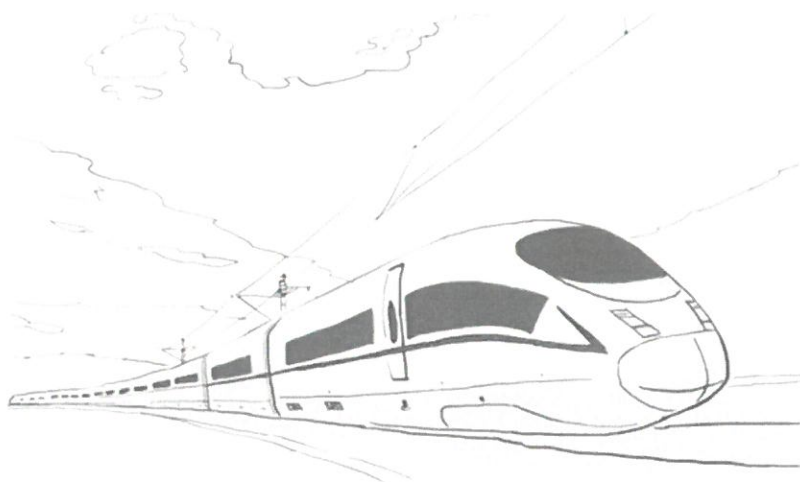




REPUBLIC OF CROATIA
AIR, MARITIME AND RAILWAY TRAFFIC ACCIDENTS INVESTIGATION AGENCY
Department for Railway Traffic Accidents Investigation

NIB CROATIA ANNUAL REPORT 2021

according to Article 24(3) of Directive (EU) 2016/798 of the European
Parliament and of the Council of 11 May 2016 on railway safety
(recast)



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PUBLICATION OF ANNUAL REPORT AND COPYRIGHT

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- Art. 24(3) of Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast),
- Art. 6(4)(5) of the Act of establishing the Air, Maritime and Railway Traffic Accidents Investigation Agency (Official Gazette Nos. 54/2013 and 96/2018) and
- Art. 132(7) of the Act on Safety and Interoperability of the Railway System (Official Gazette No. 63/2020).

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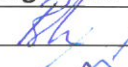



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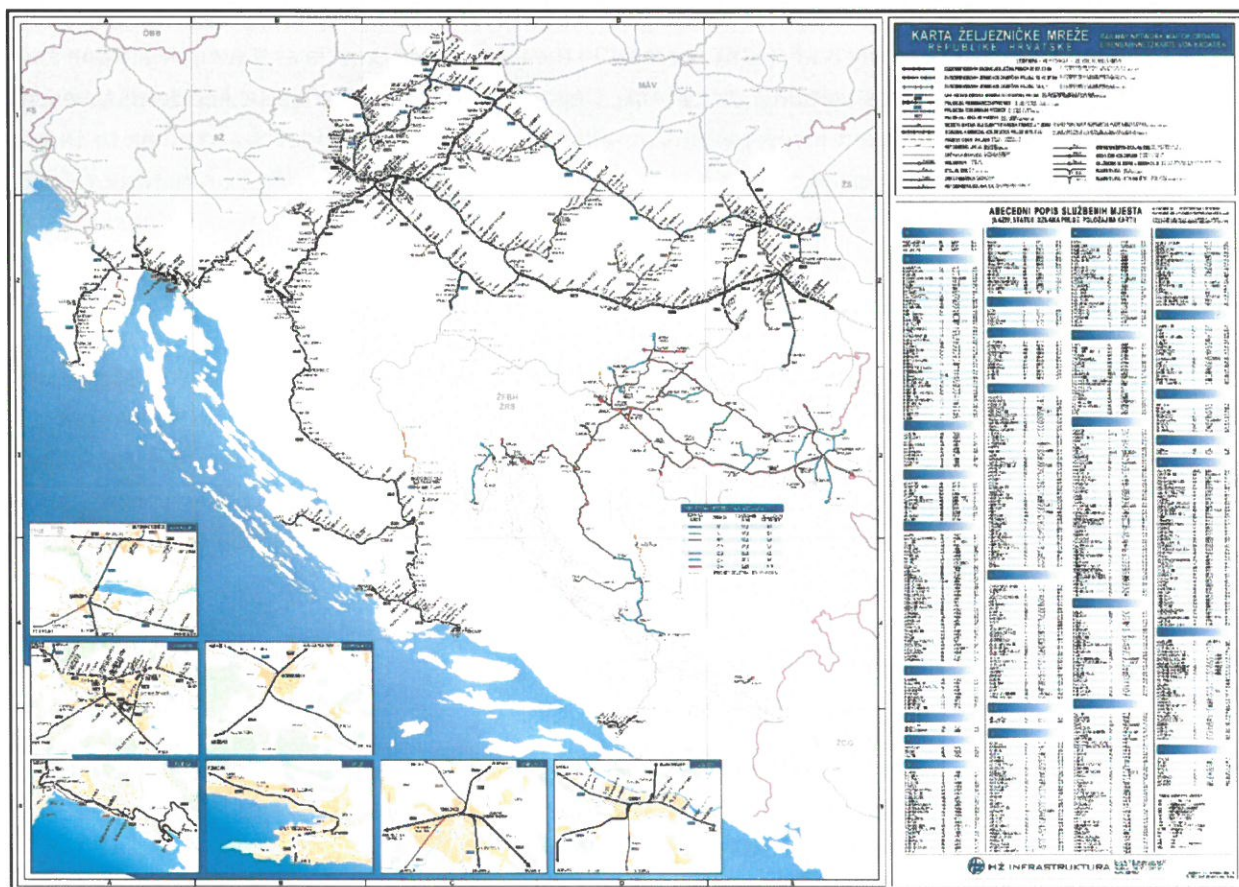
CONTENT

PUBLICATION OF ANNUAL REPORT AND COPYRIGHT	2
ABBREVIATIONS.....	4
CROATIAN RAILWAY NETWORK	5
INTRODUCTION TO THE REPORT	6
1 INTRODUCTION TO THE INVESTIGATING BODY	7
1.1 Legal Basis.....	7
1.2 Role and Aim.....	7
1.3 Organisation	8
1.4 Organisational flow.....	8
2 INVESTIGATION PROCESSES	9
2.1 Occurrence to be investigated	9
2.2 Institutions involved in investigations	9
2.3 Investigation process and approach of the AIA.....	9
3 INVESTIGATIONS.....	10
3.1 Overview of investigations completed in 2021, identifying key trends	11
3.2 Investigations completed and commenced in 2021.....	11
3.3 Research studies (or Safety Studies) commissioned and completed in 2021	13
3.4 Summaries of investigations completed in 2021	13
3.5 Comment and introduction or background to the investigations.....	13
3.6 Accidents and incidents investigated during last seven years (in 2014-2021).....	13
4 RECOMMENDATIONS	14
4.1 Short review and presentation of recommendations	14
4.2 Safety Recommendations issued in 2021.....	17
Annex 1/1	20

ABBREVIATIONS

AIA	Air, Maritime and Railway Traffic Accidents Investigation Agency
NIB	National Investigating Body
EU	European Union
IM	Infrastructure Manager
RU	Railway Undertaking
NSA	National Safety Authority
ERA	European Union Agency for Railways
LC	Level crossing
RS	Rolling stock
SA	Serious accident
A	Accident
I	Incident
SPAD	Signal passed at danger
SR	Safety Recommendation
HŽI	Croatian Railway Infrastructure Manager

CROATIAN RAILWAY NETWORK



Source: <https://www.hzinfra.hr/naslovna/mreza-hrvatskih-pruga/>

The construction length of the Croatian railway network is 2.617 km, of which:

- 2.343 km of single-track and
- 274 km of double-track lines.

The railway network contains 546 stations and stops, 1498 level crossings, 109 tunnels and 543 bridges.

INTRODUCTION TO THE REPORT

A National Investigating Body (NIB) operates in the Republic of Croatia as the Air, Maritime and Railway Traffic Accidents Investigation Agency (AIA), Department for Railway Traffic Accidents Investigation for conducting independent investigations of railway accidents and incidents according to Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast), which principles and requirements have been implemented into the Croatian national legislation. The aim of investigating railway accidents and incidents is to improve the safety of the railway system and prevent future accidents.

This annual report is issued by the AIA, Department for Railway Traffic Accidents Investigation for 2021, in accordance with Article 24(3) of Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast), Article 6(4)(5) of the Act of establishing the Air, Maritime and Railway Traffic Accidents Investigation Agency (Official Gazette Nos. 54/2013 and 96/2018) and Article 132(7) of the Act on Safety and Interoperability of the Railway System (Official Gazette No. 63/2020).

The annual report contains information regarding:

- the NIB,
- railway accidents and incidents investigation system,
- review of completed accidents and incidents investigations in 2021,
- issued safety recommendations.

1 INTRODUCTION TO THE INVESTIGATING BODY

1.1 Legal Basis

The process of the implementation of Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast), into the national legislation of the Republic of Croatia was completed with two national legal Acts, the Act of establishing the Air, Maritime and Railway Traffic Accidents Investigation Agency (Official Gazette Nos. 54/2013 and 96/2018) and the Act on Safety and Interoperability of the Railway System (Official Gazette No. 63/2020).

For accidents and incidents occurring from May 17, 2020, we are applying Commission Implementing Regulation (EU) 2020/572 of 24 April 2020 on the reporting structure to be followed in railway accident and incident reports with all 6 titles and their subtitles included in this Regulation and the English translation of the summary, safety recommendations and conclusions.

The AIA investigates accidents and incidents which, according to their nature and consequences, are divided into the following categories:

- serious accidents,
- accidents,
- incidents.

The accidents and incidents investigation performed by the AIA are independent of any other party and independent of the investigation conducted by other bodies, especially judiciary investigation and the investigation of the causes and circumstances of accidents and incidents conducted by Infrastructure Manager (IM) or Railway Undertakings (RU).

1.2 Role and Aim

The AIA was established on 29 July 2013 by the Act on Establishing of the Air, Maritime and Railway Traffic Accidents Investigation Agency (Official Gazette No. 54/13, 96/18) as a legal person with public authorities. The founder of the Agency is the Republic of Croatia and the founder's rights are exercised by the Government of the Republic of Croatia. The Agency is functionally and organizationally independent of all authorities responsible for air, maritime and railway traffic and of all legal and natural persons. The mission is to guarantee independent investigation of the causes and circumstances of railway accidents and incidents. The national legislation of Republic of Croatia does not authorize the AIA to investigate accidents and incidents within trams, trolleybuses and cable-cars.

The main goal of the AIA work is to prevent future accidents and incidents. Therefore, the AIA:

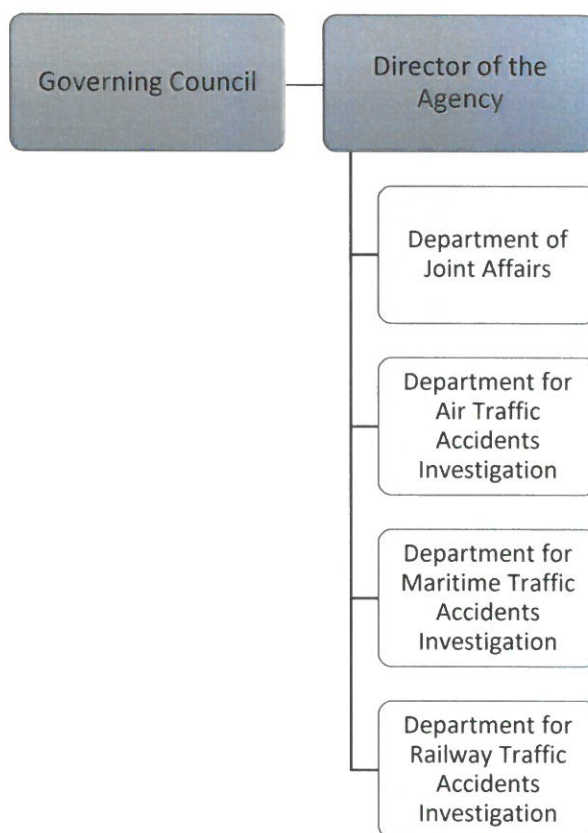
- investigates the causal and other factors that preceded the occurrence of railway accidents and incidents,
- issues final reports and safety recommendations to RUs, IM, to the National Safety Authority (NSA) or other authorities and parties.

1.3 Organisation

The AIA is a multimodal institution, consisting of three independent departments for safety investigations. One of the departments is the Department for Railway Traffic Accidents Investigation, which was established in April 2014. The remaining two departments are the Department for Air Traffic Accidents Investigation and Department for Maritime Traffic Accidents Investigation. In 2021, the Department for Railway Traffic Accidents Investigation consisted of two responsible Investigators (of which one is the Chief Investigator) and one senior expert advisor.

On November 3rd and 4th, 2021, a programme of peer review of the Department for Railway Traffic Accidents Investigation was held, in order to monitor the effectiveness and independence by other investigating bodies of the member states of the European Union (with representatives of Norway, Sweden and Poland) along with the support of the European Union Agency for Railways (ERA), in accordance with Article 22(7) of Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast).

The AIA organogram



1.4 Organisational flow

The structure of railway sector in Republic of Croatia and relationships among the parties involved are defined in the Act on Safety and Interoperability of the Railway System (Official Gazette No. 63/2020).

The bodies responsible for the railway system in the Republic of Croatia are the Ministry of The Sea, Transport and Infrastructure, NSA and AIA. The Ministry for Transport is in charge of the national railway legislation, including implementation of the EU railway legislation. The Railway Safety Agency is the NSA which activities include tasks related to safety certificates, approvals, permits and other authorizations, as well as supervision and inspection in order to ensure continuous compliance with railway system safety requirements, keeping prescribed registers and performing other tasks determined by national legislation and EU regulations. The AIA is independent of any party in the railway system. Budget funds of the AIA are granted through the Ministry of The Sea, Transport and Infrastructure budget system.

2 INVESTIGATION PROCESSES

2.1 Occurrence to be investigated

The national legislation of Republic of Croatia orders the AIA, in accordance with European principles, to investigate the causal and other factors of extraordinary events occurring within the railway system.

When making decision whether to investigate or not an extraordinary event, the AIA must take into consideration the legal requirements, all in order to be able to issue a safety recommendation from the said accident, if necessary, and to avoid similar accidents in the future.

2.2 Institutions involved in investigations

Following the occurrence of railway accident or incident, various parties may launch several independent investigations, depending on the occurrence's nature and consequences:

- **IM or RU** conducts accident or incident investigations within the framework of the safety management system,
- **AIA** investigates the causal and other factors of accidents or incidents and issues safety recommendations,
- **State Attorney's Office and Police Directorate** investigate accident or incident with the aim of defining responsibility for the committing of offenses or criminal acts.

In order to facilitate the work of the on-site investigation procedure, a Memorandum of Understanding between the Police Directorate, State Attorney's Office and NIB Croatia was signed on July 22, 2015.

2.3 Investigation process and approach of the AIA

The aim of the investigation of the causal and other factors of railway accidents and incidents is to gain knowledge for the prevention of future accidents and incidents, reducing the consequences and increasing the safety of railways.

Investigation performed by the Department for Railway Traffic Accident Investigation, focuses on the following aspects of each occurrence:

- independent investigation of the causal and other factors of railway accidents or incidents (serious accidents, accidents and incidents).

When notified about an accident or incident by an IM or RU, the Chief Investigator will decide whether it will immediately go to the accident-site or not. At the accident-site the Department for Railway Traffic Accidents Investigation will launch an independent investigation or just make onsite overview and make decision about launching an investigation later.

Within 30 days of receiving notification of an accident or incident, the Department for Railway Traffic Accidents Investigation decides whether to initiate an investigation and informs all parties involved. Also, the Department for Railway Traffic Accidents Investigation is obliged to inform ERA about the same within seven days from the day of making the decision to start the investigation.

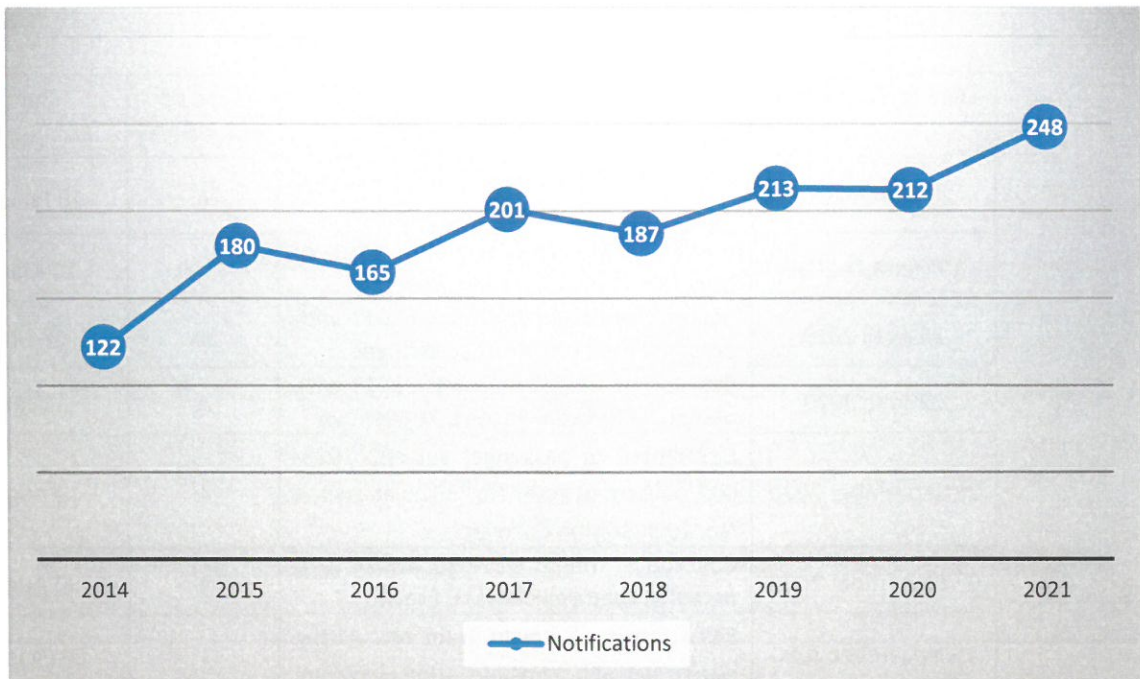
The Department for Railway Traffic Accidents Investigation will publish the conclusions of its investigation in Investigation Reports, the structure of which is based on the requirements of Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety (recast) and Commission Implementing Regulation (EU) 2020/572 of 24 April 2020 on the reporting structure to be followed for railway accident and incident investigation reports. If an accident or incident occurred without any violation of legislation or internal regulations of IM and/or RU, the Department for Railway Traffic Accidents Investigation issues safety recommendation with the aim of preventing reoccurrence of the accident or incident. Safety recommendation is issued also if there are other findings relevant for the safety.

3 INVESTIGATIONS

The Department for Railway Traffic Accidents Investigation has ensured telephone availability of railway accident investigators at any time on the basis of 7/24/365, in order to be able to react as soon as possible and perform an immediate accident-site in accordance with the provisions of the Act on Safety and Interoperability of the Railway System (Official Gazette No. 63/2020). Also, the e-mail address railway.safety@ain.hr has been established in the AIA as a central location where users of railway services can submit all reports of railway accidents and incidents, as well as all other relevant information relating to the field of railway traffic.

In 2021, we received a total of 248 notifications of occurrence in the railway system, of which 8 notifications referred to serious accidents, 84 to accidents, 132 to incidents and 24 notifications related to suicides that the AIA does not investigate.

All notifications received in 2021 were entered into the Database of received notifications kept in the AIA, in which a total of 1,528 notifications were recorded from 2014 to the end of 2021:



Following the received notifications, in 2021, we decided to perform an immediate accident-site on 33 accidents/incidents, in accordance with national and EU Laws for the investigation of accidents and incidents.

From those 33 investigations, 7 were commenced in 2021 as it was determined that there were failures in the railway system in specific events.

In 2021, we completed with Final reports and closed 9 investigations.

3.1 Overview of investigations completed in 2021, identifying key trends

Trends of completed investigations in 2021

Type of accidents investigated	Number of accidents	Number of victims		Damages in € (approx.)	Trends in relation to previous year
		Deaths	Ser. injuries		
Collisions	0	0	0	<150.000	0%
Derailments	3	0	0	<150.000	-60%
LC-accident	3	1	1	<150.000	+50%
Accident to persons involving RS in motion	0	0	0	<150.000	0%
Fire in RS	1	0	0	<150.000	+100%
Other	2	0	0	<150.000	+100%

3.2 Investigations completed and commenced in 2021

Investigations completed in 2021

Date of occurrence	Title of the investigation (Occurrence type, location)	Type of occurrence	Completed (date)
20 March 2020	Derailment of passenger train No. 3300 on derailer No. I-3 at station Čakovec	A	26 January 2021
19 October 2019	Broken wheel on locomotive 1141 of train No. 42811 at station Prečec	I	10 March 2021
26 April 2020	Collision of freight train No. 69617 with personal road vehicle at LC Brdovec	SA	18 May 2021
22 June 2020	Collision of freight train No. 29713 with personal road vehicle at LC Kupljenovo	A	11 June 2021
28 September 2020	Derailment of passenger set No. 7023-002 as part of train No. 3321 at switch No. 19 at station Čakovec	A	10 August 2021
07 September 2020	Collision of freight train No. 48974 with personal road vehicle at LC Pračno	A	30 August 2021
15 November 2020	Self-starting of freight train No. 41991 due to lack of braking at station Lipovljani	I	20 October 2021
16 October 2020	Fire on diesel engine sets No. 7121-101/102 as part of train No. 6016 near station Našice	A	16 November 2021
13 January 2021	Derailment of freight wagons during maneuvering at station Bregi	A	15 December 2021

SA-Serious accident, A-Accident, I-Incident

Investigations commenced in 2021

Date of occurrence	Title of the investigation (Occurrence type, location)	Type of occurrence
13 January 2021	Derailment of freight wagons during maneuvering at station Bregi	A
27 January 2021	Derailment of train No. 61019 at station Meja	A
05 March 2021	Running over worker on the track of the M101 line between stations Zaprešić - Podsused TV	SA
17 June 2021	Collision of passenger train No. 1272 with personal road vehicle at LC Grgur	SA
11 August 2021	Freight trains collision at Majurec (between stations Križevci-Lepavina)	SA
11 November 2021	Novska - SPAD	I
03 December 2021	Collision of train No. 81973 with personal road vehicles at LC Klara	A

SA-Serious accident, A-Accident, I-Incident

3.3 Research studies (or Safety Studies) commissioned and completed in 2021

Safety Studies completed in 2021

Date of occurrence	Title of the investigation (Occurrence type, location)	Type of occurrence	Completed (date)
	none		

Safety Studies commenced in 2021

Date of occurrence	Title of the investigation (Occurrence type, location)	Type of occurrence	Completed (date)
	none		

3.4 Summaries of investigations completed in 2021

See the Annex of this annual report.

3.5 Comment and introduction or background of the investigations

Investigations commenced in 2021 and not followed

Date of occurrence	Title of the investigation (Occurrence type, location)	Legal basis	Reason of non-following or suspension of investigations	Who, why, when (decision)
	none			

3.6 Accidents and incidents investigated during last eight years (in 2014-2021)

Rail investigations completed in the period 2014–2021

The Department for Railway Traffic Accidents Investigation started its work in April 2014, so first investigation was opened in 2014.

The table groups investigations by year of their completion

Accidents investigated		2014	2015	2016	2017	2018	2019	2020	2021	TOTAL
Serious accidents	Train collision	0	0	0	0	0	0	0	0	0
	Train collision with an obstacle	0	0	0	0	0	0	0	0	0
	Train derailment	0	0	0	0	0	0	0	0	0
	Level-crossing accident	0	0	1	1	0	0	0	1	3
	Accident to person caused	0	0	0	2	0	0	0	0	2

	by RS in motion									
	Fire in RS	0	0	0	0	0	0	0	0	0
	Involving dangerous goods	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	1	0	0	1
Accidents	Train collision	0	1	0	1	0	0	0	0	2
	Train collision with an obstacle	0	1	1	0	1	0	0	0	3
	Train derailment	1	3	2	4	4	3	5	3	25
	Level-crossing accident	0	2	1	1	0	1	2	2	9
	Accident to person caused by RS in motion	0	0	1	0	1	0	0	0	2
	Fire in RS	0	1	0	0	0	0	0	1	2
	Involving dangerous goods	0	0	0	0	0	0	0	0	0
	Other	0	0	0	0	0	0	0	0	0
Incidents		0	2	1	2	2	1	1	2	11
TOTAL		1	10	7	11	8	6	8	9	60

4 RECOMMENDATIONS

4.1 Short review and presentation of recommendations

A safety recommendation can be issued only on a basis of an independent investigation performed by the AIA. Safety recommendation is usually issued when an accident occurred without any violation of legislation or internal regulations of IM and/or RUs, or if there are other findings relevant for the safety. According to national legislation, safety recommendations are not legally binding. When a recommendation is issued, RUs and IM are obliged to adopt their own preventative safety measures based on issued safety recommendation.

Implementation of recommendations during 2014 – 2021

Recommendations issued		Recommendation implementation status					
		Implemented		In progress		Not implemented	
Year	[No.]	[No.]	[%]	[No.]	[%]	[No.]	[%]
2014	4	2	50%	1	25%	1	25%
2015	7	4	57%	2	29%	1	14%
2016	11	3	27%	1	9%	7	64%
2017	11	8	73%	2	18%	1	9%
2018	3	3	100%	0	0%	0	0%
2019	3	3	100%	0	0%	0	0%

2020	13	6	46%	6	46%	1	8%
2021	9	9	100%	0	0%	0	0%
TOTAL	61	38	62%	12	20%	11	18%

Accidents with safety recommendations issued in 2014 – 2021

Date of occurrence	Title of the investigation (Occurrence type, location)	Status of implem.	Completed (date)
11 July 2014	Derailment of a RS near station Mađarevo, SR/14	Implemented	22 December 2014
19 September 2014	Collision on LC in city Krapina, SR 1/14	Implemented	02 April 2015
19 September 2014	Collision on LC in city Krapina, SR 2/14	Accepted	02 April 2015
19 September 2014	Collision on LC in city Krapina, SR 3/14	Not implemented	02 April 2015
19 September 2014	Collision on LC in city Krapina, SR 1/15	Accepted	02 April 2015
4 September 2014	Fire in RS at station Varaždin, SR 2/15	Not implemented	18 May 2015
22 June 2014	Trains collision was avoided at station Dugo Selo, SR 3/15	Implemented	23 October 2015
10 November 2014	Derailment of maneuver locomotive at station Sisak, SR 4/15	Implemented	5 December 2016
11 November 2014	Accident caused by rolling stock in motion, Zdenčina, SR 5/15	Accepted	02 November 2015
12 January 2015	Collision on LC at place Kupinec, SR 6/15	Implemented	22 December 2015
11 September 2014	Derailment of locomotive due to rock slide near station Kaštel Stari, SR 7/15	Implemented	03 March 2016
27 February 2015	Accident on LC at place Kosovo, SR 1/16	Accepted	07 March 2016
27 February 2015	Accident on LC at place Kosovo, SR 2/16	Not implemented	07 March 2016
27 February 2015	Accident on LC at place Kosovo, SR 3/16	Not implemented	07 March 2016
27 February 2015	Accident on LC at place Kosovo, SR 4/16	Not implemented	07 March 2016
27 February 2015	Accident on LC at place Kosovo, SR 5/16	Not implemented	07 March 2016
10 July 2015	Serious accident on LC at place Švogari, SR 6/16	Implemented	12 September 2016
10 July 2015	Serious accident on LC at place Švogari, SR 7/16	Implemented	12 September 2016
10 July 2015	Serious accident on LC at place Švogari, SR 8/16	Not implemented	12 September 2016
10 July 2015	Serious accident on LC at place Švogari, SR 9/16	Not implemented	12 September 2016
10 July 2015	Serious accident on LC at place Švogari, SR 10/16	Not implemented	12 September 2016
30 June 2015	Accident to person caused by RS in motion at station Split Predgrađe, SR 11/16	Implemented	16 January 2017
28 December 2015	Collision on LC Male Sredice, SR 1/17	Implemented	07 July 2017
28 December 2015	Collision on LC Male Sredice, SR 2/17	Accepted	07 July 2017
12 May 2016	Passenger train crossed an unprotected LC at station Vinkovci, SR 3/17	Implemented	28 June 2017
16 July 2016	Derailment of wagons at Sljeme Tunnel, SR 4/17	Not implemented	31 August 2017

Date of occurrence	Title of the investigation (Occurrence type, location)	Status of implem.	Completed (date)
17 October 2016	Collision on LC Kuljevića near town Ivanec, SR 5/17	Accepted	11 October 2017
17 October 2016	Collision on LC Kuljevića near town Ivanec, SR 6/17	Implemented	11 October 2017
05 September 2016	Collision of two special railway vehicles on the station Zagreb Ranžirni, SR 7/17	Implemented	25 October 2017
05 October 2016	Trains crossed an unprotected LC Danica, SR 8/17	Implemented	27 February 2018
05 October 2016	Trains crossed an unprotected LC Danica, SR 9/17	Implemented	27 February 2018
05 October 2016	Trains crossed an unprotected LC Danica, SR 10/17	Implemented	27 February 2018
05 October 2016	Trains crossed an unprotected LC Danica, SR 11/17	Implemented	27 February 2018
27 March 2017	Derailment of wagons at station Zagreb Ranžirni, SR 1/18	Implemented	12 February 2018
27 March 2017	Derailment of wagons at station Zagreb Ranžirni, SR 2/18	Implemented	12 February 2018
04 April 2017	Passenger falling out of the wagon at station Križevci, SR 3/18	Implemented	09 May 2018
02 June 2018	Unauthorised movement of train No. 69327 at station Kutina, SR 1/19	Implemented	19 August 2019
02 June 2018	Unauthorised movement of train No. 69327 at station Kutina, SR 2/19	Implemented	19 August 2019
27 June 2018	Derailment of 2 freight wagons which hit the parapet during maneuver at station Slavonski Brod, SR 3/19	Implemented	30 September 2019
13 October 2018	Collision of passenger train No. 4708 with personal vehicle at LC Vernalska, SR 1/20	Implemented	14 July 2020
13 October 2018	Collision of passenger train No. 4708 with personal vehicle at LC Vernalska, SR 2/20	Implemented	14 July 2020
13 October 2018	Collision of passenger train No. 4708 with personal vehicle at LC Vernalska, SR 3/20	Accepted	14 July 2020
13 October 2018	Collision of passenger train No. 4708 with personal vehicle at LC Vernalska, SR 4/20	Implemented	14 July 2020
13 October 2018	Collision of passenger train No. 4708 with personal vehicle at LC Vernalska, SR 5/20	Implemented	14 July 2020
13 October 2018	Collision of passenger train No. 4708 with personal vehicle at LC Vernalska, SR 6/20	Accepted	14 July 2020
13 October 2018	Collision of passenger train No. 4708 with personal vehicle at LC Vernalska, SR 7/20	Accepted	14 July 2020
21 October 2018	Derailment of passenger train No. 783 at on the railway section Dugo Selo-Vrbovec, SR 8/20	Accepted	27 July 2020
21 October 2018	Derailment of passenger train No. 783 at on the railway section Dugo Selo-Vrbovec, SR 9/20	Not implemented	27 July 2020
5 May 2019	Falling of two containers from freight train No. 62006 while passing through station Škrlevo, SR 10/20	Accepted	24 August 2020

Date of occurrence	Title of the investigation (Occurrence type, location)	Status of implem.	Completed (date)
5 May 2019	Falling of two containers from freight train No. 62006 while passing through station Škrlevo, SR 11/20	Implemented	24 August 2020
23 September 2019	Collision of special purpose railway vehicle registered as the train No. 89949 with personal vehicle at LC Vartilen-Podrute, SR 12/20	Accepted	21 October 2020
18 June 2019	Derailment of the wagon of freight train No. 61153 due to the fracture of the axle at station Novoselec, SR 13/20	Implemented	25 November 2020
20 March 2020	Derailment of passenger train No. 3300 on derailler No. I-3 at station Čakovec, SR 1/21	Implemented	26 January 2021
19 October 2019	Broken wheel on locomotive 1141 of train No. 42811 at station Prečec, SR 2/21	Implemented	10 March 2021
22 June 2020	Collision of freight train No. 29713 with personal road vehicle at LC Kupljenovo, SR 3/21	Implemented	11 June 2021
07 September 2020	Collision of freight train No. 48974 with personal road vehicle at LC Pračno, SR 4/21	Implemented	30 September 2021
15 November 2020	Self-starting of freight train No. 41991 due to lack of braking at station Lipovljani, SR 5/21	Implemented	20 October 2021
15 November 2020	Self-starting of freight train No. 41991 due to lack of braking at station Lipovljani, SR 6/21	Implemented	20 October 2021
16 October 2020	Fire on diesel engine sets No. 7121-101/102 as part of train No. 6016 near station Našice, SR 7/21	Implemented	16 November 2021
16 October 2020	Fire on diesel engine sets No. 7121-101/102 as part of train No. 6016 near station Našice, SR 8/21	Implemented	16 November 2021
13 January 2021	Derailment of freight wagons during maneuvering at station Bregi, SR 9/21	Implemented	15 December 2021

4.2 Safety Recommendations issued in 2021

No. of the recommendation: SR 1/21	
Date of occurrence	Title of the investigation
20 March 2020	Derailment of passenger train No. 3300 on derailler No. I-3 at station Čakovec
Addressed to the NSA Railway undertakings should pay more attention to the prescribed procedures for the departure and passage of trains at stations and intermediate stations during regular training of mechanical staff.	
STATUS : Implemented (HŽ Putnički prijevoz Ltd.)	

No. of the recommendation: SR 2/21	
Date of	Title of the investigation

occurrence	
19 October 2019	Broken wheel on locomotive 1141 of train No. 42811 at station Prečec
Addressed to the NSA During the next major reparation (VP) of locomotives of serie 1141 subserie 000, the railway undertaking should consider equipping them with an electrodynamic brake.	
STATUS : Implemented (HŽ Cargo Ltd.)	

No. of the recommendation: SR 3/21	
Date of occurrence	Title of the investigation
22 June 2020	Collision of freight train No. 29713 with personal road vehicle at LC Kupljenovo
Addressed to the NSA The Infrastructure Manager should on the sections of railway lines where are installed signal safety devices for securing LCs type KŽCP-DK-EM manufactured by Končar KET (equipped with on-off system type MS2000), and on which it is reduced traffic intensity (oxidation is possible on the running part of the track), develop additional procedures regarding the reliability of device operation when trains operate through the mentioned LCs.	
STATUS : Implemented (HŽ Infrastruktura Ltd.)	

No. of the recommendation: SR 4/21	
Date of occurrence	Title of the investigation
07 September 2020	Collision of freight train No. 48974 with personal road vehicle at LC Pračno
Addressed to the NSA The Infrastructure Manager should apply the simplest solution to achieve control of lowering the barriers which are handled manually at all crossing points upon receipt of the preannouncement train dispatch.	
STATUS : Implemented (HŽ Infrastruktura Ltd.)	

No. of the recommendation: SR 5/21	
Date of occurrence	Title of the investigation
15 November 2020	Self-starting of freight train No. 41991 due to lack of braking at station Lipovljani
Addressed to the NSA The Railway Undertaking (TH) should review and update its safety management system, i.e. the part related to the Instructions for train drivers, and specify procedure for properly securing the train from self-starting by introducing brake handle position specifications, in order to eliminate the negative and frequent impact of the human error factor.	
STATUS : Implemented (Train Hungary Zagreb)	

No. of the recommendation: SR 6/21	
Date of occurrence	Title of the investigation
15 November 2020	Self-starting of freight train No. 41991 due to lack of braking at station Lipovljani

Addressed to the NSA
The Railway Undertaking (TH) should assess the risks posed by the danger of "improper train insurance", especially for machinery personnel who have recently passed the training test, and eliminate it by adopting additional measures to reduce the risk of human error.
STATUS : Implemented (Train Hungary Zagreb)

No. of the recommendation: SR 7/21	
Date of occurrence	Title of the investigation
16 October 2020	Fire on diesel engine sets No. 7121-101/102 as part of train No. 6016 near station Našice
Addressed to the NSA	
The involved railway undertaking should take action regarding the installation of a fire detector in the engine compartment and a hydrostatic transmission on sets of series 7121 and 7122.	
STATUS : Implemented (HŽ Putnički prijevoz Ltd.)	

No. of the recommendation: SR 8/21	
Date of occurrence	Title of the investigation
16 October 2020	Fire on diesel engine sets No. 7121-101/102 as part of train No. 6016 near station Našice
Addressed to the NSA	
The involved railway undertaking should take steps to install an automatic fire extinguishing system at the next regular repair process on sets of series 7121 and 7122.	
STATUS : Implemented (HŽ Putnički prijevoz Ltd.)	

No. of the recommendation: SR 9/21	
Date of occurrence	Title of the investigation
13 January 2021	Derailment of freight wagons during maneuvering at station Bregi
Addressed to the NSA	
The Infrastructure Manager should develop additional procedures/methods for risk assessment on railway sections where wooden sleepers are installed with regard to their oldness and determine the necessary measures to keep the risk under control.	
STATUS : Implemented (HŽ Infrastruktura Ltd.)	

INVESTIGATIONS COMPLETED IN 2021 SUMMARY

**Accident, derailment of passenger train No. 3300 on derailer No. I-3 at station Čakovec,
on 20 March 2020**



Type of occurrence:	Accident
Date and time:	20 March 2020, 07:08 a.m.
Occurrence type:	Train derailment
Description:	<p>On March 20, 2020 at 07:08 a.m. on the line M501 at the Čakovec station, during the departure of passenger train No. 3300 from the 1st track, it derailed at KM 060+983 on the derailer I-3 at the beginning of 21st (stub) track behind switch no. 18. The train operated on the route Varaždin-Kotoriba. In the mentioned accident, the trailer DMG 4 121 028, part of the passenger set 7 121 028, derailed with the second axle of the first bogie on the derailer I-3 on the 21st (stub) track and the train stopped 22 meters from the derailer. There were 5 passengers on the train at the time of the accident.</p>
Type of train:	Passenger train
Location:	Line No. M501, station Čakovec, derailer number 3
Parties:	HŽ Infrastruktura Ltd. (IM) and HŽ Putnički prijevoz Ltd. (RU)
Consequences:	There were no casualties in the accident and there was minor material damage to the engine set and infrastructure.
Direct cause:	The derailment of the trailer DMG 4 121 028, part of the passenger set 7 121 028, with the second axle of the first bogie on the derailer I-3 on the 21st (stub) track.
Safety recommendation:	AIN/06-SR-01/2021: Railway undertakings should pay more attention to the prescribed procedures for the departure and passage of trains at stations and intermediate stations during regular training of mechanical staff.

**Incident, broken wheel on locomotive 1141 of train No. 42811 at station Prečec,
on 19 October 2019**



Type of occurrence:	Incident
Date and time:	19 October 2019, 01:35 a.m.
Occurrence type:	Other event
Description:	On October 19, 2019 at 01:35 a.m. on the line M103, freight train number 42811 had set pass along the first track of Prečec station. Just before the input signal of the Prečec station, the driver of the freight train 42811 heard an unknown banging under the bogie. Due to the same, driver stops the train in front of the traffic office, inspected the locomotive and determined that the right monoblock wheel of the first axle of the steering wheel "A" had broken. After the wheel fracture is established, the locomotive driver declares the locomotive fault.
Type of train:	Freight train
Location:	Line No. M103, station Prečec
Parties:	HŽ Infrastruktura Ltd. (IM) and HŽ Cargo Ltd. (RU)
Consequences:	No one was injured in the incident. There was minor material damage on the involved locomotive.
Direct cause:	Thermal changes of the wheel rim material which initiated the appearance of cracks on the rolling surface of the wheels.
Safety recommendation:	AIN/06-SR-2/2021: During the next major reparation (VP) of locomotives of serie 1141 subserie 000, the railway undertaking should consider equipping them with an electrodynamic brake.

**Serious accident, collision of freight train No. 69617 with personal road vehicle at LC Brdovec,
on 26 April 2020**



Type of occurrence:	Serious accident
Date and time:	26 April 2020, 08:20 p.m.
Occurrence type:	LC accident
Description:	On April 26, 2020 at 08:20 p.m., at KM 443+898 on the line M101 Zaprešić-Savski Marof, at the LC "Brdovec" actively secured (light and sound) a personal road vehicle underflight the train No. 69617.
Type of train:	Locomotive train
Location:	Line No. M101, railway section Zaprešić - Savski Marof
Parties:	HŽ Infrastruktura Ltd. (IM), ENNA TRANSPORT Ltd. (RU) and personal road vehicle
Consequences:	In the mentioned accident, three people were suffered in a personal road vehicle, one was fatal and other two were injured. There was major material damage to the personal road vehicle, locomotive and infrastructure.
Direct cause:	The driving of a personal road vehicle over the LC immediately before the arrival of the machine train number 69617 despite the light and sound signalization, and the underflight under the train.
Safety recommendation:	The AIA has no safety recommendation related to this serious accident.

**Accident, collision of freight train No. 29713 with personal road vehicle at LC Kupljenovo,
on 22 June 2020**



Type of occurrence:	Accident
Date and time:	22 June 2020, 06:50 p.m.
Occurrence type:	LC accident
Description:	On June 22, 2020 at 06:50 p.m. at the LC "Kupljenovo", actively secured (light, sound and halfbumper), on the line R201 at KM 010 + 383, a personal vehicle ran into the side of the machine train number 29713, which operated on the route Varaždin-Zagreb Central Station.
Type of train:	Passenger train
Location:	Line No. R201, LC Kupljenovo
Parties:	HŽ Infrastruktura Ltd. (IM), HŽ Putnički prijevoz Ltd. (RU) and personal road vehicle
Consequences:	The driver of the personal vehicle was slightly injured in the accident, which caused minor material damage to the motor set and greater material damage to the personal road vehicle.
Direct cause:	The crossing of a personal road vehicle over the LC when the machine train number 29713 arrived on it while the light and sound signaling was on and the bumpers were raised, and a personal vehicle ran into the train composition number 29713
Safety recommendation:	AIN/06-SR-03/2021: The Infrastructure Manager should on the sections of railway lines where are installed signal safety devices for securing LCs type KŽCP-DK-EM manufactured by Končar KET (equipped with on-off system type MS2000), and on which it is reduced traffic intensity (oxidation is possible on the running part of the track), develop additional procedures regarding the reliability of device operation when trains operate through the mentioned LCs.

Accident, derailment of passenger set No. 7023-002 as part of train No. 3321 at switch No. 19 at station Čakovec, on 28 September 2020



Type of occurrence:	Accident
Date and time:	28 September 2020, 10:35 p.m.
Occurrence type:	Train derailment
Description:	On September 28, 2020 at 10:35 p.m. at the Čakovec station, on the M501 line, there was derailment of the passenger train number 3321, which was composed of diesel engine sets 95 78 7023 004 and 95 78 7023 002 at KM 060+994 on switch number 19. The train operated on the route Kotoriba - Varaždin. In the mentioned accident, the diesel engine set number 95 78 7023 004 derailed in the direction of travel with the last bogie. The train stopped 40 meters from switch number 19. There were no passengers on the train at the time of the accident.
Type of train:	Passenger train
Location:	Line No. M501, station Čakovec
Parties:	HŽ Infrastruktura Ltd. (IM) and HŽ Putnički prijevoz Ltd. (RU)
Consequences:	There were no casualties or injuries in the accident and there was major material damage to the motor kit and infrastructure.
Direct cause:	Derailed diesel engine set No. 95 78 7023 004, with the second, third and fourth bogies in the direction of travel on switch No. 19, due to an improperly secured driving route.
Safety recommendation:	The AIA has no safety recommendation related to this accident.

Accident, collision of freight train No. 48974 with personal road vehicle at LC Pračno, on 07 September 2020



Type of occurrence:	Accident
Date and time:	07 September 2020, 03:06 p.m.
Occurrence type:	LC accident
Description:	On September 07, 2020 at 03:06 p.m. at the LC „Pračno“ secured by a barriers which operate the LC guard, at KM 376+548 on the line M502, a freight train No. 48974 collided with a personal road vehicle.
Type of train:	Freight train
Location:	Line No. M502, LC Pračno
Parties:	HŽ Infrastruktura Ltd. (IM), HŽ Cargo Ltd. (RU) and personal road vehicle
Consequences:	The person who was driving a personal road vehicle was seriously injured in the accident, there was large material damage to the personal road vehicle and locomotive.
Direct cause:	A train collision with a personal road vehicle due to an unsecured LC before the train passed i.e. the bumpers were not lowered by the LC guard.
Safety recommendation:	AIN/06-SR-04/2021: The Infrastructure Manager should apply the simplest solution to achieve control of lowering the barriers which are handled manually at all crossing points upon receipt of the preannouncement train dispatch.

**Incident, self-starting of freight train No. 41991 due to lack of braking at station Lipovljani,
on 15 November 2020**



Type of occurrence:	Incident
Date and time:	15 November 2020, 07:41 a.m.
Occurrence type:	Other event
Description:	On November 15, 2020. at 07:41 a.m. was an incident on the line marked M103 at station Lipovljani in KM 009+140, where a trains collision was avoided. Train no. 41991 which was stopped at station Lipovljani to change the machine staff, after the train driver got off the locomotive it self-started in the direction of Novska, passed switch no. 3 and cut off the switch no. 1. Furthermore, it was successfully stopped by the train owner's staff, at a distance of 22m in front of train no. 89280 coming from the direction of Novska.
Type of train:	Freight train
Location:	Line No. M103, station Lipovljani
Parties:	HŽ Infrastruktura Ltd. (IM), ENNA TRANSPORT Ltd. (RU) and Train Hungary Zagreb (RU)
Consequences:	Mentioned incident did not cause either injuries/deaths or damages at the railway infrastructure or rolling stock involved.
Direct cause:	Self-starting of train number 41991 due to improper securing of the train during the stop at the station for changing the machine staff.
Safety recommendations:	AIN/06-SR-05/2021: The Railway Undertaking (TH) should review and update its safety management system, i.e. the part related to the Instructions for train drivers, and specify procedure for properly securing the train from self-starting by introducing brake handle position specifications, in order to eliminate the negative and frequent impact of the human error factor. AIN/06-SR-06/2021: The Railway Undertaking (TH) should assess the risks posed by the danger of "improper train insurance", especially for machinery personnel who have recently passed the training test, and eliminate it by adopting additional measures to reduce the risk of human error.

Accident, fire on diesel engine sets No. 7121-101/102 as part of train No. 6016 near station Našice, on 16 October 2020



Type of occurrence:	Accident
Date and time:	16 October 2020, 09:10 p.m.
Occurrence type:	Fire in RS
Description:	On October 16, 2020, at 9:10 pm, during the traffic of passenger train number 6016 on the line marked R202 at KM 072+600 near the station Našice, a fire broke out on a diesel engine set of series 7121-101. At the time of the fire, there were a number of passengers and train staff on board, none of them were injured, while the diesel engine set was completely burnt.
Type of train:	Passenger train
Location:	Line No. R202, near station Našice
Parties:	HŽ Infrastruktura Ltd. (IM) and HŽ Putnički prijevoz Ltd. (RU)
Consequences:	No one was killed or injured in the accident, there was major material damage to the vehicle and infrastructure.
Direct cause:	A fault in the electrical installations on the passenger diesel engine set of series 7121.
Safety recommendations:	AIN/06-SR-07/2021: The involved railway undertaking should take action regarding the installation of a fire detector in the engine compartment and a hydrostatic transmission on sets of series 7121 and 7122. AIN/06-SR-08/2021: The involved railway undertaking should take steps to install an automatic fire extinguishing system at the next regular repair process on sets of series 7121 and 7122.

**Accident, derailment of freight wagons during maneuvering at station Bregi,
on 13 January 2021**



Type of occurrence:	Accident
Date and time:	13 January 2021, 10:30 a.m.
Occurrence type:	Train derailment
Description:	<p>On January 13, 2021, at 10:30 a.m. at station Bregi, freight wagons derailed on the line R202 during maneuvering. During the maneuvering of a group of 28 wagons with locomotive number 92812016081-9 from the 4th track to the 3rd track, wagons number 33879339564-5, 33879333902-3 and 33879334741-4 derailed and overturned, wagon number 33879334641-6 derailed with both bogies and wagon number 33879334625-9 with one bogie and collisions with wagon bumpers number 33879334963-4 on wagon bumpers number 33879345238-8. The part of the shunting composition of 18 wagons that was in front of the overturned wagons separated from them and remained on the track. The rear wagon of that composition number 33879334963-4 remained with the second bogie in the air in the direction of movement of the shunting composition.</p>
Type of train:	Maneuver composition
Location:	Line No. R202, station Bregi
Parties:	HŽ Infrastruktura Ltd. (IM) and Rail Cargo Carrier Croatia Ltd. (RU)
Consequences:	There were no casualties in the accident, and there was major material damage to the freight wagons and infrastructure.
Direct cause:	The derailment and overturning of wagons number 33879339564-5, 33879333902-3 and 33879334741-4, and derailment of wagon number 33879334641-6 with both bogies and wagon number 33879334625-9 with one bogie, due to poor infrastructure condition i.e. track.
Safety recommendation:	AIN/06-SR-09/2021: The Infrastructure Manager should develop additional procedures/methods for risk assessment on railway sections where wooden sleepers are installed with regard to their oldness and determine the necessary measures to keep the risk under control.