bagrdan and Jagodina was organized in one track, on the right track).

Works on rehabilitation and preparation of the left track for traffic were completed on 31.01.2021. at 16:00, when the left track of the double-track railway line between Bagrdan and Jagodina stations was opened for train traffic with the introduction of restricted speed running at 20 km/h from km 123+450 to km 123+800.



Category: Accident

Fatally injured and injured: N/A

Material damage: Exists on infrastructure, railway vehicles and goods

In this accident due to leakage from the damaged wagon tanks, it came to loss of the part of goods (sulfuric acid). The lack of goods was determined according to the following:

from wagon No. 33 72 7867 810-3	missing	2.16 t	in the amount of	16.20 EUR
from wagon No. 31 72 7865 013-8	missing	2.04 t	in the amount of	15.30 EUR
from wagon No. 33 72 7867 853-3	missing	5.28 t	in the amount of	39.60 EUR
from wagon No. 33 72 7867 846-7	missing	28.00 t	in the amount of	210.00 EUR
from wagon No. 31 72 7865 005-4	missing	2.09 t	in the amount of	15.67 EUR
from wagon No. 31 72 7865 009-6	missing	1.75 t	in the amount of	13.13 EUR
from wagon No. 31 72 7865 010-4	missing	51.65 t	in the amount of	387.38 EUR
from wagon No. 33 87 7868 736-2	missing	4.00 t	in the amount of	30.00 EUR

missing in total 96.97 t in the amount of 727.28 EUR

According to the official middle exchange rate of the National Bank of Serbia on 28.11.2020., which amounted to 1 EUR (Euro) = 117.5834 RSD (Dinar), the total material damage to the goods (sulfuric acid) caused by the accident in the amounts to 85 516.06 dinars (RSD).

Damage to the railway vehicles (wagons in train composition):	18 162 952.29	RSD
Total costs of lifting of derailed wagons:	16 968 002.00	RSD
On the railway line (superstructure and substructure):	6 498 932.00	RSD
On KM facilities:	1 968 872.00	RSD
Total direct material damage:	43 598 758.29	RSD

The damage is stated in the official currency of the RS (Dinar - RSD).

According to the official middle exchange rate of the National Bank of Serbia on 28.11.2020., which amounted to 1 EUR (Euro) = 117.5834 RSD (Dinar), the total material damage to the infrastructure and the railway vehicles in the accident in question amounts to 370 790.08 EUR.

4.2.2. Accident causes determined by investigation

Based on the facts and evidence determined during on-site investigation by the Working Group of CINS and data submitted, the probable direct and immediate cause of the accident is decoupling of the track which was not maintained in accordance with Articles 74 and 76 of the Rulebook on technical conditions and maintenance of the superstructure of railways ("Official



Gazette of RS” No. 39/16 and 74/16). Taking into account the available facts on the condition of the track, records from track inspection runs, on the action of horizontal longitudinal forces in the direction of the track axis which influence the tendency of rails movement, as well as the fact that the temperature of the rail at the time of the accident most likely caused tensile stresses in the rails ($t_{\text{air}} = -0.4^{\circ}\text{C} \approx t_{\text{rail}} < t_p$) and that due to the braking of the train there were additional tensile stresses in the rails, it is likely that, during the passage of the train, the track ruptured due to the fracture of the connecting screws in the insulated joint on the left rail at km 123+660.80 in the direction of increasing stationing, that is, the right rail in the direction of train No. 45022 movement and the rupture of the right rail at km 123+660.20 in the direction of increasing stationing, that is, left rail in the direction of train No. 45022 movement.

Maintenance of the railway line on the observed section was not performed in accordance with the Rulebook on technical conditions and maintenance of the superstructure of railways (“Official Gazette of RS” No. 39/16 and 74/16) having in mind the years of the last railway repairs, as well as insufficient number of executors, machinery and tools.

4.2.3. Additional remarks on the shortcomings and flaws identified during the investigation, but not relevant to the conclusions on the causes

One or two screws out of four were missing on the lids of the filling and emptying openings of the overturned wagons Nos. 31 72 7865 013-8, 33 72 7867 853-3 and 31 72 7865 010-4, which contributed to a greater leakage of sulfuric acid after the accident.

The front bogie of the ninth wagon No. 33 72 7867 846-7, separated from the wagon box during derailment due to the cracking of the fastening screws and the fastening board of the center bowl upper part. The fracture was made as a consequence of derailment and overturning, but on that occasion, it was shown that there was already a fracture of the center bowl upper part and one screw on that vehicle, which was not determined during regular maintenance.

During the on-site inspection of the wagon, it was noticed that on some buffers the trace on the lubricant indicates insufficient movement, which could contribute to the increase of the consequences of the accident. In the case of separate bogies, it has been noticed that the wear parts of the side bearers go beyond the exploitation tolerances. Also, the plastic inserts of the center bowls of some vehicles were excessively worn, which in operation causes an increase in the torque moment of the rotating bogie in relation to the wagon body when passing through curves and reducing the safety against derailment.

A broken wire was found on the first wagon in train No. 33 87 7864 174-0, with which the G-P brake mode switch was previously fixed in the P position, which is in itself a technical malfunction, which requires immediate labelling and elimination of the wagon from traffic.

The Rulebook on Amendments to the Rulebook on technical conditions and maintenance of the railway lines superstructure (“Official Gazette of RS” No. 74/16), amended Article 8 of the Rulebook on technical conditions and maintenance of the railway lines superstructure (“Official Gazette of RS” No. 36/16), so that in Article 8 of the Rulebook on technical conditions and maintenance of the railway lines superstructure (“Official Gazette of RS” No. 36/16 and 74/16) there is no longer a provision with the following content: “Alternating (mixed) installation of wooden and concrete sleepers is not allowed”, from which it can be unequivocally concluded that alternate (mixed) installation of wooden and concrete sleepers is allowed. Taking into account the provisions of other Paragraphs from Article 8 of the Rulebook on technical conditions and maintenance of the railway lines superstructure (“Official Gazette of RS” No. 36/16 and 74/16) and differences in technical characteristics between wooden and



concrete sleepers, we are of the opinion that wooden and concrete sleepers should not be installed alternately (mixed) in the track. Also, after the adopted amendments, in Article 8 of the said Rulebook, there are two paragraphs of similar content (paragraph 12 and paragraph 13).

4.2.4. Issued safety recommendations

To the Directorate for Railways SR_12/21, SR_13/21, SR_14/21, SR_15/21, SR_16/21, SR_17/21, SR_18/21, SR_19/21, SR_20/21 and SR_21/21:

SR_12/21 Directorate for Railways, to consider the justification of the abolition of Paragraph 9 of Article 8 of the Rulebook on technical conditions and maintenance of railway lines superstructure (“Official Gazette of RS”, No. 36/16), which reads: “Alternate (mixed) installation of wooden and concrete sleepers is not allowed” and justification to return via amendments the Article 8 of the Rulebook on technical conditions and maintenance of railway lines superstructure (“Official Gazette of RS”, No. 36/16 and 74/16).

SR_13/21 “IŽS” a.d., to conduct the risk assessment of train traffic on the main arterial line 102: Belgrade Center - Junction “G” - Rakovica - Mladenovac - Lapovo - Niš - Preševo - state border - (Tabanovce), left track, from Markovac station (exclusively) km 101+057 to Jagodina station (inclusive) km 136+000, given the inadequate maintenance and condition of tracks, sleepers and fasteners and the insufficient number of executors for maintenance from the construction industry; and take measures to reduce the risk to an acceptable level.

SR_14/21 “IŽS” a.d., in the Rulebook on organization and work positions systematization of “IŽS” a.d., Belgrade, to consider the adequacy of the existing ones and consider the possibility to predict the appropriate number of executors in the construction industry both on the section of the railway on which the accident occurred and on the entire network in order to ensure the safe conduct of railway traffic. In accordance with the appropriate number of executors to plan the procurement of the necessary machinery and tools, all in order to ensure the safe conduct of railway traffic.

SR_15/21 Elixir Zorka Mineralna đubriva d.o.o. Šabac, to establish maintenance procedures with a list of instructions that must be an integral part of the maintenance file with a detailed list of scope of work in regular repairs of wagon-tanks for transportation of sulfuric acid.

SR_16/21 Elixir Zorka Mineralna đubriva d.o.o. Šabac, to establish maintenance procedures, in accordance with the requirements of the Rulebook on maintenance of railway vehicles (“Official Gazette of RS” No. 144/2020), where the maintenance of bogies must be performed according to the manufacturer's instructions, and the procedures must be harmonized with that instruction, considering that wagons with



worn inserts of the center bowl and side bearers represent a significant risk of derailment in curves and in which the documentation of the characteristics of the buffer after repair and comparison with the characteristic given by the manufacturer will be defined, i.e. for newer and reconstructed wagons in accordance with the required characteristic according to EN 15551 for the corresponding type of buffer.

- SR_17/21** Elixir Group d.o.o. Šabac, as the holder for whose needs the transport is performed, it is necessary to provide procedures for proper closing of tank lids in accordance with the manufacturer's instructions, which include: checking the cleanliness and flatness of adjacent surfaces, use of undamaged prescribed seals, closing the opening with the projected number of screws with a torque wrench with the torque prescribed by the manufacturer. If this information is not known from the manufacturer, the tightening torque must be prescribed according to the general technical standards for pressure vessels.
- SR_18/21** Elixir Group d.o.o. Šabac, as the holder for whose needs the transport is performed, should require that staff be trained at all loading and unloading points to properly close the lids and carry it out according to the adopted procedure.
- SR_19/21** Elixir Group d.o.o. Šabac, as the holder of the wagons which did not have individual licenses, to prescribe in its acts the verification of the existence of an individual license for use, before using the wagon and to conduct additional training of its staff on this issue.
- SR_20/21** "Srbija Kargo" a.d., to train the staff to carry out the measure at the reception points, that if it is possible to establish the lack of screws on the tank lids by visual inspection, to refuse the transport of improperly closed tanks.
- SR_21/21** "Srbija Kargo" a.d., to train the staff that wagons due to defects, (in one tank it was determined that the GP gearbox was defective when the handle could turn without resistance and without arrest in the end positions and said gearbox has been fixed with wire in position P) must be labelled and sent for repair.

To the Ministry of Construction, Transport and Infrastructure SR_22/21, SR_23/21 and SR_24/21 are issued:

- SR_22/21** Ministry of Construction, Transport and Infrastructure, Sector for Inspection Supervision, Department for Railway Traffic Inspection Affairs, to perform an extraordinary inspection of the condition of the railway infrastructure on the main arterial line 102: Belgrade Center - Junction "G" - Rakovica - Mladenovac - Lapovo - Niš - Preševo - state border - (Tabanovce), left track, from the station Markovac (exclusively) km 101+057 to the station Jagodina (inclusive) km 136+000 and take measures within its competence.



SR_23/21 Ministry of Construction, Transport and Infrastructure, Sector for Inspection Supervision, Department for Railway Traffic Inspection Affairs, to perform an extraordinary inspection of Elixir Group d.o.o. Šabac which used railway vehicles that do not have a type license and without an individual license for use and take measures within its competence.

SR_24/21 The Ministry of Construction, Transport and Infrastructure, Sector for Railways and Intermodal Transport, to consider possible amendments in the existing legislation in order to facilitate the procedure of issuing type licenses and licenses for use only for existing vehicles in long-term operation in RS for which, due to current legal regulations, licenses cannot be issued by the Railway Directorate.

To *Autorité française de sécurité ferroviaire* SR_25/21 is issued:

SR_25/21 Atir-Rail SA, to prescribe in maintenance procedures the control of the condition and wear of wearing inserts of center bowls and side bearers as well as other elements that can reach the limit measures between the two repairs and define the documentation of buffer characteristics after repair and comparison with the characteristic given by the manufacturer.

4.3. On the level crossing, overtaking of the train No. 6431 on the road passenger vehicle

4.3.1. Short description of the serious accident

On 02.12.2020. at 08:15 on the main arterial line 110: Subotica - Bogojevo - state border - (Erdut), on the level crossing at km 102+890, secured with automatic half barriers with light traffic signs and traffic signs on the road, there occurred an overtaking of the train No. 6431 (railway undertaking "Srbija Voz" a.d.) on the road passenger vehicle of brand Volkswagen Golf, license plate KI 045-DK.

The level crossing is located in the area of the city of Subotica, in the settlement of Bajmok, on the main arterial line 110: Subotica - Bogojevo - state border - (Erdut). It is secured with an automatic level crossing device. At the time of this serious accident, the automatic level crossing device was not in operation (the half-barriers were lifted and the traffic lights that regulate the crossing over the railway line at the same level were turned off).

The road passenger vehicle of brand Volkswagen Golf, license plate KI 045-DK, was moving along the state road 1B rank, marking 12: Subotica - Sombor - Odžaci - Bačka Palanka - Novi Sad - Zrenjanin - Žitište - Nova Crnja - state border with Romania (border crossing Srpska Crnja) from the direction of Sombor to Bajmok. Upon encountering the level crossing at km 102+890, whose automatic device was defective, having in mind that the half-barriers were raised, the road passenger vehicle did not stop in front of the level crossing, but continued driving and entered the track profile in the area of the level crossing, just before the arrival of train No. 6431.

Train No. 6431 was moving from the direction of Bajmok station in the direction of Aleksa Šantić station. Train No. 6431 consisted of DMV 711-033/034. In DMV 711-033/034, in addition to the train driver, there were also two conductors, all employees of the railway undertaking “Srbija Voz” a.d. Upon encountering the level crossing at km 102+890, there occurred overtaking of the train No. 6431 with a road passenger vehicle, which entered the track profile immediately before the train arrived. The collision occurred when the right part of the forehead DMV 711-034 (front right buffer) hit the central left part of the side of the road passenger vehicle (seen in the direction of train No. 6431 movement, ie road passenger vehicle).

After overtaking, train No. 6431 continued its movement in the length of 165 m, after which it stopped. Due to the force of the impact, the road passenger vehicle crawled under the DMV 711-034 head (driver’s cab), i.e. it remained stuck in the part between the DMV buffer and the track. On that occasion, the entire front part of the road passenger vehicle was significantly damaged.



Figure 4.3.1.1: Appearance of DMV 711-033/034 and the road passenger vehicle after the serious accident (view from the free space between the railway line and the road, source: “IŽS” a.d.)



Figure 4.3.1.2: Appearance of the road passenger vehicle after the serious accident (view from the railway line, in the direction opposite from the direction of train movement, source: “IŽS”a.d.)

In this serious accident, one person was fatally injured (a person who was in the driver's seat in a road passenger vehicle). In this serious accident, there were no damages to the infrastructure, while there existed a material damage on the railway vehicle.

Due to this serious accident, members of the MUP RS, PU in Subotica, the Traffic Police Department in Subotica, the Traffic Police Office in Subotica, members of the MUP RS, the Emergency Situations Sector, the Emergency Situations Department in Subotica, the Subotica Fire and Rescue Battalion and members of the Voluntary fire brigade Bajmok, representatives of OJT Subotica and members of the Emergency Medical Service of the Health Center Subotica were engaged.

Due to this serious accident, the interruption of traffic between the stations Bajmok and Sombor, lasted until 02.12.2020. at 13:07, when the regular traffic of trains was established.

Category: Serious accident

Fatally injured and injured: 1 fatally injured (fatally injured person was in the road passenger vehicle)

Material damage: Exists on the railway vehicles

On DMV 711-033/034:	1 148 100.0	RSD
Total direct material damage:	1 148 100.0	RSD

The damage is stated in the official currency of the RS (Dinar - RSD).

According to the official middle exchange rate of the National Bank of Serbia on 02.12.2020., which amounted to 1 EUR (Euro) = 117.5725 RSD (Dinar), the total material damage caused by the serious accident in question is 9 765.04 EUR (Euro).



4.3.2. Serious accident causes determined by investigation

Direct cause of the occurrence of the serious accident in question is that upon encountering the level crossing at km 102+890, which automatic device was faulty, the train No. 6431 did not stop in front of the level crossing, in accordance with the aspect of a signal 55: "Level crossing device faulty" which showed the control signal KS 2, which is contrary to the provisions of Article 63, item 5 of the Rulebook 2, Traffic Rulebook ("Official Gazette of ZJŽ" No. 3/94, 4/94, 5/94, 4/96 and 6/03), while the road passenger vehicle was on the track just before the train arrived, thus creating a dangerous situation related to the occurrence of this serious accident. Having in mind that the half-barriers were raised and that the traffic light did not announce the arrival of the train, the road passenger vehicle did not stop in front of the level crossing, but continued driving and entered the track profile in the area of the level crossing just before train No. 6431 arrived.

In accordance with the provisions of Article 63, item 5 of the Rulebook 2, Traffic Rulebook ("Official Gazette of ZJŽ" No. 3/94, 4/94, 5/94, 4/96 and 6/03), the train driver of the train No. 6431 was obliged to stop the train in front of the level crossing in question, which was faulty, to let all the road vehicles pass and only after he ensures that there are no other vehicles in the vicinity and that crossing over the level crossing is safe, to undertake the activities for safe crossing. When the traction vehicle crosses the crossing, it may continue driving at regular speed.

Pursuant to Article 160 of the Rulebook on the types of signals, signalling marks and markings on the railway line ("Official Gazette RS", No. 51/20), when approaching a level crossing, the train driver is obliged to give an aspect of a signal 67: "Watch out", and pursuant to Article 143 of the same Rulebook, the train driver is obliged to give aspect of a signal 67: "Watch out", when approaching the faulty level crossing. Giving this aspect of a signal on the section of the line from the control signal to the level crossing, informs the participants in road traffic that the train is approaching the level crossing. Failure to act in this way could have contributed to the occurrence of a serious accident.

4.3.3. Additional remarks on the shortcomings and flaws identified during the investigation, but not relevant to the conclusions on the causes

Based on the data submitted by "IŽS" a.d., the mechanic on duty in the section OJ for SS Subotica was working alone in the night shift on 01/02.12.2020., although it was planned that two mechanics work in a shift. As stated, this is a frequent case due to the lack of staff in the OJ section for SS Subotica. The mechanic on duty was informed about the failure at the level crossing, but did not manage to troubleshoot the failure, as well as rectify the reported failure due to interventions at other faults and breakdowns.

By comparing the descriptions of event codes shown within the diagnostic application and the descriptions of codes given in Annex 2 of the manufacturer's documentation "Technical description of the device -safety road crossing device PZZ-EA", it can be concluded that these descriptions are not identical. In addition to the mentioned discrepancies, it can be noticed that the text was not clearly translated into Serbian with the use of correct and professional terminology. There are many such examples of unclear meaning of individual codes, as well as inconsistent meaning of individual codes in the diagnostic application and in the technical description document.



In the period from 02.12.2019. to 02.12.2020., on the device of the automatic road crossing at km 102+890, at the workplace of the technical SS dispatcher in the TK Center in Makiš (Belgrade Marshalling Yard), 52 failures were recorded. For 23 recorded failures, the clear cause of the transition of the road crossing device to the state of failure was not stated, but the remark “Reset device” was entered when the fault was resolved. Such deregistration of faults on electronic traffic safety devices at road crossings that have diagnostics from which it is easy to determine the cause of the fault is unacceptable and contrary to the prescribed form of the Fault Log (V-11)

According to the electronic records of disturbances and failures on SS devices in the TK Center in Makiš (Belgrade Marshalling Yard),, as well as the records of handover of the service of on-duty SS mechanics in the section OJ for SS Subotica, it is recorded that the disturbance, which occurred on 01.12.2020. at 17:50, was removed on 02.12.2020. at 00:50 with the explanation “Reset” while the analysis of the diagnostic record of the device PZZ-EA determined that the workers of the maintenance service OJ for SS Subotica did not reset the device after a malfunction on the device of the automatic road crossing in the period from 01.12.2020. at 17:55 until the occurrence of the serious accident in question.

Article 2, item 11 of the Rulebook on the manner of crossing the railway and road, pedestrian or bicycle path, the place where the crossing can be made and measures to ensure safe traffic (“Official Gazette of RS” No. 89/2016), definition of a dangerous area is stated, while Annex 2 defines the area that represents the boundary of the dangerous area.

Annex 2 of the Rulebook on technical conditions for signalling and safety devices (“Official Gazette of RS”, No. 18/2016 and 89/2016) defines the space that represents the limit of the free profile in a different way, compared to the definitions in Annex 1 and Annex 2 of the Rulebook on the manner of crossing the railway and road, pedestrian or bicycle path, the place where the crossing can be made and measures to ensure safe traffic (“Official Gazette of RS” No. 89/2016). Also, the term and borders of the free profile are defined by the Rulebook on technical conditions and maintenance of the railway line superstructure (“Official Gazette of RS” No. 39/2016 and 74/2016) in a similar way as defined in Annex 2 of the Rulebook on technical conditions for signalling and safety devices (“Official Gazette of RS”, No. 18/2016 and 89/2016). Bearing in mind that both formulations are used in the context of safe leaving the crossing zone, as well as the fact that in Article 14 of the Rulebook on the manner of crossing the railway and road, pedestrian or bicycle path, the place where the crossing can be made and measures to ensure safe traffic, within the explanation of the time t_{pdv} , also the formulation leaving the boundary of the free profile is mentioned, there is a discrepancy in determining the distance of this boundary from the axis of the track.

4.3.4. Issued safety recommendations

To the Directorate for Railways recommendations SR_26/21, SR_27/21, SR_28/21, SR_29/21, SR_30/21 and SR_31/21 are issued:

SR_26/21 “IŽS” a.d., to revise the technical documentation and diagnostic software for the road crossing device PZZ-EA, and to consider the need for their supplementation and correction in terms of correct and clear translation into Serbian with the use of precise and professional terms. This primarily refers to the documentation for the operation and maintenance of the device, so that the content of the mentioned documentation is clear to the employees of the maintenance service.



- SR_27/21** “IŽS” a.d., to continuously during the regular training of workers employed in the regular maintenance of SS devices, analyse the operation of available software tools for diagnosing the operation of electronic devices of level crossings. During corrective maintenance of the electronic level crossing device, on those devices where it is applicable, by using electronic diagnostic devices to accurately determine the cause of the fault and enter it into the appropriate records kept in “IŽS” a.d.
- SR_28/21** “IŽS” a.d., in the Rulebook on organization and work positions systematization of “IŽS” a.d., Belgrade, to consider the adequacy of the existing ones and consider the possibility to predict the appropriate number of executors in the electro technical affairs (worker on SS devices and facilities maintenance) both on the section of the railway on which the serious accident occurred and on the entire network in order to reduce the time of starting the process of elimination of the fault to a measure that is in accordance with the Rulebook on maintenance of signaling and safety devices (“Official Gazette RS”, No. 41/18), thus minimizing the time in which SS devices are in the state of fault, all in order to ensure the safe conduct of railway traffic.
- SR_29/21** “IŽS” a.d., to carry out activities on obtaining a use permit issued by the Ministry of Construction, Transport and Infrastructure for level crossing at km 102+890, in accordance with the Article 158 of the Law on Planning and Construction (“Official Gazette of RS”, No. 72/2009, 81/2009 - amended, 64/2010 - US decision, 24/2011, 121/2012, 42/2013 - US decision, 50/2013 - US decision, 98/2013 - US decision, 132/2014, 145/2014, 83/2018, 31/2019, 37/2019 - other law, 9/2020 and 52/2021).
- SR_30/21** “Srbija Voz” a.d., to perform extraordinary training of traction vehicle staff regarding the procedure in front of the road crossing equipped with control signals, pursuant to Article 143, paragraph 2 of the Rulebook on the types of signals, signalling marks and markings on the railway line (“Official Gazette RS” No. 51/20), and Article 61, item 12 and Article 63, item 5 of the Rulebook 2, Traffic Rulebook (“Official Gazette of the ZJŽ” No. 3/94, 4/94, 5/94, 4/96 and 6/03).
- SR_31/21** “Srbija Voz” a.d., to perform extraordinary training of traction vehicle staff in terms of proper application of the aspect of signal 67: “Watch out”, in accordance with the Article 160 of the Rulebook on the types of signals, signalling marks and markings on the railway line (“Official Gazette RS”, No. 51/20), in order to properly apply railway regulations with the aim of preventing the circumstances that could contribute to the occurrence of new similar accidents and increase safety in railway traffic.



To the Ministry of Construction, Transport and Infrastructure the recommendation SR_32/21 is issued:

SR_32/21 The Ministry of Construction, Transport and Infrastructure to harmonize the Article 2, item 11 and Annex 2 of the Rulebook on the manner of crossing the railway and road, pedestrian or bicycle path, the place where the crossing can be made and measures to ensure safe traffic (“Official Gazette of RS” No. 89/2016) with Annex 2 of the Rulebook on technical conditions for signalling-safety devices (“Official Gazette of RS”, No. 18/2016 and 89/2016) regarding the definition of the border of the dangerous zone of the road crossing, that is, the border of the free profile.

5. SAFETY RECOMMENDATIONS AND MEASURES TAKEN

With the aim to possibly improve railway safety and prevent the occurrence of new accidents, CINS, the Sector for Investigation of Accidents in Railway Traffic, issued 32 (thirty-two) safety recommendations in 2021. In 2020, 10 (ten) safety recommendations were issued, in 2019, 32 (thirty-two) safety recommendations were issued, in 2018, 33 (thirty-three) safety recommendations and in 2017, 7 (seven) safety recommendations were issued. Out of a total of 114 (one hundred and fourteen) safety recommendations issued by CINS in 2017, 2018, 2019, 2020 and 2021, 84 (eighty-four) safety recommendations (73.68%) were issued to the Directorate for Railways, and to the other bodies and organizations 30 (thirty) safety recommendations (26.32%) were issued.

The table 5.1. shows issued safety recommendations per years.

Table 5.1: Issued safety recommendation

Year	Directorate for Railways		Other bodies and organizations		Total	
	[No.]	[%]	[No.]	[%]	[No.]	[%]
2017	6	85.71	1	14.29	7	100.00
2018	28	84.85	5	15.15	33	100.00
2019	24	75.00	8	25.00	32	100.00
2020	7	70.00	3	30.00	10	100.00
2021	19	59.38	13	40.62	32	100.00
Total	84	73.68	30	26.32	114	100.00

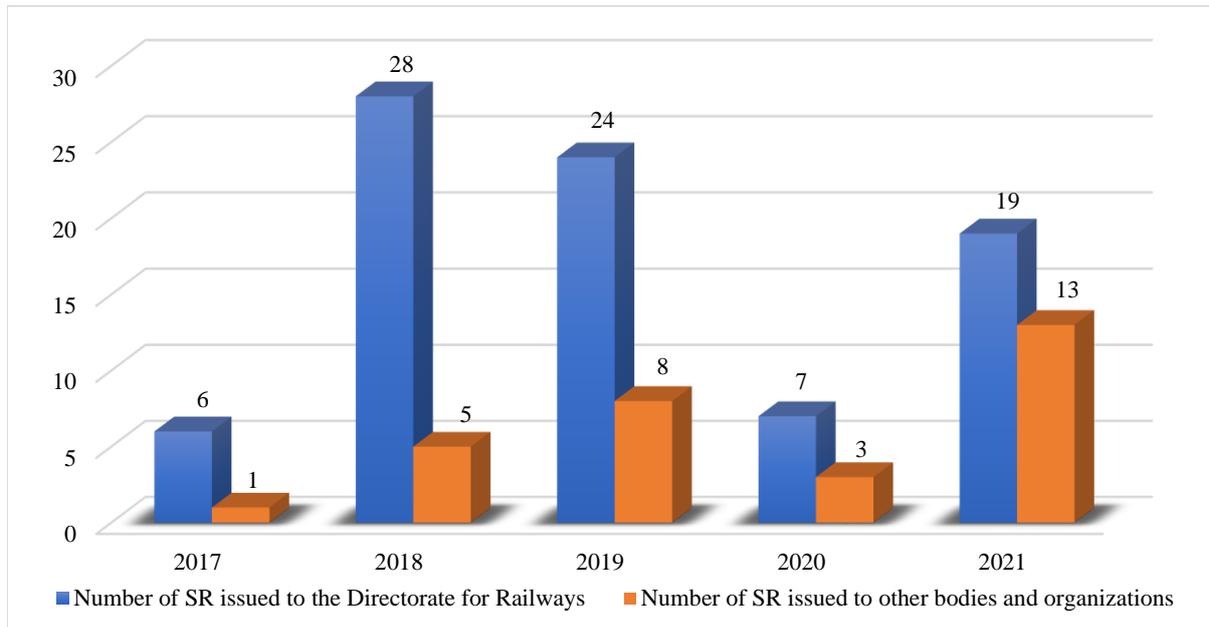


Figure 5.1: Graphic display of the number of issued safety recommendations

Table 5.2. shows the status of safety recommendations per years.

Table 5.2: Safety recommendations – status

Year	Accepted		Executed		Not accepted, no response has been submitted or it is not possible to determine the status from the submitted response		Total	
	[No.]	[%]	[No.]	[%]	[No.]	[%]	[No.]	[%]
2017	3	42.86	2	28.57	2	28.57	7	100.00
2018	15	45.45	11	33.33	7	21.22	33	100.00
2019	11	34.38	10	31.24	11	34.38	32	100.00
2020	4	40.00	5	50.00	1	10.00	10	100.00
2021	11	34.38	7	21.87	14	43.75	32	100.00
Total	44	38.60	35	30.70	35	30.70	114	100.00

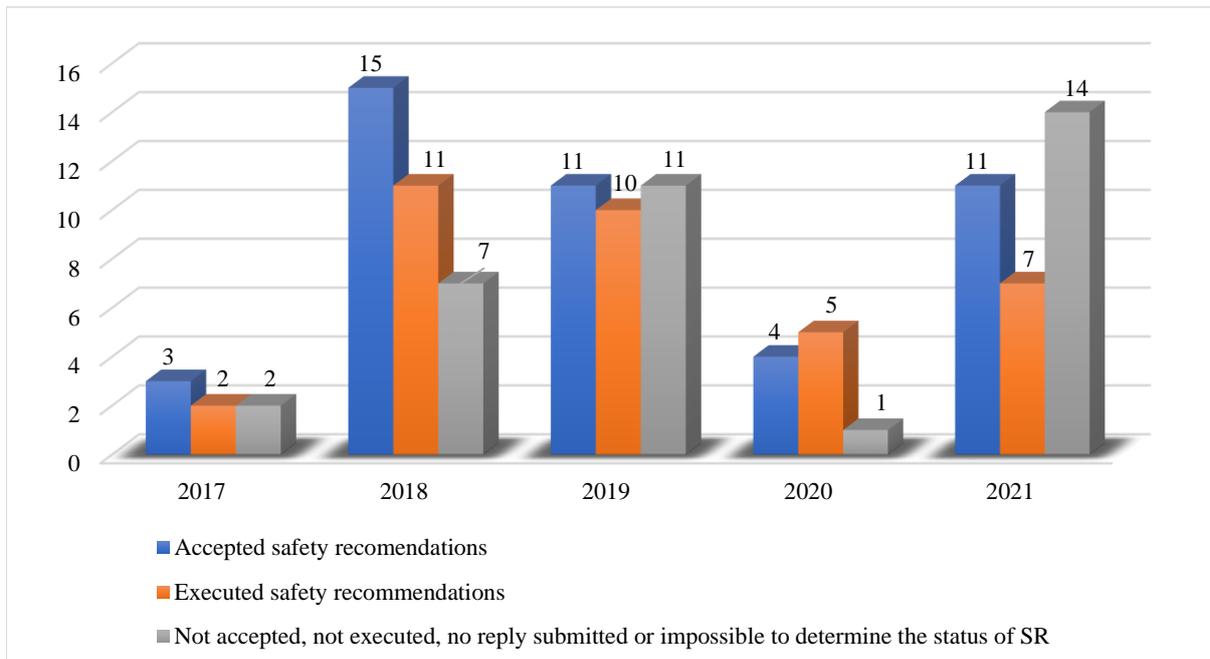


Figure 5.2: Graphic display of the status of issued safety recommendations

Table 5.3. shows the status of issued safety recommendations issued to the Directorate for Railways.

Table 5.3: Safety recommendations issued to Directorate for Railways - status

Year	Accepted		Executed		Not accepted, no response has been submitted or it is not possible to determine the status from the submitted response		Total	
	[No.]	[%]	[No.]	[%]	[No.]	[%]	[No.]	[%]
2017	3	50.00	2	33.33	1	16.67	6	100.00
2018	15	53.57	10	35.71	3	10.72	28	100.00
2019	6	25.00	9	37.50	9	37.50	24	100.00
2020	3	42.86	4	57.14	-	0.00	7	100.00
2021	10	52.63	4	21.05	5	26.32	19	100.00
Total	37	44.05	29	34.52	18	21.43	84	100.00

The tables 5.4. and 5.5. show the status of safety recommendations issued to other bodies and organisations by years, and the Table 5.4. shows the status of safety recommendations issued to MGSI, while the Table 5.5. shows the status of issued safety recommendations to all other bodies and organisations.



Table 5.4: Safety recommendations issued to MGSI -status

Year	Accepted		Executed		Not accepted, no response has been submitted or it is not possible to determine the status from the submitted response		Total	
	[No.]	[%]	[No.]	[%]	[No.]	[%]	[No.]	[%]
2017.	-	-	-	-	1	100.00	1	100.00
2018.	-	-	-	-	4	100.00	4	100.00
2019.	5	83.33	1	16.67	-	-	6	100.00
2020.	1	33.33	1	33.33	1	33.33	3	100.00
2021.	1	8.33	3	25.00	8	66.7	12	100.00
Total	7	26.92	5	19.23	14	53.85	26	100.00

Table 5.5: Safety recommendations issued to other bodies and organizations - status

Year	Accepted		Executed		Not accepted, no response has been submitted or it is not possible to determine the status from the submitted response		Total	
	[No.]	[%]	[No.]	[%]	[No.]	[%]	[No.]	[%]
2017.	-	-	-	-	-	-	-	-
2018.	-	-	-	-	1	-	1	100.00
2019.	-	-	-	-	2	100.00	2	100.00
2020.	-	-	-	-	-	-	-	-
2021.	-	-	-	-	1	100.00	1	100.00
Total	-	-	-	-	4	100.00	4	100.00

In accordance with Article 35 of the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic ("Official Gazette of RS" No. 66/15 and 83/18), CINS issues safety recommendations based on data analysis and the results of the investigation. Recommendations are sent to the Directorate for Railways, and in the case when it is necessary, to other bodies and organizations in the Republic of Serbia, as well as to interested bodies and organizations of other countries and international organizations. The Directorate for Railways takes measures to take safety recommendations into account and to act upon them.



5.1. The status of safety recommendations from 2017

5.1.1. Investigation Report (ŽS-02/17) 33 No. 340-8059/2017-16 of 05.01.2018. (accident, derailment of the train No. 62946 from 16.08.2017. at 15:30 on the main arterial route: Belgrade Marshalling Yard “A” - Junction “B” - Junction “K” - Resnik, between Junction “B” and “K”)

SR_01/17 Directorate for Railways shall define, as soon as possible, in the existing Rulebook on technical conditions for the maintenance of the railway superstructure (“Official Gazette of RS” No. 39/2016 and 74/2016), limit conditions of the track superstructure and substructure elements that require immediate corrective actions or closing of the railway line until the unauthorized condition is eliminated.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_01/17 is accepted and in realization. No new evidence was submitted compared to last year for the purposes of the Annual Report for 2020.

The Railway Directorate submitted the Report - a Letter I-01 No. 340-834/2021 of 27.07.2021. in which it is stated that the recommendation has been accepted, implementation is underway and that the Rulebook is in the legislation. The Directorate for Railways submitted an amendment to the Report - a Letter I-01 No. 340-942/2021 of 27.08.2021. in the attachment when the Draft Rulebook on maintenance of the super and sub structure of railway line and the Rulebook on technical conditions of infrastructure subsystems that are in the legislation were submitted. The draft Rulebook on technical conditions of infrastructure subsystems gives limit values of parameters, but it is still stated that speed reduction is a way to reduce the risk of derailment, with which CINS does not agree because a clearly defined safety recommendation was not followed.

SR_02/17 Directorate for Railways shall define in the existing Rulebook on technical conditions for the maintenance of the railway track superstructure (“Official Gazette of RS”, No. 39/2016 and 74/2016), criteria for the periods in which the intermediate overhauling on the railway track superstructure shall be performed.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022. of 29.07.2022., safety recommendation SR_02/17 is accepted and in realization. No new evidence was submitted compared to last year for the purposes of the Annual Report for 2020.

The Directorate for Railways submitted the Report - a Letter I-01 No. 340-834/2021 of 27.07.2021. in which it is stated that the recommendation has been accepted, implementation is underway and that the Rulebook is in the legislation. The Directorate for Railways submitted an amendment to the Report - a Letter I-01 No. 340-942/2021 of 27.08.2021. with the attachment in which the Draft Rulebook on maintenance of the super and sub structure of railway line and the Rulebook on technical conditions of infrastructure subsystems that are in the legislation, were submitted. The drafts of these two Rulebooks do not define the criteria for the time intervals in which the overhauls on the upper structure must be performed, as clearly defined in this recommendation.



SR_03/17 “IŽS”a.d. shall amend the Instruction on the Unique Criteria for the Control of the Condition of Railway Lines on the Network of Yugoslav Railways, Instruction 339 (“Official Gazette of ZJŽ” No. 2/2001 and 4/2004), which is, by the Decision of “IŽS”a.d., No. 4/2015-51-17 from 29.12.2015. still into force in “IŽS”a.d., in accordance with provisions from the Instruction 339 from 1989., mentioned in point 3.3.5. For future measuring wagons, recommended parameters are in accordance with the Standards: SRPS EN 13848-1, SRPS EN 13848-2, SRPS EN 13848-6.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_03/17 is not executed. Amendments were made to Instruction 339 (Official Gazette of ZJŽ No. 2/2001 and 4/2004) taking into account the future track inspection coaches of the Sever 1435 series, but no amendments were made to Instruction 339 (Official Gazette ZJŽ, No. 2/2001 and 4/2004) in accordance with a clearly defined safety recommendation.

SR_04/17 “IŽS”a.d. shall prescribe in its internal documents that, if during the measurement using the measuring wagon, there is a disorder in the continuity of the measurement, the control of the superstructure parameters must necessarily be carried out at the site of the resulting disturbance and in the zone for which data are missing. The control aims to eliminate the cause of the measurement disorder and to check the condition of the superstructure, visual control and measurement of the superstructure parameters with alternative measuring devices. After removing the cause of the disorder, it is necessary to repeat the measurement with measuring wagon on that kilometre.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_04/17 is executed.

SR_05/17 “IŽS”a.d. shall, having in mind inadequate maintenance and condition of the tracks, sleepers and fastening devices, to assess the risk of train traffic on the main arterial route Belgrade Marshalling Yard “A” - Junction “B” - Junction “K” - Resnik, between junctions “B” and “K”.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_05/17 is in the process of realization. No evidence was submitted that activities were carried out to implement the safety recommendation (there is no data that the train traffic risk assessment as specified in the safety recommendation was initiated) in relation to the Annual Report for 2019 and the Annual Report for 2020.



5.2. The status of safety recommendations from 2018

5.2.1. Investigation Report (ŽS-01/17) 33 No. 340-07684/2017-006 of 01.03.2018. (incident, decoupling of the train No. 8011 of 03.08.2017. at 07:55 on the main arterial route E 66: Belgrade Center – Pančevo Main station - Vršac – state border - (Stamora Moravita) in the area of the junction and stop Pančevački most)

SR_02/18 “Srbija Voz” a.d. should consider the possibility to make structural changes on the couplings between vehicles during regular repairs of EMV 412/416 in order to provide for a back-up alternative force transmission in case that the threaded connection is separated, or to apply other measures to reduce the risk of separation of the threaded joint.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-877/2022 of 29.07.2022. and a Letter I-01 No. 340-933/2022 of 22.08.2022., safety recommendation SR_02/18 is in the process of realization (“Srbija Voz” a.d. in 2021 and 2022 sent a request for the delivery of an opinion by the overhauler “Šinvoz” d.o.o. Zrenjanin, but did not receive a response from the overhauler).

SR_03/18 “Srbija Voz” a.d. should, in the submitted Instructions for the Repair of Couplings between Vehicles, which was produced within the Project for the preparation of the technical and overhaul documentation for the electric multiple unit of the series 412/416 by the Institute “Kirilo Savić” from Belgrade in 2004, align item 7 with the Working Instructions for the Control and Receiving Bodies of JŽ (“Official Gazette of ZJŽ“, No 1/03).

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-877/2022 of 29.07.2022. and a Letter I-01 No. 340-933/2022 of 22.08.2022., safety recommendation SR_03/18 is in the process of realization. No evidence was submitted that activities were carried out to implement the safety recommendation in relation to the Annual Report for 2018.

SR_05/18 “Srbija Voz” a.d. should harmonize its Instructions for the Maintenance of Traction Vehicles No. 4/2016-16-4, dated 23.02.2016., with Article 34, paragraph 2 and Article 36 of the Rulebook on Rolling Stock Maintenance No. 340-382-7/2015 dated 04.12.2015. (“Official Gazette of RS” No. 101/15), or to thoroughly reexamine the deadlines for regular repairs by taking the original technical documentation as a basis and to change them only after performing a risk evaluation and risk assessment based on information about the determined condition (especially measurement limits) during previous regular repairs, as well as perform analyses of extraordinary repairs and unplanned works.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-877/2022 of 29.07.2022. and a Letter I-01 No. 340-933/2022 of 22.08.2022., safety recommendation SR_05/18 is in the process of realization. No evidence was submitted that activities were carried out to implement the safety recommendation in relation to the Annual Report for 2018.



SR_06/18 “Srbija Voz” a.d. should perform a risk assessment for passenger transport in EMV of the series 412/416 where the extension of the deadlines for regular repairs was done before a previously performed risk evaluation and risk assessment based on the extension of these deadlines, as specified in paragraph 1, under 2) in Article 36 of the Rulebook on Rolling Stock Maintenance No. 340-382-7/2015 dated 04.12.2015. (“Official Gazette of RS”, No.101/15) and in paragraph 2, item 4.13. of the Rules of Procedure of the Safety Management System of “Srbija Voz” a.d. (due to the incident that occurred).

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-877/2022 of 29.07.2022. and a Letter I-01 No. 340-933/2022 of 22.08.2022., safety recommendation SR_06/18 is in the process of realization. No evidence was submitted that activities were carried out to implement the safety recommendation in relation to the Annual Report for 2018.

SR_07/18 Directorate for Railways should reexamine the content of the Maintenance File for EMV 412/416 and take measures from its area of competence, as the changes of the maintenance conditions specified by the manufacturer were not performed in accordance with Article 36 of the Rulebook on Rolling Stock Maintenance No. 340-382-7/2015 dated 04.12.2015. (“Official Gazette of RS” No 101/15).

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_07/18 is in the process of realization. No evidence was submitted that activities were carried out to implement the safety recommendation in relation to the Annual Report for 2018.

5.2.2. Investigation Report (ŽS-05/17) 33 No. 340-00-10144/2017-20 of 18.05.2018. (serious accident, overtaking of the train No. 4905 on the road passenger vehicle of 09.10.2017. at 20:26 on the main arterial route E 70/E 85: Belgrade - Mladenovac - Lapovo - Niš - Preševo - state border - (Tabanovce), on the level crossing, ensured with the traffic signs on the road and the necessary visibility zone, which is located on the open track between the stations Grdelica and Predejane)

SR_09/18 Ministry of Construction, Transport and Infrastructure should adjust the Rulebook on the mode of crossing the railway line and the road, pedestrian or bicycle path, a place where you can carry out the intersection and measures for ensuring safe traffic (“Official Gazette of RS” No. 89/2016) with actual performances of the road vehicles (in the manner of adjustment by some countries in the region) and the actual state of the railway infrastructure.

It is necessary to determine whether the speed of the road vehicle over the crossing which is used in these calculations by this Rulebook, and which amounts to 4 km/h is suitable for the actual performances of the rolling stock, or if this speed should be enlarged (for example, in the Republic of Slovenia the speed is 7 km/h). With the speed of 4 km/h, the large number of crossings cannot satisfy the minimal required zone of visibility that the Rulebook predicts.

Explanation for the Article 11 of the Rulebook, which is given in the Article 12, and which states: “By securing the necessary zone of visibility from the Article 11



of this Rulebook, the participants in the road traffic are enabled with uninterrupted visibility on the railway track with both sides of the road, pedestrian or bicycle path, for noticing on time of the upcoming railway vehicles on the track so that they could stop the vehicle and stop the moving of the pedestrians or bicycles before they come to the railway, that is, in front of the traffic sign that indicates the point where the road comes over the railway track at the railway level” would make sense only in the case that in front of the crossing there is no traffic sign II-2: “The obligation of stopping”. Situation on site confirms that the traffic sign II-2: “The obligation of stopping”, exists on all the crossings with passive signalization, which we consider absolutely necessary.

In the expression:

$$t_a = \frac{m + n + d + s}{V_p} \cdot 3,6 \text{ [s]}$$

In front of s should stand a sign “-”, and not the sign “+”.

Status of the recommendation: MGSI did not submit a response for the Annual Report for 2021.

The status of safety recommendation: SR_09/18 has not changed compared to the Annual Report for 2018. Safety recommendation SR_09/18 was partially accepted (the part of the recommendation related to the speed of the road vehicle crossing over the level crossing was accepted).

SR_10/18 “IŽS”a.d. that given the existence of construction facilities, not even from the limit of dangerous area it is not possible to provide the necessary visibility in all directions, to consider introduction of active signaling, or to solve the problem in another way.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_10/18 is in the process of realization. New evidence was submitted where in the Annual Program for the construction, reconstruction and maintenance of railway infrastructure, organization and regulation of railway traffic for the year 2021 with the projection for the years 2022 - 2025 (IŽS Assembly Decision No. 5/2021-353-146 of 12.07.2021), the level crossing in question is included in the World Bank project for providing automated equipment.

SR_11/18 “IŽS”a.d. to perform the expert - based risk assessment on the level crossing. Having in mind that the accidents on the level crossing (viewing them individually) are rare events, the risk evaluation cannot be done solely on the number of accidents that had happened on some level crossings. The risk assessment should be done, as a measure of precaution, for all the level crossing according to all the relevant parameters, whether there were accidents on them or not.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_11/18 is in the process of realization. New evidence was submitted on the



basis of which it can be stated that the draft methodology for risk assessment at level crossings was adopted (document No. 36/2022-106-1 of 28.06.2022). Testing of the methodology was carried out at 24 road crossings and improvement of the methodology is planned in the coming period.

SR_13/18 “IŽS” a.d. to do the act of “Programme for resolution of the level crossings” according to previously finished risk assessment, with the goal of taking certain actions to raise the level of safety in traffic.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_13/18 is accepted (realization of safety recommendation SR_13/18 is possible only upon execution of the safety recommendation SR_11/18).

5.2.3. Investigation Report (ŽS-04/17) 33 No. 340-00-9180/2017-18 of 22.06.2018. (accident, derailment of the pushed shunting composition of 17.09.2017. at 08:45 on the main arterial route E70/E85: (Belgrade) - Rakovica - Jajinci - Mala Krsna - Velika Plana, between the junction “K1” and station Rakovica)

SR_18/18 Directorate for Railways to review the Rulebook on technical conditions and maintenance of the superstructure of railway lines (“Official Gazette of RS” No.39/16,74/16) and to include in it the limit of the geometric parameters of railway condition, including twist, on the basis of standards SRPS EN 13848-5 and SRPS EN 13848-6 and to define, complied with these limits, the obligation of measuring the condition of track with track examination coach and action based on measurement results.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_18/18 is accepted and in realization. Directorate for Railways did not submit new evidence in relation to the last year, for the purposes of the Annual Report for 2020. In drafts of Rulebook on technical conditions and maintenance of the superstructure and substructure of railway lines and the Rulebook on technical condition of subsystem infrastructure, which were submitted in 2021, all suggestions of CINS, stated in Letter 33 No. 340-00-9180/2017-31 of 13.11.2020., and which was submitted to the Directorate for Railways, were not taken into account. CINS has, by Letter 33 No. 340-00-9180/2017-33 of 30.12.2021., which CINS submitted to the Directorate for Railways, again stated that not all suggestions were taken into account, stated by CINS in a Letter No. 33 No. 340-00-9180/2017-31 of 13.11.2020, that is, a clearly defined safety recommendation was not followed.

SR_20/18 “IŽS” a.d. to conduct examination of the reasons why the measures have not been taken for urgent elimination of defects type “C” that were determined during the measurement with track examination coach under the Instruction on unique criteria for control of the condition of railways on the network JŽ, Instruction 339 (“Official Gazette of ZJŽ” No. 2/2001 and 4/2004) and to develop coordination between sectors that determined the defect and sectors that should eliminate this defect, and under review of management in order to follow and analyze these cases. According to the evaluation of safety risks which due to this occurred, to take



efficient measures for elimination of the safety flaws, and in accordance with the Article 5 of Law on safety in Railway Transport (“Official Gazette of RS” No. 41/2018) and its Safety Management System Manual.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_20/18 is in the process of realization. New evidence has been submitted that is inconsistent with a clearly defined safety recommendation. No evidence was submitted that measures were taken according to Decision No. 14-2.1/2018-17/2 of 02.11.2018. of Center for Internal Control “IŽS” a.d. as well as a clearly defined safety recommendation issued by the Center (nothing was stated by “IŽS” a.d. about reviewing the reasons for not taking measures to urgently eliminate the errors of type “C”, assessing safety risks, coordination between the services, etc.).

5.2.4. Investigation Report (ŽS-06/17) 33 No. 340-00-10982/2017-16 of 14.08.2018. (accident, derailment of the train No. 56990 of 03.11.2017. at 15:25 on the local track Markovac - Resavica, between the station Svilajnac and Despotovac)

SR_23/18 Directorate for Railways that as soon as possible defines in the current Rulebook on the technical requirements and maintenance of the superstructure of railway tracks (“Official Gazette of RS” No. 39/2016 and 74/2016) limits conditions and elements of the upper substructure which requires the immediate removal of or closure of railway for traffic by eliminating unauthorized condition.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_23/18 is accepted and in the process of realization. No new evidence has been submitted in relation to the last year, for the purposes of the Annual Report for 2020.

Directorate for Railways has submitted the Report - a Letter I-01 No. 340-834/2021 of 27.07.2021. stating that the recommendation is accepted, realization is in progress and that the Rulebook is in legislation. Directorate for Railways has submitted amendment to the Report - a Letter I-01 No. 340-942/2021 of 27.08.2021., with the attachments of Draft Rulebook on technical conditions and maintenance of the superstructure and substructure of railway lines and Draft Rulebook on technical condition of subsystem infrastructure, which are in legislation. Draft Rulebook on technical conditions of infrastructure subsystems contains limit values of parameters, but still it has been mentioned that speed reduction is a manner of reducing the risk of derailment, with which CINS does not agree, because a clearly defined safety recommendation was not followed.

SR_24/18 “IŽS” a.d. to make amendments to the Instruction on common criteria for control of the condition of railway track on the network JŽ, Instruction 339 (“Official Gazette of ZJŽ” No. 2/2001 and 4/2004), which with the decision of the “IŽS” a.d. No. 4/2015-51-17 from 29.12.2015. is still applicable in “IŽS” a.d., in accordance with the provisions of Instruction 339 of 1989 which are listed in paragraph 3.3.4. For future track examination coaches parameters in accordance with standards: SRPS EN 13848-1, SRPS EN 13848-2, SRPS EN 13848-6 are recommended.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a



Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_24/18 is not executed. Amendments to Instruction 339 have been made (“Official Gazette ZJŽ” No. 2/2001 and 4/2004) taking into account future track inspection coach of series Sever 1435, but no amendments of Instruction 339 (“Official Gazette ZJŽ” No. 2/2001 and 4/2004) have been made that are relating to clearly defined safety recommendation.

SR_25/18 “IŽS” a.d. that, given the extremely poor condition of the track, makes an assessment of risk of train traffic on the local railway track Markovac - Resavica and take measures to reduce risks to an acceptable level. Based on this, to make a technical assessment of the minimum required resources (materials, machinery, labor) for track maintenance.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_25/18 is in the process of realization. Risk assessment of traffic of trains has not even begun, measures have been made to take the risk to an acceptable level and, based on the above, the expert evaluation of the minimum required resources (materials, machinery, work force) for track maintenance has not been submitted.

5.2.5. Investigation Report (ŽS-07/17) 33 No. 340-00-13136/2017-19 of 26.11.2018. (accident, derailment of the train No. 53527 of 23.12.2017. at 13:15 on the regional line Pančevo Main Station - Zrenjanin - Kikinda - state border - (Jimbolia), in the area of the station Novi Bečej)

SR_27/18 Directorate for Railways that in short deadline defines in the applicable Rulebook on technical conditions and maintenance of the superstructure of the railway tracks (“Official Gazette of RS” No. 39/16 and 74/16) the boundary conditions of elements of superstructure of the track, which require urgent elimination or closing the track for traffic until removal of unsatisfactory state.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022. safety recommendation SR_27/18 is accepted and in the process of realization. No new evidence was submitted in relation to the last year, for the purposes of the Annual Report for 2020.

Directorate for Railways submitted the Report - a Letter I-01 No. 340-834/2021 27.07.2021. stating that the recommendation has been accepted, realization is in process and the Rulebook is in legislation. Directorate for Railways submitted amendment to the Report - a Letter I-01 No. 340-942/2021 of 27.08.2021. with the attachments containing the Draft Rulebook on technical conditions and maintenance of the superstructure and substructure of railway lines and the Draft Rulebook on technical condition of subsystem infrastructure, which are in legislation. Draft Rulebook on technical condition of subsystem infrastructure contains limit values of parameters, but still it has been mentioned that speed reduction is a manner of reducing the risk of derailment, with which CINS does not agree, because a clearly defined safety recommendation was not followed.



SR_28/18 “IŽS” a.d. to conduct amendments to the Instruction on unique criteria for control of the condition of railway tracks on the network JŽ, Instruction 339 (“Official Gazette of RS”, No. 2/2001 and 4/2004), which is by the decision of the “IŽS” a.d. No. 4/2015-51-17 from 29.12.2015. is still applicable in “IŽS” a.d., pursuant to the provisions of Instruction 339 of 1989 which are listed in clause 3.3.5. For future track inspection coaches, the parameters are recommended in accordance with standards: SRPS EN 13848-1, SRPS EN 13848-2, SRPS EN 13848-6.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_28/18 is not executed. Amendments to Instruction 339 have been made (“Official Gazette ZJŽ” No. 2/2001 and 4/2004) taking into account future track inspection coach of series Sever 1435, but no amendments of Instruction 339 (“Official Gazette ZJŽ” No. 2/2001 and 4/2004) have been made that are relating to clearly defined safety recommendation.

SR_29/18 “IŽS” a.d. that, due to inadequate maintenance and condition of the track, sleepers and fastening systems, conducts an assessment of risk of train traffic on the regional railway line Pančevo Main Station - Zrenjanin - Kikinda - (Jimbolia) and take measures to reduce risk to an acceptable level. Based on this, to conduct a technical assessment of the minimum required resources (material, machinery, work force) for track maintenance.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_29/18 was partially executed. A risk assessment of train traffic on the regional railway line Pančevo Main Station - Zrenjanin - Kikinda - (Jimbolia) has not been carried out, measures have been taken to reduce the risk to an acceptable level on the section of the railway line between the official positions of Kumane and Banatsko Miloševo (significant works on the maintenance of the railway's superstructure) and on the basis of the above, an expert assessment of the minimum required resources (mechanization and workforce) for track maintenance was not submitted (data on the planned quantities of materials were submitted).

SR_30/18 “IŽS” a.d. to review the procedures and criteria for the approval of the traffic of trains with an overload and that this process is confined to the extreme and rare individual occasions, and not as a daily practice.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_30/18 is in the process of realization. Based on the submitted attachments, it can be concluded that the implementation of the safety recommendation is not directed in an adequate way. Nowhere is it mentioned, in the submitted attachments, that the procedures and criteria for approving the traffic of trains with an overload have been reviewed in order to limit that procedure only to exceptional and rare individual cases and how many freight trains operate on the section in question of the railway in total and how many of that number operate with an overload, in order to direct the execution of the issued safety recommendation in an adequate way and thus to see the course of implementation of the safety recommendation.



5.3. The status of safety recommendations from 2019

5.3.1. Investigation Report (ŽS-01/18) 33 No. 340-00-3336/2018-10 of 06.03.2019. (accident, fire on the train No. 2746 of 30.03.2018. at 17:50 on the regional track Crveni Krst - Zaječar - Prahovo Pristanište, between the stations Matejevac and Svrljig)

SR_02/19 “Srbija Voz” a.d. that on the basis of quality control in the course of repair and final review of the DMK series 710, determine whether repairs were made in the required quality and scope of work, with the aim of adequate execution of the repairs in accordance with Article 8 of the Rulebook on the Maintenance of railway vehicles.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-877/2022 of 29.07.2022. and a Letter I-01 No. 340-933/2022 of 22.08.2022., safety recommendation SR_02/19 is accepted and in the process of realization. No new evidence has been submitted in relation to the Annual Report for 2019.

SR_06/19 “Srbija Voz” a.d. that at the next regular repair DMK series 710, during the reconstruction of the interior applies materials in accordance with EN 45545-1 and EN 45545-2:2013+A1, that is SRPS EN 45545-1:2013 and SRPS EN 45545-2:2017.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-877/2022 of 29.07.2022 and a Letter I-01 No. 340-933/2022 of 22.08.2022., safety recommendation SR_06/19 is in realization. In the submitted attachments, there is no evidence that with 3 DMKs, which have been reconstructed so far, materials used for interior were in line with the standards EN 45545-1 and EN 45545-2:2013+A1, that is, SRPS EN 45545-1:2013 and SRPS EN 45545-2:2017.

SR_07/19 Directorate for Railways to check the license for use of DMK series 710 in terms of improvement of technical solutions of the drive system and the application of appropriate materials in terms of controlling the fulfillment of conditions for issuing safety certificates for transport.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022, safety recommendation SR_07/19 is accepted. No evidence has been submitted proving that activities have been made on execution of safety recommendation, in relation to the Annual Report for 2019.



5.3.2. Investigation Report (ŽS-02/18) No. 340-00-1/2018-02-1-31 of 26.03.2019. (serious accident, overtaking of the locomotive CEM-7, owned by JP “EPS” branch TENT from Obrenovac, on the worker of “Inter-Mehanika”d.o.o. from Skorenovac on 13.04.2018. at 13:30 in the area of the industrial railway JP “EPS” branch TENT, at the station Obrenovac on the track depot No. 10d)

SR_12/19 Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate to carry out additional inspection within its competences in terms of fulfillment of conditions under Article 9 of the Regulation on Safety and Health on Temporary or Mobile Construction Sites (“Official Gazette of RS” 14/2009 and 95/2010), where the investor (JP “EPS” branch TENT from Obrenovac) was obliged to carry out application of the construction site on the form in Annex 3 “Construction site registration” and appoints the coordinator for execution of works.

Status of the recommendation: Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate did not submit a response to the Annual Report for 2021. Also, no response has been submitted for Annual Report for 2020. It cannot be determined whether the measures, based on the issued safety recommendation SR_12/19, have been taken.

SR_13/19 Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate that upon application of future works by the employer-investor (JP “EPS” branch TENT from Obrenovac) to carry out the inspection within its authorities, and with the aim of reducing the possible similar accidents.

Status of the recommendation: Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate did not submit a response to the Annual Report for 2021. Also, no response has been submitted for Annual Report for 2020. It cannot be determined whether the measures, based on the issued safety recommendation SR_13/19, have been taken.

5.3.3. Investigation Report (ŽS-03/18) No. 340-00-2/2018-02-3-51 of 27.06.2019. (accident, collision of successive trains No. 2990 and 70922 of 01.08.2018. at 05:35 on the main arterial route E70/E85: Belgrade - Mladenovac - Lapovo - Niš - Preševo - state border - (Tabanovce), between the official positions Klenje and Ripanj Tunnel)

SR_18/19 “IŽS”a.d. to regularly check and continuously maintain the prescribed distance of the visibility of light signals in accordance with the provisions of Article 15 of the Rulebook on maintenance of the SS devices (“Official Gazette of RS”, No. 80/2015).

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022, safety recommendation SR_18/19 is in realization. Various railway undertakings have expressed objections to the poor visibility of the main signals due to vegetation and shrubs. From the submitted attachments, it can be stated that “IŽS”a.d. engaged a chemical train, but there is no data on the cutting of vegetation, as well as no data on checking and continuous maintenance of the prescribed distance of visibility of light signals by “IŽS”a.d. as clearly defined by the issued safety recommendation.



SR_23/19 “Srbija Kargo” a.d. to form a Human Factor Assessment Team for Occurrence of Accidents and Incidents in order to Develop Critical Elements Models by classifying them according to the importance and ranking list of representation (identification of all risks) in order to work on the prudent structuring of preventive measures and anticipation of human behavior in crisis situations in order to reduce the impact on the emergence of new accidents and incidents.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_23/19 is executed.

5.3.4. Investigation Report (ŽS-04/18) No. 340-00-1/2018-2-2-45 of 29.11.2019. (serious accident, overtaking of the train No. 7821 on the road vehicle bus of 21.12.2018. at 07:30 on the main arterial route E 70/E 85: Belgrade - Mladenovac - Lapovo - Niš - Preševo - state border - (Tabanovce), on the level crossing, secured with traffic signs on the road and the zone of necessary visibility, located in the area of the station Medurovo)

SR_24/19 Ministry of Construction, Transport and Infrastructure, that in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the point where the crossing can be made and measures to secure the safe traffic (“Official Gazette of RS” No. 89/2016), defines methodology (the manner) of determining (calculating) the elements of the zone of necessary visibility given in Annex 9 (d_{pz} - the length of stopping of the road vehicle and $s_{pžv}$ - the length of approaching of the railway vehicle).

Status of the recommendation: MGSI did not submit a response for the Annual Report for 2021.

MGSI did not submit a response for the Annual Report for 2020. The status of safety recommendation SR_24/19 has not changed in relation to the Annual Report for 2019. Safety recommendation SR_24/19 is accepted.

SR_25/19 Ministry of Construction, Transport and Infrastructure, that in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the point where the crossing can be made and measures to secure the safe traffic (“Official Gazette of RS” No. 89/2016), defines the procedure when there exists a necessary visibility according to the definition from the Article 2 Paragraph 1 under 12) of this Rulebook and it is not possible to determine the zone of necessary visibility. In particular, it should be borne in mind that by setting the traffic sign II-2: “Obligation of stopping”, while providing the necessary visibility, enables the safe passage of road vehicles over the crossing.

Status of the recommendation: MGSI did not submit a response for the Annual Report for 2021.

MGSI did not submit a response for the Annual Report for 2020. The status of safety recommendation SR_25/19 has not changed in relation to the Annual Report for 2019. Safety recommendation SR_25/19 is accepted.



SR_26/19 Ministry of Construction, Transport and Infrastructure that in the Article 14 of the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the point where the crossing can be made and measures to secure the safe traffic (“Official Gazette of RS” No. 89/2016), makes corrections in the expression:

$$t_v = \frac{m + n + d + s}{V_p} \cdot 3,6 \text{ [s]}$$

so that in front of *s* there is a sign “-”, and not the sign “+”.

Status of the recommendation: MGSi did not submit a response for the Annual Report for 2021.

MGSi did not submit a response for the Annual Report for 2020. The status of safety recommendation SR_26/19 has not changed in relation to the Annual Report for 2019. Safety recommendation SR_26/19 is accepted.

SR_27/19 Ministry of Construction, Transport and Infrastructure that in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the point where the crossing can be made and measures to secure the safe traffic (“Official Gazette of RS” No. 89/2016), harmonize the description of the position of point B given in Article 14, Article 15 and Annex 6.

Status of the recommendation: MGSi did not submit a response for the Annual Report for 2021.

MGSi did not submit a response for the Annual Report for 2020. The status of safety recommendation SR_27/19 has not changed in relation to the Annual Report for 2019. Safety recommendation SR_27/19 is accepted.

SR_29/19 Ministry of Construction, Transport and Infrastructure to consider the possibility that in the Law on traffic safety on the roads (“Official Gazette of RS” No. 41/2009, 53/2010, 101/2011, 32/2013 - decision US, 55/2014, 96/2015 - other law, 9/2016 - decision US, 24/2018, 41/2018, 41/2018 - other law and 87/2018) Article 153 Paragraph 2 to reformulate and harmonize with the Article 97 Paragraph 1 of the Law on safety of railway traffic (“Official Gazette of RS”, No.41/2018) in terms of more precise provisions for the installation of traffic lights.

Status of the recommendation: MGSi did not submit a response for the Annual Report for 2021.

MGSi did not submit a response for the Annual Report for 2020. The status of safety recommendation SR_29/19 has not changed in relation to the Annual Report for 2019. Safety recommendation SR_29/19 is accepted.



SR_30/19 “IŽS”a.d. to conduct expertly based risk assessment on level crossings. Given that the accidents on the level crossings (by reviewing every crossing individually) are rare events, it is not possible to assess risk solely on the number of accidents which occurred on the individual level crossings. Risk assessment, as a precautionary measure, should be made jointly for all level crossings in accordance with all relevant parameters, whether the accidents occurred or not.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_30/19 is the process of realization. New evidence was submitted on the basis of which it can be stated that the draft Methodology for risk assessment at road crossings was adopted (document No. 36/2022-106-1 of 28.06.2022). Testing of the methodology was carried out at 24 road crossings and improvement of the methodology is planned in the coming period.

SR_31/19 “IŽS”a.d. to make the act “Level Crossing Program” according to the previously done risk assessment on the level crossings with a view to undertake appropriate activities in order to raise the level of traffic safety.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_31/19 is accepted (realization of safety recommendation SR_31/19 is possible only upon execution of safety recommendation SR_30/19).

5.4. The status of safety recommendations from 2020

5.4.1. Investigation Report (ŽS-01/20) No. 340-03-1/2020-02-1-53 of 20.11.2020. (serious accident, overtaking of the shunting composition MS-4 on the road passenger vehicle of 09.01.2020. at 02:35 on the industrial track, Oil Refinery Pančevo (“NIS”a.d. Novi Sad) on the level crossing, secured with automatic level crossing device, located in the area of the city of Pančevo, the city settlement Stara Misa)

SR_01/20 Pančevo Oil Refinery (“NIS”a.d. Novi Sad) to harmonize item 2.3.13.1.2. of the Act on the industrial track of the Marshalling Yard in the Pančevo Oil Refinery (to which the Directorate for Railways gave its consent No. 340-1351/2019 of 03.10.2019.) with item 5.1.1. of the Instruction for operation of devices for automatic securing the traffic at the level crossing at km 2+231 of the own stationing of the industrial track of the Pančevo Oil Refinery from 01.01.2018. (Registration No. 1/2018), in terms of the manner of securing the traffic at the level crossing, pursuant to Article 58, item 6 of the Rulebook 2, Traffic Rulebook (“Official Gazette of ZJŽ” No. 3/94, 4/94, 5/94, 4/96 and 6/03).

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022. I-01 and a Letter No. 340-877/2022 of 29.07.2022., safety recommendation SR_01/20 is in the process of realization. Request No. 59-03/21 of 15.03.2021 from “NIS”a.d. was submitted for amendments to the Industrial Track Act of the Marshalling Yard in the Pančevo Oil Refinery and Decision on granting consent I-01 No. 340-278-2/2021 of 17.03.2021. of the Directorate for Railways. The adopted and amended Act with the



corresponding Instruction was not submitted, as proof that point 2.3.13.1.2. of the Act is aligned with point 5.1.1. of the Instruction, as clearly defined by the issued safety recommendation.

SR_04/20 Pančevo Oil Refinery (“NIS” a.d. Novi Sad) to, in the capacity of railway infrastructure manager, establish cooperation with the road manager of JP “Putevi Srbije” and conclude an Agreement which regulates more closely the relations regarding the respective level crossing in accordance with the provisions of Articles 67 and 70 of the Law on Railways (“Official Gazette of RS” No. 41/2018).

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_04/20 is executed.

SR_05/20 Pančevo Oil Refinery (“NIS” a.d. Novi Sad) that in the Act on the industrial track of the Marshalling Yard in the Pančevo Oil Refinery (to which the Directorate for Railways gave its consent No. 340-1351/2019 of 03.10.2019.) and the Instruction for operation of devices for automatic securing the traffic at the level crossing at km 2+231 of the own stationing of the industrial track of the Pančevo Oil Refinery from 01.01.2018. (Registration No. 1/2018) to make corrections in terms of harmonizing the terminology “train” and “train staff” with the actual situation on the industrial track - “shunting composition” and “shunting staff”.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_05/20 is in the process of realization. Request No. 59-03/21 of 15.03.2021. from “NIS” a.d. was submitted for amendments to the Industrial Track Act of the Marshalling Yard in the Pančevo Oil Refinery and Decision on granting consent I-01 No. 340-278-2/2021 of 17.03.2021. of the Directorate for Railways. The adopted and amended Act with the corresponding Instruction was not submitted, as a proof that in the Act and in the Instruction the terminology is harmonized, as clearly defined with the issued safety recommendation.

SR_07/20 “Srbija Kargo” a.d. to conduct the training of the train staff, that is, the train drivers and conductors, except train driver assistants and train shunters, regarding the procedure upon entering the station in case of crossing of the level crossing secured with control signals whose device is defective, pursuant to Article 4.2.3. of the Instruction for operation of devices for automatic securing the traffic at the level crossing at km 2+231 of the own stationing of the industrial track of the Pančevo Oil Refinery from 01.01.2018. (Registration No. 1/2018).

Status of the recommendation: Directorate did not submit a reply for the Annual Report for 2021.

Directorate for Railways submitted the Report - a Letter I-01 No. 340-834/2021 of 27.07.2021., safety recommendation SR_07/20 is accepted.



SR_10/20 Ministry of Construction, Transport and Infrastructure to harmonize the provisions of Article 35, paragraph 1 under 2) of the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the point where the crossing can be made and measures to secure the safe traffic (“Official Gazette of RS” No. 89/2016) with Article 58, under 6. of the Rulebook 2, Traffic Rulebook (“Official Gazette of ZJŽ” No. 3/94, 4/94, 5/94, 4/96 and 6/03) and Article 124 of the Shunting Instruction 42 (“Official Gazette of ZJŽ” No. 3/80, 6/83, 3/87, 4/88, 6/91 and 2/94) regarding the manner in which the sent railway worker at the level crossing directly regulates the traffic by giving manual traffic signs to road vehicles.

Note: Article 35 Paragraph 1 under 2) of the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the point where the crossing can be made and measures to secure the safe traffic (“Official Gazette of RS” No. 89/2016) refers to the regulations that regulate traffic safety on roads, and in these regulations the stated issue is not defined (it is defined only in cases of performing works).

Status of the recommendation: Directorate did not submit a reply for the Annual Report for 2021. Status of the recommendation SR_10/20 has not changed in relation to the Annual Report for 2020, safety recommendation SR_10/20 is accepted.

MGSI has submitted the Reports - a Letter No. 340-07-533/2000-04 of 11.02.2021., a Letter No. 340-07-533/2000-04 of 10.05.2021. and a Letter No. 340-01-00533/2020-04 of 27.07.2021., safety recommendation SR_10/20 is accepted.

5.5. The status of safety recommendations from 2021

5.5.1. Investigation Report (ŽS-02/20) No. 340-03-1/2020-02-2-49 of 03.03.2021. (serious accident, overtaking of the train No. 45403 on a road passenger vehicle on 25.07.2020. at 10:55 on the regional railway line 211: Ruma - Šabac - Junction Donja Borina - state border - (Zvornik Novi), at the level crossing, secured with road traffic signs and the zone of necessary visibility, located between the crossing point Štitar and the station Petlovača

SR_01/21 Ministry of Construction, Transport and Infrastructure to harmonize the provisions of Article 69 with the provisions of Article 56 in the Law on Railways (“Official Gazette of RS” No. 41/2018) in terms of the obligation of railway infrastructure manager to maintain the necessary visibility zone at the crossings of the railway line and the road in terms of defining the distance from the track axis (track belt) at which the infrastructure manager has the obligation to remove vegetation.

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_01/21 is unknown.



SR_02/21 Ministry of Construction, Transport and Infrastructure to clearly define in the Law on Railways (“Official Gazette of RS” No. 41/2018) in Article 69 the obligations of railway infrastructure manager and road manager in terms of maintaining the necessary visibility zone (part of the necessary visibility zone which includes the railway belt and part of the necessary visibility zone which does not include the railway belt).

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_02/21 is unknown.

SR_03/21 Ministry of Construction, Transport and Infrastructure, in the Law on Roads (“Official Gazette of RS”, No. 41/2018 and 95/2018 - other law) in Article 68 to define (supplement) maintenance - landscaping of green areas (grass mowing, clearing shrubs and cutting of trees) in the zone of necessary visibility at the points of crossing of the railway line and the road, in accordance with Article 38, which defines the obligation to provide the zone of necessary visibility in accordance with the regulations.

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_03/21 is unknown.

SR_04/21 Ministry of Construction, Transport and Infrastructure, to define in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette RS”, No. 89/2016) the methodology (method) for determining (calculating) the elements of the zone of necessary visibility given in the Annex 9 (d_{pz} - length of stopping the road vehicle and $S_{pžv}$ - length of approaching the railway vehicle).

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_04/21 is unknown.

SR_05/21 Ministry of Construction, Transport and Infrastructure, to define in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette RS”, No. 89/2016) the procedure in the case when there is the necessary visibility according to the definition from Article 2, Paragraph 1 under 12) of this Rulebook and it is not possible to provide the zone of necessary visibility. In particular, it should be borne in mind that the installation of traffic sign II-2: “Obligation of stopping” while providing the necessary visibility, allows safe passage of road vehicles over the crossing.

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_05/21 is unknown.



SR_06/21 Ministry of Construction, Transport and Infrastructure, to make corrections in the expression in Article 14 of the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette of RS” No. 89/2016):

$$t_v = \frac{m + n + d + s}{V_p} \cdot 3,6 \text{ [s]}$$

so that in front of s there is a sign “-”, and not the sign “+”.

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_06/21 is unknown.

SR_07/21 Ministry of Construction, Transport and Infrastructure to harmonize, in the Rulebook on the manner of crossing of the railway line and the road, pedestrian or bicycle path, the place where the crossing can be made and the measures for ensuring safe traffic (“Official Gazette of RS” No. 89/2016), the description of the position of point B given in Article 14, Article 15 and Annex 6.

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_07/21 is unknown.

SR_08/21 Ministry of Construction, Transport and Infrastructure to consider the possibility that in the Law on Road Traffic Safety (“Official Gazette of RS” No. 41/2009, 53/2010, 101/2011, 32/2013 - decision US, 55/2014, 96/2015 - other law, 9/2016 - decision US, 24/2018, 41/2018, 41/2018 - other law and 87/2018) Article 153, Paragraph 2 reformulates and harmonizes with the Article 97, Paragraph 1 of the Law on Railway Traffic Safety (“Official Gazette of RS” No. 41/2018) in terms of more precise provisions for the installation of traffic lights.

Status of the recommendation: MGSI has not submitted a reply to the Annual Report for 2021. The status of the recommendation SR_08/21 is unknown.

SR_09/21 “IŽS”a.d. to consider a change in the level of insurance (introduction of active signallization) for the level crossing in question, or solve the problem in some other way. Due to the existence of facilities near the level crossing and the curve on the railway, the necessary visibility zone is not provided, and due to the abundant vegetation in the infrastructure belt and thus in the railway belt, the necessary visibility is not provided. It is also a fact that the level crossing in question is a crossing of a regional line and a state road of IIA rank.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-834/2021 of 27.07.2021., a Letter I-01 No.340-676/2022 of 10.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No.340-877/2022 of 29.07.2022., safety recommendation SR_09/21 is accepted and in the process of realization. Minutes of the commission for determining the possibility of raising the level of insurance No. 26/2022 -781/1 of 09.06.2022. “IŽS”a.d. it was concluded that since it is not possible to achieve all four required visibility zones due to the facilities and vegetation located outside the railway belt and the level crossing is located on an open railway, the commission proposes that the level



crossing be equipped with automatic half-barriers with light traffic signs and traffic signs on road.

SR_10/21 “IŽS” a.d. to make a professionally based risk assessment at road crossings. Bearing in mind that accidents at road crossings (observing each crossing separately) are rare events, risk assessment cannot be performed only on the basis of the number of accidents that occurred at individual road crossings. Risk assessment, as a precautionary measure, should be performed collectively for all road crossings according to all relevant parameters, regardless of whether accidents have occurred at them or not.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-834/2021 of 27.07.2021., a Letter I-01 No.340-676/2022 of 10.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No.340-877/2022 of 29.07.2022., safety recommendation SR_10/21 is accepted and in the process of realization. Evidence was submitted on the basis of which it can be stated that the draft methodology for risk assessment at level crossings was adopted (document No. 36/2022-106-1 of 28.06.2022.). Testing of the methodology was carried out at 24 level crossings and improvement of the methodology is planned in the coming period.

SR_11/21 “IŽS” a.d. to make an act “Program for solving road crossings” according to the previously done risk assessment at road crossings, in order to take appropriate activities with the aim to raise the level of traffic safety.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-834/2021 of 27.07.2021., a Letter I-01 No.340-676/2022 of 10.06.2022., Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_11/21 is accepted (realization of SR_11/21 is only possible upon execution of recommendation SR_10/21).

5.5.2. Investigation Report (ŽS-03/20) No. 340-00-2/2020-02-1-53 of 17.11.2021. (accident, derailment of the train No. 45022 of 28.11.2020. at 19:27 on the main arterial line 102: Belgrade Center - Junction “G” - Rakovica - Mladenovac -Lapovo - Niš - Preševo - state border - (Tabanovce), between the stations Bagrdan and Jagodina, on the left track of the two-track railway line

SR_12/21 Directorate for Railways, to consider the justification of the abolition of Paragraph 9 of Article 8 of the Rulebook on technical conditions and maintenance of railway lines superstructure (“Official Gazette of RS”, No. 36/16), which reads: “Alternate (mixed) installation of wooden and concrete sleepers is not allowed” and justification to return via amendments the Article 8 of the Rulebook on technical conditions and maintenance of railway lines superstructure (“Official Gazette of RS”, No. 36/16 and 74/16).

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-176/2022 of 10.02.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_12/21 is accepted and in the process of realization. Directorate for Railways has, in Draft Rulebook on technical conditions of subsystem infrastructure in



Article 50, Paragraph 6 defined: “Alternate (mixed) installation of wooden and concrete sleepers is not to be applied”. CINS agrees with the proposed text.

SR_13/21 “IŽS” a.d., to conduct the risk assessment of train traffic on the main arterial line 102: Belgrade Center - Junction “G”- Rakovica - Mladenovac - Lapovo - Niš - Preševo - state border - (Tabanovce), left track, from Markovac station (exclusively) km 101+057 to Jagodina station (inclusive) km 136+000, given the inadequate maintenance and condition of tracks, sleepers and fasteners and the insufficient number of executors for maintenance from the construction industry; and take measures to reduce the risk to an acceptable level.

Status of the recommendation: Directorate for Railways submitted the Reports - a Letter I-01 No. 340-176/2022 of 10.02.2022., a Letter I-01 No. 340-177-4/2022 of 03.03.2022. a Letter I-01 No. 340-676/2022 of 10.06.2022., a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022. safety recommendation SR_13/21 is accepted and in the process of realization.

SR_14/21 “IŽS” a.d., in the Rulebook on organization and work positions systematization of “IŽS” a.d., Belgrade, to consider the adequacy of the existing ones and consider the possibility to predict the appropriate number of executors in the construction industry both on the section of the railway on which the accident occurred and on the entire network in order to ensure the safe conduct of railway traffic. In accordance with the appropriate number of executors to plan the procurement of the necessary machinery and tools, all in order to ensure the safe conduct of railway traffic.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_14/21 is not accepted by the Directorate for Railways.

Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022., a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter I-01 No. 340-771/2022 of 01.07.2022. and a Letter 340-877/2022 of 29.07.2022. from which it can be stated that “IŽS” a.d. has accepted the proposed safety recommendation.

SR_15/21 Elixir Zorka Mineralna đubriva d.o.o. Šabac, to establish maintenance procedures with a list of instructions that must be an integral part of the maintenance file with a detailed list of scope of work in regular repairs of wagon-tanks for transportation of sulfuric acid.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_15/21 is not accepted by the Directorate for Railways.

Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022. stating that the Directorate for Railways submitted a request to Elixir Zorka Mineralna đubriva d.o.o. Šabac (the reference number of the request and the date were not specified, nor was the request submitted, and CINS is not able to state that the said request was also sent) for the delivery of information on the status of the safety recommendation, but it has not yet received it. Upon receipt of information by the Company, all evidence will be submitted to CINS in



order to assess the fulfillment of the safety recommendation.

SR_16/21 Elixir Zorka Mineralna đubriva d.o.o. Šabac, to establish maintenance procedures, in accordance with the requirements of the Rulebook on maintenance of railway vehicles ("Official Gazette of RS" No. 144/2020), where the maintenance of bogies must be performed according to the manufacturer's instructions, and the procedures must be harmonized with that instruction, considering that wagons with worn inserts of the center bowl and side bearers represent a significant risk of derailment in curves and in which the documentation of the characteristics of the buffer after repair and comparison with the characteristic given by the manufacturer will be defined, i.e. for newer and reconstructed wagons in accordance with the required characteristic according to EN 15551 for the corresponding type of buffer.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_16/21 is not accepted by the Directorate for Railways.

Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022. stating that the Directorate for Railways submitted a request to Elixir Zorka Mineralna đubriva d.o.o. Šabac (the reference number of the request and the date were not specified, nor was the request submitted, and CINS is not able to state that the said request was also sent) for the delivery of information on the status of the safety recommendation, but it has not yet received it. Upon receipt of information by the Company, all evidence will be submitted to CINS in order to assess the fulfillment of the safety recommendation.

SR_17/21 Elixir Group d.o.o. Šabac, as the holder for whose needs the transport is performed, it is necessary to provide procedures for proper closing of tank lids in accordance with the manufacturer's instructions, which include: checking the cleanliness and flatness of adjacent surfaces, use of undamaged prescribed seals, closing the opening with the projected number of screws with a torque wrench with the torque prescribed by the manufacturer. If this information is not known from the manufacturer, the tightening torque must be prescribed according to the general technical standards for pressure vessels.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_17/21 is not accepted by the Directorate for Railways.

Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022. stating that the Directorate for Railways submitted a request to Elixir Zorka Mineralna đubriva d.o.o. Šabac (the reference number of the request and the date were not specified, nor was the request submitted, and CINS is not able to state that the said request was also sent) for the delivery of information on the status of the safety recommendation, but it has not yet received it. Upon receipt of information by the Company, all evidence will be submitted to CINS in order to assess the fulfillment of the safety recommendation.

SR_18/21 Elixir Group d.o.o. Šabac, as the holder for whose needs the transport is performed, should require that staff be trained at all loading and unloading points to properly



close the lids and carry it out according to the adopted procedure.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_18/21 is not accepted by the Directorate for Railways.

Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022. stating that the Directorate for Railways submitted a request to Elixir Zorka Mineralna đubriva d.o.o. Šabac (the reference number of the request and the date were not specified, nor was the request submitted, and CINS is not able to state that the said request was also sent) for the delivery of information on the status of the safety recommendation, but it has not yet received it. Upon receipt of information by the Company, all evidence will be submitted to CINS in order to assess the fulfillment of the safety recommendation.

SR_19/21 Elixir Group d.o.o. Šabac, as the holder of the wagons which did not have individual licenses to prescribe in its acts the verification of the existence of an individual license for use, before using the wagon and to conduct additional training of its staff on this issue.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_19/21 is not accepted by the Directorate for Railways.

Directorate for Railways submitted the Report - a Letter I-01 No. 340-877/2022 of 29.07.2022. stating that the Directorate for Railways submitted a request to Elixir Zorka Mineralna đubriva d.o.o. Šabac (the reference number of the request and the date were not specified, nor was the request submitted, and CINS is not able to state that the said request was also sent) for the delivery of information on the status of the safety recommendation, but it has not yet received it. Upon receipt of information by the Company, all evidence will be submitted to CINS in order to assess the fulfillment of the safety recommendation.

SR_20/21 „Srbija Kargo”a.d., to train the staff to carry out the measure at the reception points, that if it is possible to establish the lack of screws on the tank lids by visual inspection, to refuse the transport of improperly closed tanks.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_20/21 is not accepted by the Directorate for Railways.

Directorate for Railways submitted the Reports- a Letter I-01 No. 340-676/2022 of 10.06.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., from which it can be stated that „Srbija Kargo”a.d. has accepted and carried out the given safety recommendation.

SR_21/21 „Srbija Kargo”a.d., to train the staff that wagons due to defects (in one tank it was determined that the G-P gearbox was defective when the handle could turn without resistance and without arrest in the end positions and said gearbox has been fixed with wire in position P) must be labelled and sent for repair.

Status of the recommendation: Directorate for Railways submitted a Report - a Letter I-01 No. 340-176/2022 of 10.02.2022., safety recommendation SR_21/21 is not accepted by the Directorate for Railways.



Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., from which it can be stated that „Srbija Kargo“a.d. has accepted and carried out the given safety recommendation.

SR_22/21 Ministry of Construction, Transport and Infrastructure, Sector for Inspection Supervision, Department for Railway Traffic Inspection Affairs, to perform an extraordinary inspection of the condition of the railway infrastructure on the main arterial line 102: Belgrade Center - Junction “G” - Rakovica - Mladenovac - Lapovo - Niš - Preševo - state border - (Tabanovce), left track, from the station Markovac (exclusively) km 101+057 to the station Jagodina (inclusive) km 136+000 and take measures within its competence.

Status of the recommendation: MGSI submitted the Report - a Letter No. 340-01-00359/2021-04 of 08.02.2022. based on which it can be stated that the safety recommendation SR_22/21 is accepted.

MGSI submitted the Report - a Letter No. 340-01-003361/2021-04 of 21.07.2022., in the attachment to which the Minutes of Inspection No. 340-06-542/2020-18 of 03.12.2020 were submitted. of the Head of the inspection for railway traffic that was carried out on the part of the railway from km 123+545 to km 123+660 with recommended measures to eliminate irregularities “IŽS”a.d. and “Srbija Kargo”a.d. Bearing in mind the clearly defined safety recommendation, based on the submitted evidence, it can be stated that SR_22/21 was partially implemented (to a lesser extent - inspection was performed on only 115 m of railway).

SR_23/21 Ministry of Construction, Transport and Infrastructure, Sector for Inspection Supervision, Department for Railway Traffic Inspection Affairs, to perform an extraordinary inspection of Elixir Group d.o.o. Šabac which used railway vehicles that do not have a type license and without an individual license for use and take measures within its competence.

Status of the recommendation: MGSI submitted the Report - a Letter No. 340-01-00359/2021-04 of 08.02.2022, based on which it can be stated that safety recommendation SR_23/21 is accepted.

MGSI submitted the Report - a Letter No. 340-01-003361/2021-04 of 21.7.2022., in the attachment of which evidence was submitted, based on which it can be stated that SR_23/21 is executed.

SR_24/21 The Ministry of Construction, Transport and Infrastructure, Sector for Railways and Intermodal Transport, to consider possible amendments in the existing legislation in order to facilitate the procedure of issuing type licenses and licenses for use only for existing vehicles in long-term operation in RS for which, due to current legal regulations, licenses cannot be issued by the Railway Directorate.

Status of the recommendation: MGSI submitted the Report - a Letter No. 340-01-00359/2021-04 of 08.02.2022, based on which it can be stated that safety recommendation SR_24/21 is accepted and in realization.

MGSI submitted the Report - a Letter No. 340-01-003361/2021-04 of 21.07.2022. in the attachment of which Draft Law on Railway System Interoperability was submitted, which in



Article 29 provides for provisions in accordance with clearly defined safety recommendations. It can be stated that SR_24/21 has been executed.

SR_25/21 Atir-Rail SA, to prescribe in maintenance procedures the control of the condition and wear of wearing inserts of center bowls and side bearers as well as other elements that can reach the limit measures between the two repairs and define the documentation of buffer characteristics after repair and comparison with the characteristic given by the manufacturer

Status of the recommendation: *Autorité française de sécurité ferroviaire* did not submit a reply. Pursuant to Article 35 of the Law on Investigation of Accidents in Air, Railway and Waterborne Traffic ("Official Gazette RS" No. 66/15 and 83/18) bodies and organizations of other states and international organizations are not obliged to submit a Report on measures taken or planned to be taken to CINS once a year, based on issued safety recommendations in the previous year.

5.5.3. Investigation Report (ŽS-04/20) No. 340-03-1/2020-02-3-42 of 22.11.2021. (serious accident, overtaking of the train No. 6431 on the road passenger vehicle of 02.12.2020. at 08:15 on the main arterial line 110: 110: Subotica - Bogojevo - state border - (Erdut), on the level crossing secured with automatic half barriers with light traffic signs and traffic signs on the road, located in the area of the settlement Bajmok)

SR_26/21 "IŽS"a.d., to revise the technical documentation and diagnostic software for the road crossing device PZZ-EA, and to consider the need for their supplementation and correction in terms of correct and clear translation into Serbian with the use of precise and professional terms. This primarily refers to the documentation for the operation and maintenance of the device, so that the content of the mentioned documentation is clear to the employees of the maintenance service.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-178/2022 of 11.02.2022., safety recommendation SR_26/21 has not been accepted by the Directorate for Railways.

Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022., a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., based on which it can be stated that "IŽS"a.d. accepted the safety recommendation.

SR_27/21 "IŽS"a.d., to continuously during the regular training of workers employed in the regular maintenance of SS devices, analyse the operation of available software tools for diagnosing the operation of electronic devices of level crossings. During corrective maintenance of the electronic level crossing device, on those devices where it is applicable, by using electronic diagnostic devices to accurately determine the cause of the fault and enter it into the appropriate records kept in "IŽS"a.d.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-178/2022 of 11.02.2022., safety recommendation SR_27/21 has not been accepted by



the Directorate for Railways.

Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022., a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., based on which it can be stated that "IŽS"a.d. accepted the safety recommendation.

SR_28/21 "IŽS"a.d., in the Rulebook on organization and work positions systematization of "IŽS"a.d., Belgrade, to consider the adequacy of the existing ones and consider the possibility to predict the appropriate number of executors in the electro technical affairs (worker on SS devices and facilities maintenance) both on the section of the railway on which the serious accident occurred and on the entire network in order to reduce the time of starting the process of elimination of the fault to a measure that is in accordance with the Rulebook on maintenance of signalling and safety devices ("Official Gazette RS", No. 41/18), thus minimizing the time in which SS devices are in the state of fault, all in order to ensure the safe conduct of railway traffic.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-178/2022 of 11.02.2022., safety recommendation SR_28/21 has not been accepted by the Directorate for Railways.

Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022., a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., based on which it can be stated that "IŽS"a.d. accepted the safety recommendation.

SR_29/21 "IŽS"a.d., to carry out activities on obtaining a use permit issued by the Ministry of Construction, Transport and Infrastructure for level crossing at km 102+890, in accordance with the Article 158 of the Law on Planning and Construction ("Official Gazette of RS", No. 72/2009, 81/2009 - amended, 64/2010 - US decision, 24/2011, 121/2012, 42/2013 - US decision, 50/2013 - US decision, 98/2013 - US decision, 132/2014, 145/2014, 83/2018, 31/2019, 37/2019 - other law, 9/2020 and 52/2021)

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-178/2022 of 11.02.2022., safety recommendation SR_29/21 has not been accepted by the Directorate for Railways.

Directorate for Railways submitted the Reports - a Letter I-01 No. 340-676/2022 of 10.06.2022., a Letter I-01 No. 340-752/2022 of 27.06.2022., a Letter 340-771/2022 of 01.07.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., based on which it can be stated that "IŽS"a.d. accepted the safety recommendation.

SR_30/21 "Srbija Voz"a.d., to perform extraordinary training of traction vehicle staff regarding the procedure in front of the road crossing equipped with control signals, pursuant to Article 143, paragraph 2 of the Rulebook on the types of signals, signalling marks and markings on the railway line ("Official Gazette RS", No. 51/20), and Article 61, item 12 and Article 63, item 5 of the Rulebook 2, Traffic Rulebook ("Official Gazette of the ZJŽ" No. 3/94, 4/94, 5/94, 4/96 and 6/03).



Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-178/2022 of 11.02.2022., safety recommendation SR_30/21 is accepted.

Directorate for Railways submitted the Reports - a Letter I-01 No. 340-177-4/2022 of 03.03.2022., a Letter No. 340-676/2022 of 10.06.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_30/21 is executed.

SR_31/21 “Srbija Voz” a.d., to perform extraordinary training of traction vehicle staff in terms of proper application of the aspect of signal 67: “Watch out”, in accordance with the Article 160 of the Rulebook on the types of signals, signalling marks and markings on the railway line (“Official Gazette RS”, No. 51/20), in order to properly apply railway regulations with the aim of preventing the circumstances that could contribute to the occurrence of new similar accidents and increase safety in railway traffic.

Status of the recommendation: Directorate for Railways submitted the Report - a Letter I-01 No. 340-178/2022 of 11.02.2022., safety recommendation SR_31/21 is accepted.

Directorate for Railways submitted the Reports - a Letter I-01 No. 340-177-4/2022 of 03.03.2022., a Letter No. 340-676/2022 of 10.06.2022. and a Letter I-01 No. 340-877/2022 of 29.07.2022., safety recommendation SR_31/21 is executed.

SR_32/21 The Ministry of Construction, Transport and Infrastructure to harmonize the Article 2, item 11 and Annex 2 of the Rulebook on the manner of crossing the railway and road, pedestrian or bicycle path, the place where the crossing can be made and measures to ensure safe traffic (“Official Gazette of RS” No. 89/2016) with Annex 2 of the Rulebook on technical conditions for signalling-safety devices (“Official Gazette of RS”, No. 18/2016 and 89/2016) regarding the definition of the border of the dangerous zone of the road crossing, that is, the border of the free profile.

Status of the recommendation: MGSI submitted the Reports - a Letter No. 340-01-00361/2021-04 of 08.02.2022. and a Letter No. 340-01-003361/2021-04 of 21.07.2022., based on which it can be stated that SR_32/21 is accepted.