



ROMANIAN RAILWAY INVESTIGATION  
AGENCY  
- AGIFER -

ANNUAL REPORT

2022



## INTRODUCTION

This is the Annual Report of Romanian Railway Investigation Agency - AGIFER (hereinafter referred to as AGIFER) for 2022. It meets with the requirement of the Directive 2016/798/EC of European Parliament and Council, transposed into Romanian legislation by the Emergency Ordinance no.73/2019 *for railway safety*.

This reference legislation is uploaded also on AGIFER site [www.agifer.ro](http://www.agifer.ro)

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## 1. PRESENTATION

### 1.1 1.1. Foreword of AGIFER General Manager

Over 2022 it was found, against previous year, an increase of 8% of the number of investigations opened by AGIFER for the accidents consisting in derailments of railway vehicles from the composition of trains in running, respectively an increase of 3% of the number of railway accidents occurred in the trains running, accidents for which AGIFER must open investigation, among these being included also an accident consisting in the collision between two freight trains, that generated damages over 1 million EUR.

From these 34 railway accidents for which the investigation was completed over the analyzed period of time, 1 case consisted in the collision between two freight trains, 26 were derailments and 7 fires at the rolling stock (5 at the locomotives and 2 at wagons). From those 26 derailments, regarding the causal factors, in 16 cases there were nonconformities at the track condition, especially improper condition of the wooden sleepers (10), in 5 cases both nonconformities at the track condition and at the rolling stock, in 2 cases nonconformities concerning the loading of wagons and in 3 cases failure at the rolling stock. Over the year analysed (2022), there was found an increase over 13% of the number of railway accidents for which AGIFER completed the investigation.

There are still a very high share of accidents for which the investigations revealed that the resources allocated for maintenance and investments are not enough, so in many situations the deadlines for repairs at the rolling stock and railway infrastructure are not observed, and the insufficient specialized human resources influenced unfavourably the activity. Also, the assessment, management and keeping under control the risks continue to need a special attention.

Regarding the cooperation with other investigation bodies from the network of European investigation bodies, AGIFER continued to participate actively within the meetings of the working groups, as follows:

- Peer-review working group, in accordance with the provisions of art.22(7) from the Directive no.798/2016 for the railway safety;
- Working group for the working out the guides of the National Investigation Bodies' Network;
- Working group focused on the setting up of scenarios of occurrences for the Common Safety Method for the Assessment of the performance safety level of the railway enterprises.

AGIFER participated also in the seminars of European Safety, Reliability & Data Association - EsREDA, where there are present specialists on safety investigation for the air, chemical and nuclear fields, etc.

The cooperation with the railway economic operators within the investigations, although the conclusions of the investigation reports were not always comfortable for them, revealing real problems that have seriously to be kept under control, was based on the understanding of the common purpose of railway safety improvement, considering the lessons to be learned.

I'd like to express my thanks to all the railway undertakings, infrastructure administrator/managers and entities in charge with the maintenance and their employees, which collaborated effectively during the investigations with, supporting us in our activity.

**AGIFER General Manager**  
DUMITRU Laurențiu-Cornel

## 1.1 Role and purpose

### Role of Romanian Railway Investigation Agency-AGIFER

AGIFER investigates all the accidents and incidents in the train running, on railway and metro networks, as well as the incidents that in slightly different conditions should have led to serious accidents, including the technical failures at the structural subsystems or at the interoperability constituents, parts of European conventional and high speed system.

According to the provisions of the Emergency Ordinance no. 73/2019 *for the railway safety* and of the Government Decision no.117/02.03.2010 for the approval of the Regulation for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and metro safety (hereinafter referred to as *Investigation Regulation*), in making the decision to start an investigation, AGIFER considers:

- seriousness of the accident or incident;
- if it is part of a series of accidents or incidents relevant for whole system;
- its impact on the community railway safety;
- requests of the infrastructure administrators, railway undertakings, Romanian Railway Safety Authority or of other member states of European Union

### AGIFER purpose

Through the investigations of the accidents and incidents, AGIFER follows the improvement of the railway safety and prevention of some accidents and incidents similar to those investigated. The investigations, if necessary, have as final result safety recommendations, that are proposals for the improvement of the railway safety.

## 1.2 General data about AGIFER

### Employees at the end of 2022

At the end of 2022, AGIFER had 40 employees, that is:

- 1 general manager
- 1 deputy general manager;
- 1 economic director;
- 3 advisers of the general manager;
- 5 department heads;
- 1 office head;
- 21 investigators;
- 4 experts
- 1 technician
- 1 referent
- 1 economist

### Budget

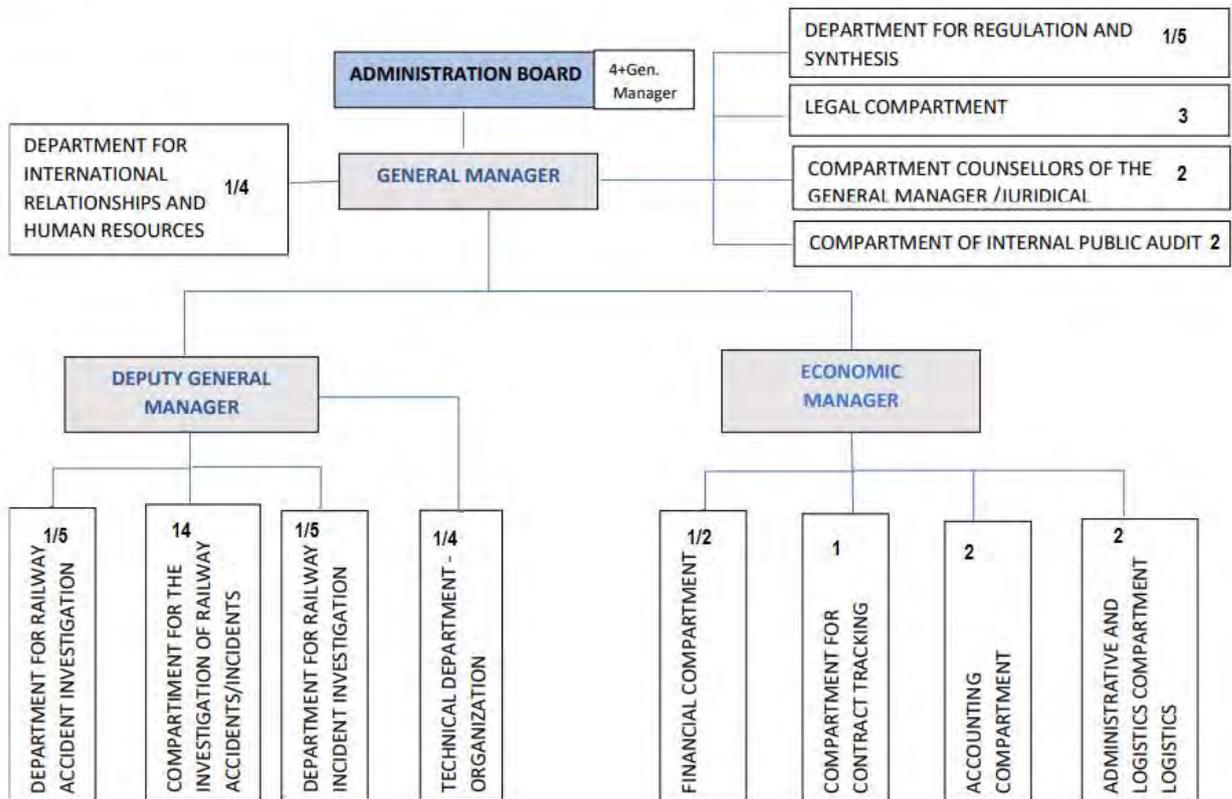
For its activity in 2022, AGIFER had a budget of 6.455.645 RON, that is 1.304.856 EUR (considering an exchange rate at the 30th December 2022 1 € = 4,9474 lei).

## 1.3 Organization

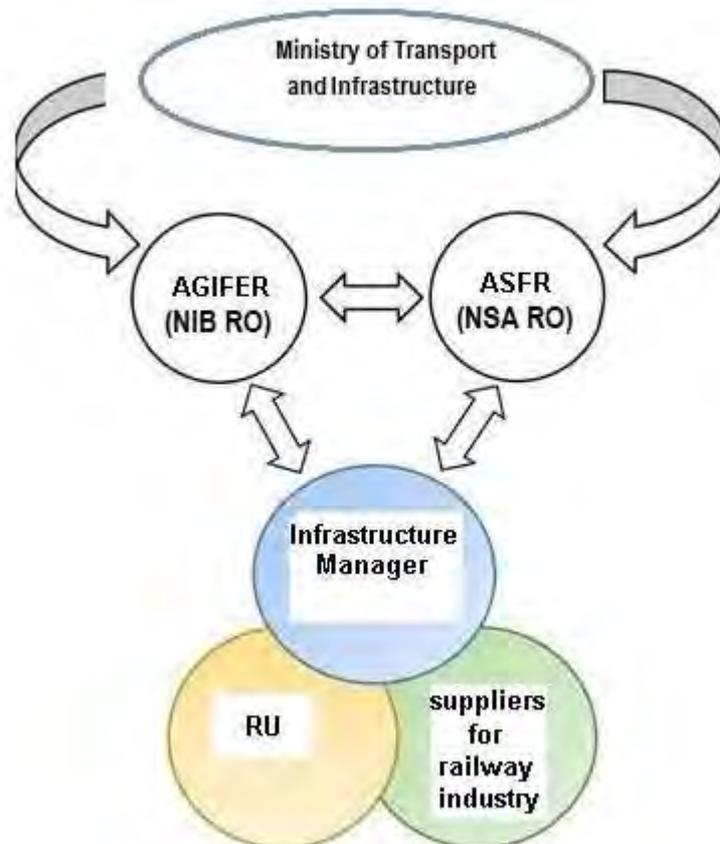
In 2018, through the Order of Minister of Transports no.1171/11.07.2018 the organization chart of Romanian Railway Investigation Agency – AGIFER was approved, it being presented below:

### Romanian Railway Investigation Agency-AGIFER

Total number of employees 50  
 Leading positions 9



#### 1.4 Organization diagram



## 2 INVESTIGATION PROCESS

The investigation aims the prevention of the accidents and incidents and includes the collection and analysis of the information, establishment of the conditions, including the determination of the causes and, if case, issuing of safety recommendations.

The investigators in charge fulfil their tasks as efficiently as possible and as soon as possible. The investigation is performed independently of any legal inquiry. The investigation does not aim any way the establish the guilty or responsibility.

The result of an accident or incident investigation is the object of the investigation report, worked out according to the seriousness of the accident or incident. The report presents the investigation objectives and includes, if case, safety recommendations.

The investigation is carried out as open as possible, so all the parties can be heard and take notice about the results. The railway infrastructure administrator, the railway undertakings involved, Romanian Railway Safety Authority, European Union Agency for Railways, the victims and their relatives, the keepers of the goods damaged, the manufacturers, the emergency services involved, the representatives of the staff and the users have the possibility to supply technical information relevant for the improvement of the investigation report quality. So, in the last stage of the investigation process, AGIFER works out a draft report, that is sent to all mentioned before, in order to give them the possibility to send relevant technical information.

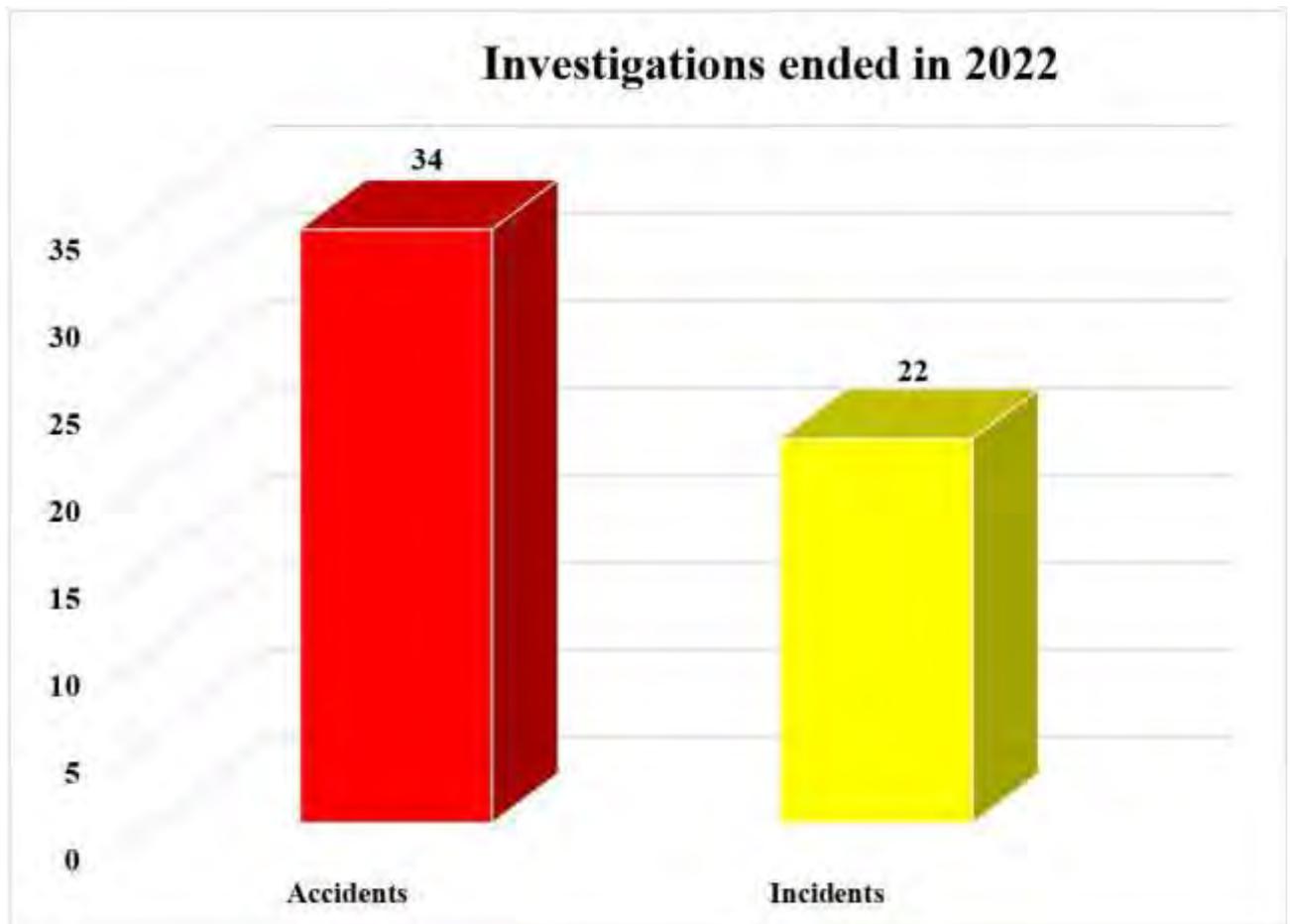
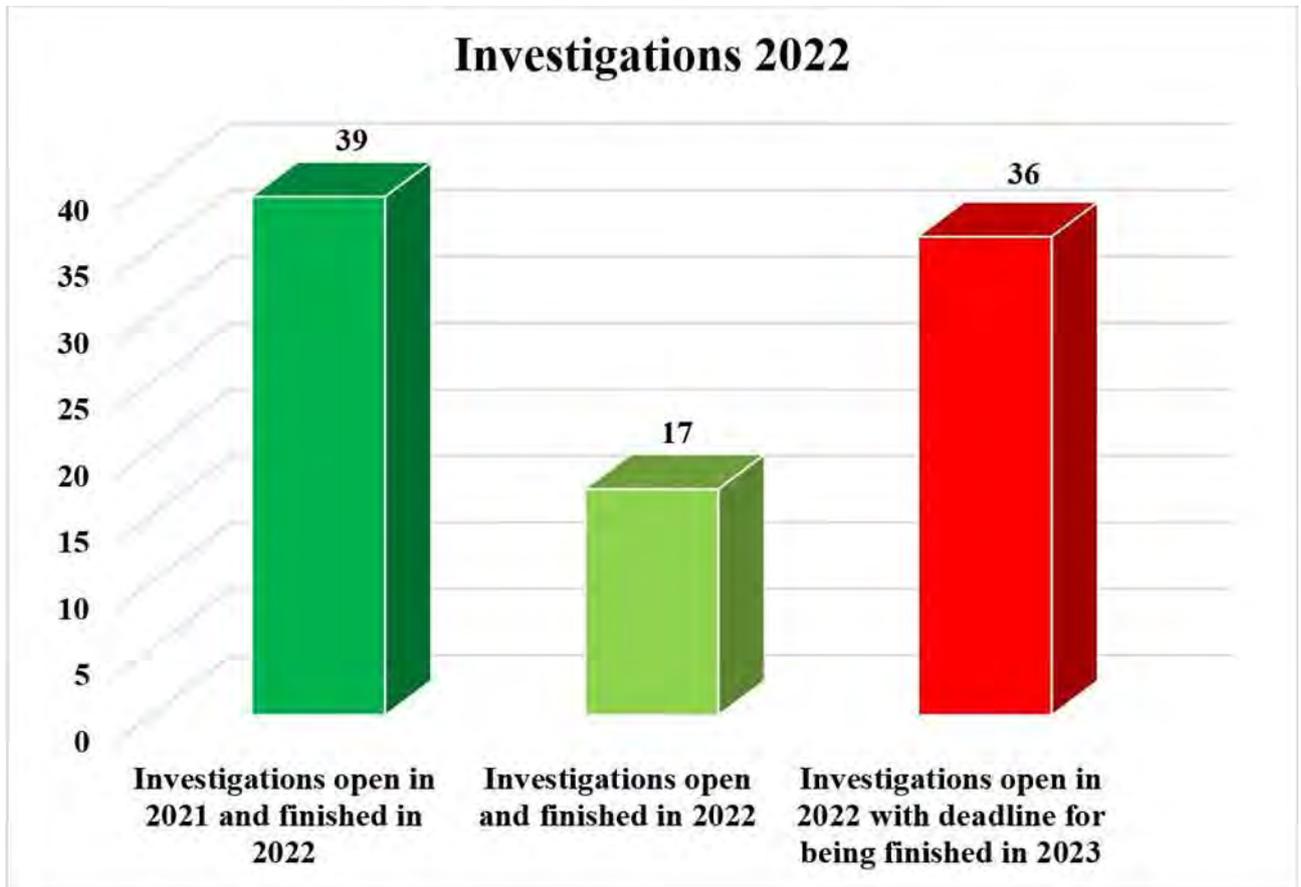
The technical information supplied, the opinions and comments are analyzed and if they are relevant for the investigation, they will be considered, being included in the final report. The investigation report is endorsed by the management of Romanian Railway Investigation Agency – AGIFER for being uploaded on its site

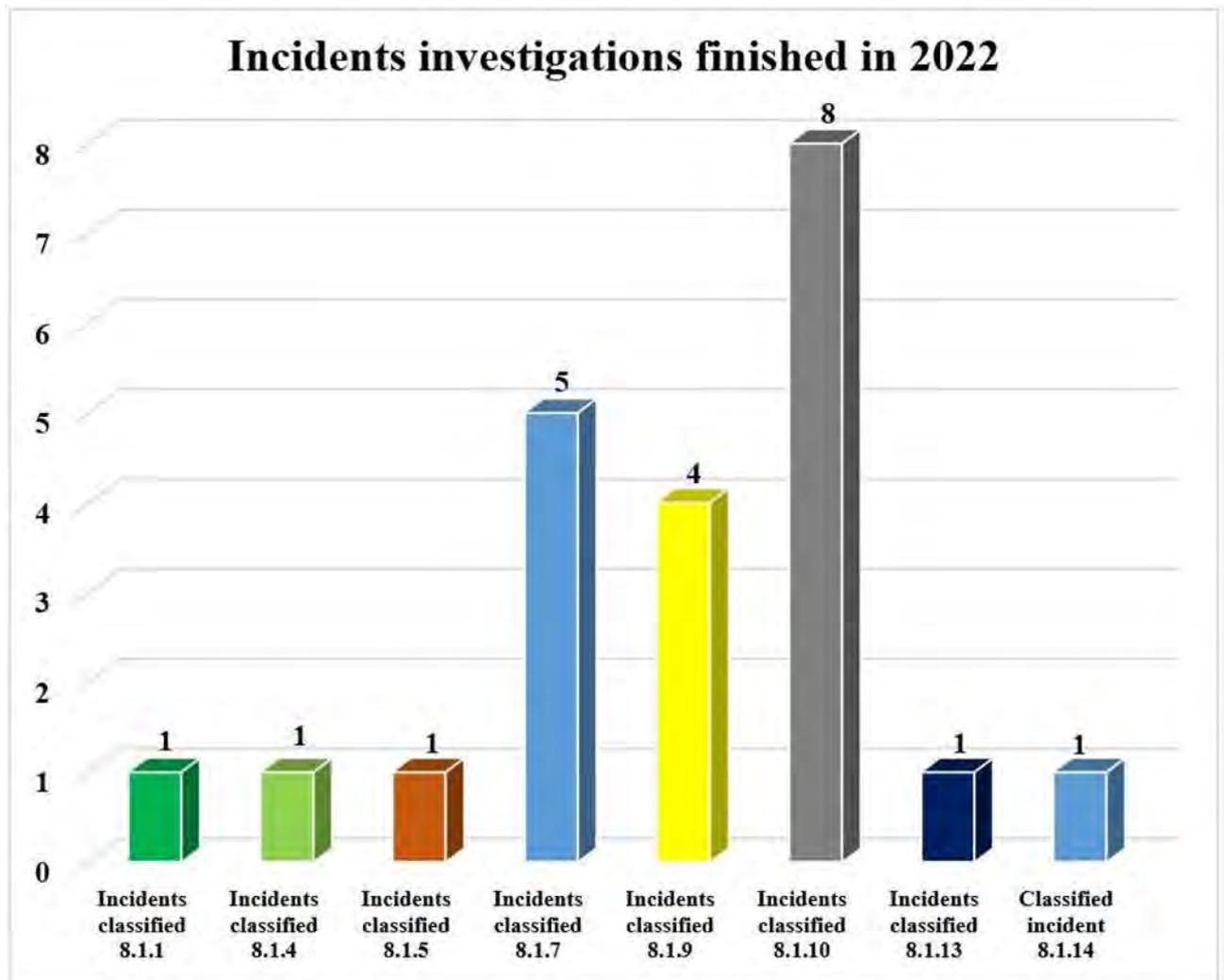
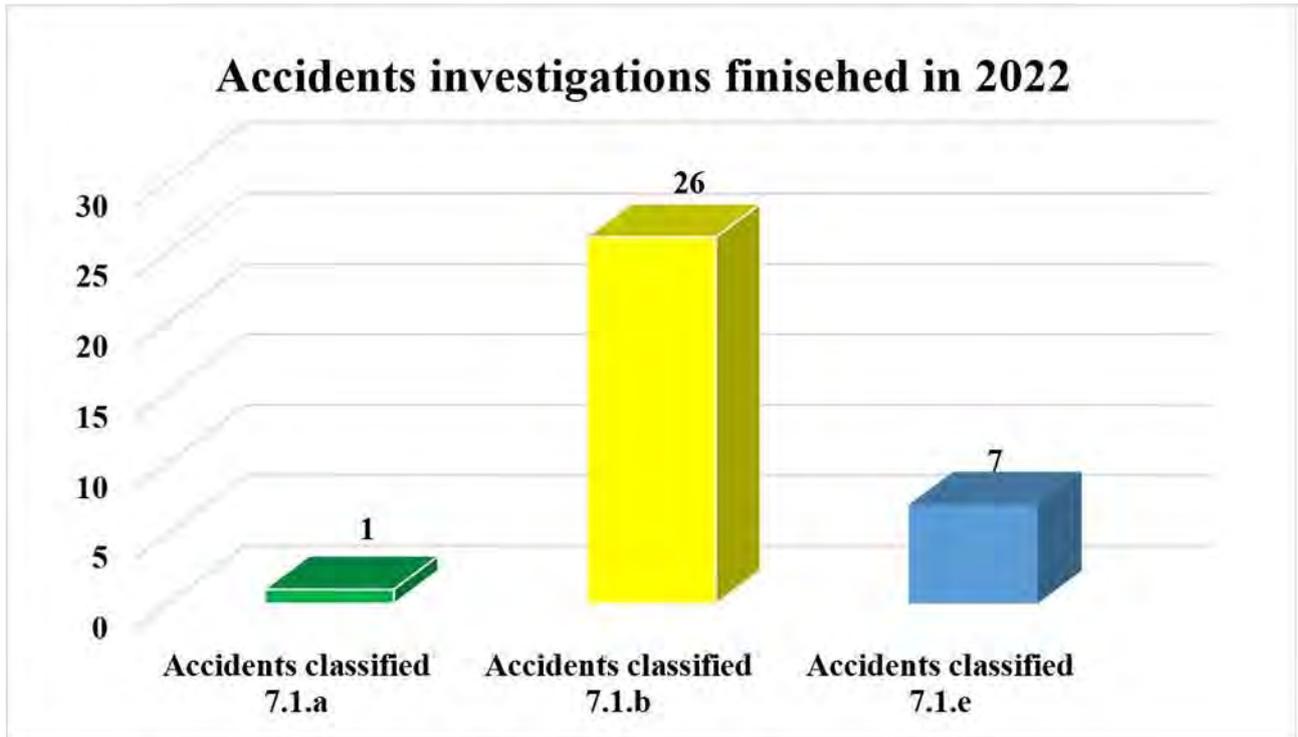
### 2.1 Events investigated

In 2022, AGIFER staff investigated **92** accidents/incidents, according to the provisions of *the Emergency Ordinance no. 73/2019* and of *the Regulation for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety*, approved by the *Government Decision 117/2010* – hereinafter referred to as *Investigation Regulation*. From those **92** investigations, **39** were open in 2021, and the other ones of **53** were open in 2022.

In 2022, one also completed and closed **56** investigations, respectively:

- **34 railway accidents;**
- **22 railway incidents**, classified according to the provisions of art.8.1 group A from the *Investigation Regulation*, for which Romanian Railway Investigation Agency ensured the investigator in charge.





## 2.2 Situation of the investigations open/completed in the last 5 years

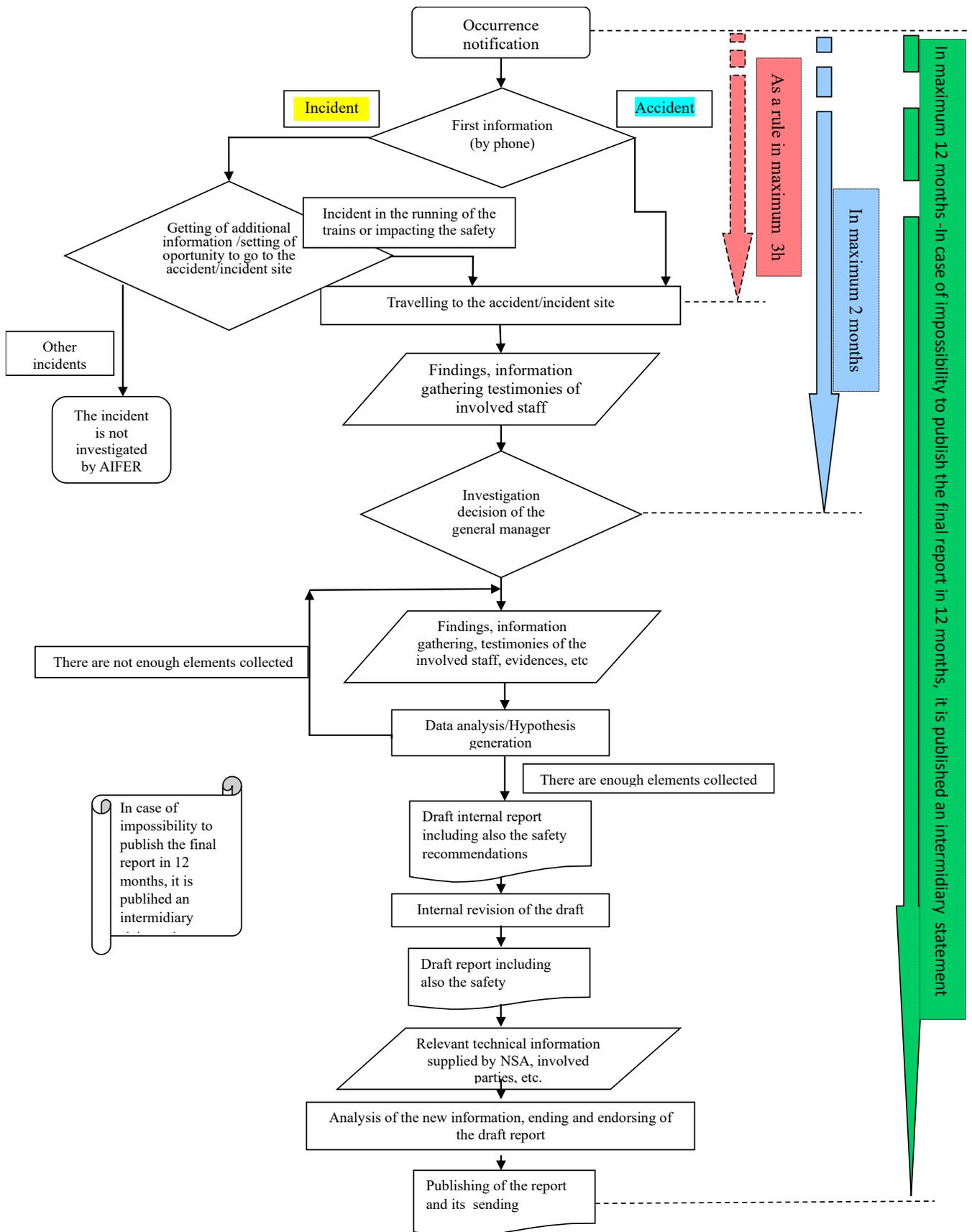
	Number of the investigations open			Number of the investigations completed		
	Accidents	Incidents	TOTAL	Accidents	Accidents	TOTAL
2018	32	26	58	25	12	37
2019	45	24	69	32	31	63
2020	29	17	46	42	25	67
2021	32	25	57	30	24	54
2022	33	20	53	34	22	56

## 2.3 Institutions involved in the investigation (currently or exceptionally)

Starting with its setting an up to now, during the investigations, Romanian Railway Investigation Agency - AGIFER cooperated with the authorities in charge with the legal inquiry, as well as with other authorities with responsibilities of intervention at the accident/incident site.

According to the provisions of the Emergency Ordinance no.73/2019 for railway safety, Romanian Railway Investigating Agency – AGIFER can use in the investigations, if necessary, specialists from related fields. During 2022 there was no cases of appointment specialists outside AGIFER within the commissions for the investigation of the railway accidents.

2.4 The diagram of the investigation process



### 3 INVESTIGATIONS

#### 3.1 Overview on the investigations completed in 2022 as against to 2021, identification of the main tendencies

Type of the accidents investigated in 2022 <sup>(1)</sup>	Number of accidents	Number of victims		Damages (lei)	Damages (€)	Tendency of the accident number, as against to 2021 (difference between the number of cases and percentage)
		Deaths	Seriously injured			
Trains collisions	1	-	-	5.579.870,75	1.129.734,31	0 (0%)
Trains derailments	26	-	-	4.375.590,14	886.988,36	+4 (+15,38%)
Road vehicles hits at the level crossings	0	-	-	-	-	0 (0%)
Fires in the rolling stock	7	-	-	18.240.458,63	3.696.467,93	-1 (-14,28%)
<b>Total</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>28.195.919,52</b>	<b>5.713.190,60 €</b>	<b>+4 (+11,76%)</b>

<sup>(1)</sup> one took into account the year of the investigation completion;

#### 3.2. Investigations completed and started in 2022

In 2022 Romanian Railway Investigation Agency completed and closed **56** investigations (from which **36** investigations opened in 2021) and started the investigation in **53** cases, from which 17 investigations were completed and closed in 2022, and 36 ones are going to be completed and closed in 2023.

In the table below there are presented the investigations and their legal basis, considering the requirements of European Directive for the railway safety and of the national legislation

#### Investigations completed in 2022

No	Date of occurrence	Presentation	Legal basis of the investigation <sup>(1)</sup>	Date of completion
1	04.02.2021	In the railway county Timișoara, between Domașnea Cornea and Poarta railway stations, km 435+100, in the running of freight train no.60516-1 (got by the railway undertaking SC Tim Rail Cargo SRL), a fire burst into the banking locomotive EA 1084.	i	03.02.2022
2	16.02.2021	In the railway county București, track section București Nord - Videle (electrified double-track line), in Bucureștii Noi railway station, on the connecting line between the switches no.6C and 30 („Governmental line”), km 0+230, two axles (first one from each bogie in the running direction) of the locomotive EA 2002, light one, running like train no.39512 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL) derailed.	i	27.01.2022

3	26.03.2021	In the railway county Braşov, track section Braşov - Sighişoara, Augustin railway station, in the running of the freight train no.80599-2 (got by the railway undertaking SC Grup Feroviar Român SA), both axles of first bogie from the 9 <sup>th</sup> wagon derailed in the running direction.	i	24.03.2022
4	29.03.2021	On the metro network SC TMB „METROREX” SA Bucureşti, between Piaţa Victoriei 1 and Aviatorilor metro stations, in the running of metro train set no.18, path 15, the train consisting in the electric train set (TEM) no.1324-2324, the torque rod and the left current collector broke, in the running direction, from the bogie no.1 of the unit M2 of the semi-train no.2324 and they hit the tunnel installations.	ii	22.02.2022
5	30.03.2021	In the railway county Bucureşti, track section Bucureşti Nord - Videle (electrified double-track line), in Vadu Lat railway station, when the freight train no.20574-1 (got by the railway undertaking SC CER FERSPEED SA) left the diverging track 2 from the railway station to track I, to Zăvestreni railway station CF, having route on the switches no.14 and no.10, two wagons derailed and overturned (the 11 <sup>th</sup> and 12 <sup>th</sup> ones in the train composition).	i	09.02.2022
6	06.04.2021	In the railway county Braşov, track section Braşov - Sighişoara (electrified double-track line), in Sighişoara railway station, when the passenger train R.3528 (got by the railway undertaking SNTFC „CFR Călători” SA) left the railway station, the first two cars of the train derailed (all axles of the first wagon and first axle of the second one derailed).	i	03.03.2022
7	09.04.2021	In the railway county Constanţa, noninteroperable track section Năvodari - Dorobanţu (not-electrified single-track line, railway infrastructure manager SC Grup Feroviar Român SA), between Năvodari and Nazarcea railway stations, km. 22+400, in the running of freight train no.89576, got by the railway undertaking SC Grup Feroviar Român SA, 3 wagons derailed (3 <sup>rd</sup> one, the 6 <sup>th</sup> one and the 11 <sup>th</sup> one of the train).	i	23.02.2022
8	11.04.2021	In the railway county Constanţa, non-interoperable track section Palas – Năvodari (railway infrastructure manager SC Grup Feroviar Român SA), between the railway stations Palas and Constanţa Mărfuri, not-electrified single-track line, km 1+330, in the running of freight train no.80639 (got by the railway undertaking SC Grup Feroviar Român SA), two wagons of the train derailed (the 32 <sup>nd</sup> and 33 <sup>rd</sup> ones)	i	06.04.2022
9	01.06.2021	In the railway county Craiova, track section Titu - Goleşti (not-electrified double-track line), in Goleşti railway station, in the running of passenger train no.1897 (got by the railway undertaking SNTFC „CFR Călători” SA), the signals XIC,	iii	31.05.2022

		XPIII, and XIII were passed on danger, being on the position „STOP, without passing the signal in stop position!”, and the switch no.15 was forced, the train being stopped on the insulated track section no.50/56.		
10	06.06.2021	In the railway county Timișoara, track section Caransebeș - Orșova (electrified single-track line), in Poarta railway station, after stabling the freight train no.81690 (got by the railway undertaking SNTFM „CFR Marfă” SA), a fire burst into the hauling locomotive EA 071.	i	30.05.2022
11	15.06.2021	In the railway county Cluj, track section Deda – Dej Călători (electrified double-track line), in Dej Triaj the railway station, on switch no.6A, in the running of freight train no.48375, hauled with the locomotive DA 897 (got by the railway undertaking SNTFM „CFR Marfă” SA) and consisting in 14 wagons type Faccpps (got by the railway infrastructure administrator CNCF „CFR” SA), two wagons derailed (the 3rd and 4th ones of the train).	i	07.06.2022
12	26.06.2021	In the railway county Brașov, track section Brașov - Sighișoara (electrified double-track line), on switch no.8, end Y of Vânători railway station, axle no.6, the first in the in the running direction from the locomotive EA 317 (got by the railway undertaking SNTFM „CFR Marfă” SA) that hauled the freight train no.21817-2 derailed.	i	15.06.2022
13	28.06.2021	In the railway county Craiova, track section Craiova – Piatra Olt (not-electrified single-track line), in the railway station Robănești, the passenger train Interregio no.9036 (got by railway undertaking SNTFC „CFR Călători” SA), having route for passing on the direct line II and the entry semaphore D1/2 on the position „FREE on the direct line entered on the diverging track 3 from the railway station.	iii	07.06.2022
14	08.07.2021	In the railway county Cluj, track section Războieni - Apahida (electrified double-track line), when the train passenger train R.3081 (got by the railway undertaking SNTFC „CFR Călători” SA) left the railway station Câmpia Turzii, on the track section 022, track I Câmpia Turzii-Valea Florilor, km 452+255, the second bogie of the rear car of the train derailed.	i	05.07.2022
15	08.07.2021	In the railway county București, track section Ploiești – Brașov (electrified double-track line), between the railway stations Bușteni and Azuga, track I, km 133+800, in the running of freight train no.80498-1 (got by the railway undertaking SC Grup Feroviar Român SA), a fire burst into the first wagon after the locomotive, it being loaded with oil products (gasoline).	i	02.06.2022

16	12.07.2021	In the railway county Braşov, track section Vânători – Braşov (electrified double-track line), in the railway station Beia, on direct line II, km.263+407, in the running of freight train no.99514 (got by the railway undertaking SC VEST TRANSRAIL SRL), a fire burst into the first wagon of the train, loaded with logs.	i	04.07.2022
17	12.07.2021	In the railway county Craiova, track section Filiaşi – Turceni, in the railway station Filiaşi, the freight train no.80230-1 (got by the railway undertaking SC Grup Feroviar Român SA) exceeded the speed of 30km/h, when it ran on the deflecting section, on switches no.4 and 8.	iii	27.06.2022
18	15.07.2021	In the railway county Bucureşti, track section Bucureşti Nord - Videle (electrified double-track line), in the railway station Bucureştii Noi, on the switch no.12C, km 0+550, in the running of freight train no.83548G-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), the first 3 axles in the running direction of the locomotive ED 022 derailed.	i	14.06.2022
19	18.07.2021	In the railway county Constanţa, track section Feteşti – Ciulniţa (electrified double-track line), at the end X of the railway station Jegălia, a fire burst at the traction engine (diesel one) no.2 of the multiple unit AMD no.2084 that running as passenger train no.8008 (got by the railway undertaking SNTFC „CFR Călători” SA),	i	13.07.2022
20	20.07.2021	In the railway county Constanţa, track section Palas - Medgidia (electrified double-track line), in the railway station Dorobanţu, on switch no.22, in the running of freight train no.50830-1 (got by the railway undertaking SC EXPRESS Forwarding SRL), all axles of the 33 <sup>rd</sup> wagon of the train derailed.	i	20.07.2022
21	21.07.2021	In the railway county Constanţa, track section Bucureşti - Constanţa (electrified double-track line), in the railway station Feteşti, end X, in the running of freight train no.64288 (got by the railway undertaking SC ROFERSPED SA), three wagons derailed (the 8 <sup>th</sup> , 9 <sup>th</sup> and 15 <sup>th</sup> ones of the train).	i	20.07.2022
22	28.07.2021	In the railway county Constanţa, track section Bucureşti - Constanţa (electrified double-track line) in the railway station Feteşti, end X, on the direct line II, the freight train no.60514-1 (got by the railway undertaking SC TIM RAIL CARGO SRL) passed the entry signal on danger and came into collision with the freight train no.50790-1 (got by the railway undertaking SC EXPRESS Forwarding SRL).	i	21.07.2022
23	01.08.2021	In the railway county Constanţa, on the stabling of the freight train no.30658-1 (got by the railway undertaking SC Deutsche Bahn Cargo Romania	i	20.07.2022

		SRL) on the industrial branch Antestație ROMCIM Medgidia, the first wagon of the train derailed.		
24	05.08.2021	In the railway county Constanța, in the railway station Medgidia, in the running of freight train no.20934 (got by the railway undertaking SC Cargo Trans Vagon SA), all axles of the 4 <sup>th</sup> wagon of the train derailed.	i	14.06.2022
25	07.08.2021	In the railway county Craiova, track section Caracal – Piatra Olt (not-electrified single-track line), between the railway stations Vlădueni and Piatra Olt, km 206+850, in the running of freight train no.20536-1 (got by the railway undertaking SC CER - FERSPED SA), the first bogie in the running direction of the 13 <sup>th</sup> wagon of the train derailed.	i	04.08.2022
26	19.08.2021	In the railway county Timișoara, track section Simeria – Arad (electrified double-track line), on track II of the running line between Mintia and Brănișca railway stations, km 492+680, the 13 <sup>th</sup> wagon of freight train no.50783 (got by railway undertaking SC Express Forwarding SRL) derailed.	i	28.06.2022
27	23.08.2021	In the railway county Timisoara, track section Timișoara - Arad (electrified single-track line), between Șag and Vinga railway stations, km.36+400, a fire burst into the locomotive EA 251, hauling the passenger train no.2602 (got by the railway undertaking SNTFC „CFR Călători” SA).	i	18.08.2022
28	23.08.2021	In the railway county Craiova, track section Strehaia – Orșova (electrified single-track line), between Valea Albă and Balota railway stations, km.345+460, in the running of freight train no.29114 (got by the railway undertaking SC Rail Cargo Carrier Romania SRL), the 12 <sup>th</sup> wagon of the train derailed.	i	12.08.2022
29	24.08.2021	In the railway county Craiova, track section Filiași – Craiova, between Coțofeni and Răcari railway stations, the shunt signal M2 and two pegs of insulated sections were hit by the freight train no.23052-1 (got by the railway undertaking SNTFM „CFR Marfă” SA).	iii	31.05.2022
30	27.08.2021	In the railway county București, track section Titu – Târgoviște (not-electrified double-track line), when the freight train no.59401 (got by the railway undertaking SC UNICOM TRANZIT SA) stabled on the line 5 in Nucet railway station , 6 wagons derailed ( from the 9th wagon to the 14th one).	i	27.06.2022
31	03.09.2021	In the railway county Brașov, track section Brașov - Sibiu (not-electrified single-track line), in Făgăraș railway station, on the exit of the freight train no.99974 (got by the railway undertaking SC Rail Force SRL) from the line 8, the first bogie of 10 <sup>th</sup> wagon of the train derailed.	i	25.08.2022
32	20.09.2021	In the railway county Craiova, track section Filiași – Strehaia, in Gura Motrului railway station, the	iii	28.02.2022

		freight train no.93759 (got by the railway undertaking SNTFM „CFR Marfă” SA) was dispatched to another direction than that stipulated, passing the switch that gives access to that direction.		
33	03.11.2021	In the railway county Craiova, track section Băbeni - Alunu (not-electrified single-track line), between Popești Vâlcea and Berbești railway stations, in the running of the freight train no.23686 (got by railway undertaking SNTFM „CFR Marfă” SA), the 19th wagon of the train derailed on km 25+333.	i	27.10.2022
34	10.11.2021	In the railway county Iași, track section Suceava – Ilva Mică, in Câmpulung Moldovenesc railway station, the freight train no.80672, hauled with the locomotive EA 1004 (got by the railway undertaking SC Grup Feroviar Român SA) passed the entry signal Y on danger.	iii	16.06.2022
35	24.11.2021	In the railway county Craiova, track section Caransebeș-Strehaia, in Balota railway station, 14 wagons from the line no.4 ran away and took over a shunting rake of wagons, leading to the collision with it and the derailment of 5 wagons (got by the railway undertaking SC CER FERSPED SA).	iii	31.08.2022
36	28.11.2021	In the railway county Brașov, track section Luduș – Măgheruș Șieu (noninteroperable track section, managed by RC CF Trans SRL Brașov), in the running of passenger train no.16301 (got by the railway undertaking SC Regio Călători SRL Brașov), between Luduș and Sărmășel railway stations, km 6+757, two bogies of the trailer wagon of the multiple unit AMX 1600 derailed.	i	24.11.2022
37	29.11.2021	In the railway county Craiova, track section Drăgotești-Turceni (electrified single-track line), when the freight train nr.23644 entered Turceni railway station (got by the railway undertaking SNTFM „CFR Marfă” SA), on switch no.6, two wagons derailed (the 15 <sup>th</sup> and 16 <sup>th</sup> ones of the train).	i	28.11.2022
38	06.12.2021	In the railway county Galați, track section Mărășești - Barboși (electrified double-track line), in Barboși Triaj railway station, on line 1D, the first wagon of freight train no.30630-1 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL) derailed.	i	06.12.2022
39	27.12.2021	In the railway county București, track section București Nord - Videle (electrified double-track line), in Chiajna railway station, when the freight train no.67400 (got by the railway undertaking SC TIM RAIL CARGO SRL) was dispatched from line 2, the 25 <sup>th</sup> wagon derailed.	i	16.12.2022
40	30.12.2021	In the railway county Constanța, track section Dorobanțu – Năvodari (not-electrified single-track line, noninteroperable one and managed by SC Grup Feroviar Român SA), in Nazarcea railway station, in	i	24.11.2022

		the running of freight train no.66648030 (got by the railway undertaking SC Grup Feroviar Român SA), 8 wagons derailed.		
41	02.01.2022	In the railway county București, track section București Nord - Ploiești Sud, between Crivina and Brazi railway stations there was a smoke release, followed by a fire burst into the locomotive DA 1547, hauling the freight train no.56300 (got by the railway undertaking SC Grup Feroviar Român SA).	i	29.12.2022
42	07.01.2022	In the railway county Galați, track section Galați Brateș – Racordare CSG – Cătușa, line 706M, between Filești (racordare CSG) and CFU Cătușa (from the industrial branch with wide gauge, got by Liberty Galați SA) railway stations, km 2+773, in the running of freight train no.77146 (got by railway undertaking SC Unicom Tranzit SA), 4 wagons for wide gauge derailed (from the 3 <sup>rd</sup> one to the 6 <sup>th</sup> one).	i	29.12.2022
43	13.12.2021	In the railway county București, between Fundulea and Sărulești railway stations, the freight train no.68102, hauled with the locomotive EA 1088 (got by the railway undertaking SC Constantin Grup SRL), exceeded the maximum speed established in the working timetable.	iii	20.05.2022
44	27.03.2022	In the railway county Constanța, railway station Cernavodă Pod, when the passenger train Regio no.8202 (got by the railway undertaking SNTFC „CFR Călători” SA) parked on line 4, on switch no.10, the hauling locomotive EA 649 hit the plate of a buffing gear, fallen into the gauge from a wagon.	iii	14.04.2022
45	07.05.2022	In the running of passenger train no.9000, got by the railway undertaking SNTFC „CFR Călători” SA, in the railway county Craiova, in the railway station Leu, the train was dispatched to Jianca, on track II, closed, instead track I, as it was stipulated in the Disposal of Traffic Controller.	iii	29.07.2022
46	29.05.2022	In the railway county Timișoara, track section Caransebeș – Orșova (electrified single-track line), between Teregova and Armeniș railway stations, the locomotive LE-MA 027, hauling the freight train no.56718, hit a track magnet of 1000/2000Hz afferent to the caution signal PrX of the railway station Armeniș.	iii	10.10.2022
47	06.07.2022	In the railway county Craiova, track section Târgu Jiu–Turceni (electrified single-track line), in Amaradia railway station, the locomotive ES 007, hauling the freight train nr.57202 (got by the railway undertaking SC CER FERSPED SA), passed the exit semaphore C on danger.	iii	10.10.2022
48	05.05.2022	In the railway county Timișoara, track section Caransebeș – Lugoj, on the running line between Găvojdia and Căvâran railway stations, the train no.73 (got by the railway undertaking SNTFC „CFR Călători” SA) exceeded the speed of 50km/h,	iii	26.10.2022

		established as speed restriction between km.493+600 ÷ 499+800.		
49	22.07.2022	In the railway county Galați, track section Buzău – Adjud (electrified double-track line), between Adjud and Pufești railway stations, km 241+000, the contact line was caught by a cover opened at the 13 <sup>th</sup> wagon of the freight train no.67010 (got by the railway undertaking SC Unicom Tranzit SA).	iii	02.11.2022
50	27.07.2022	In the railway county Craiova, in Gura Motrului railway station, on the branch line R2, km 291+010, the freight train no.66344 (got by the railway undertaking SC Grup Feroviar Român SA) passed the light branch signal YRT on danger „STOP without pass the signal by! <i>Day and night</i> – a light red unit to the train”.	iii	07.12.2022
51	21.07.2022	In the railway county Craiova the freight train no.68110, hauled with the locomotive EA 725 (got by the railway undertaking SC Constantin Grup SRL), , exceeded the maximum speed accepted for the line, limited at 10 km/h on the switches no.65, 55 and 43/49 situated on the end X of the railway station.	iii	05.12.2022
52	03.08.2022	In the railway county București, between Sărulești and Lehliu railway stations, the indicator plate from the 21 <sup>st</sup> wagon of freight train no.56006030 (got by the railway undertaking SNTFM „CFR Marfa” SA) detached from the fastening supports of the wagon and hit 2 cars (the 3 <sup>rd</sup> and the 4 <sup>th</sup> ones) of the passenger train no.1582 (got by the railway undertaking SNTFC „CFR Călători” SA).	iii	25.08.2022
53	22.08.2022	In the railway county Galați, track section Buzău - Ploiești (electrified double-track line), between Inotești and Cricov railway stations, the vertical damper afferent to the axle no.3 in the running direction of the locomotive EA 359, hauling the passenger train no.1750 (got by the railway passenger undertaking SNTFC „CFR Călători” SA), hit 7 track inductors.	iii	24.11.2022
54	03.09.2022	In the railway county Brașov, in Copșa Mică railway station, a brake shoe detached from the wagon no.33537919315-4 from the freight train no.66013 (got by the railway undertaking SNTFM „CFR Marfa” SA) hit the wheel sensor from the switch no.1 and the trough from track II of the level crossing situated at km 343+325.	iii	27.10.2022
55	04.10.2022	In the railway county Cluj, Tunel railway station, in the running of passenger train Regio Expres no.10503 got by SC Interregional Călători, the exit light signal X1 (that was on red position) was passed on danger and the switch no.10 of the station was forced.	iii	05.12.2022
56	28.10.2022	In the railway county Cluj, between Șuncuiuș and Oradea Est railway stations, some parts of the	iii	08.12.2022

		railway installations were hit by a piece detached from the locomotive DA 506, hauling the freight train no.58807 (got by the railway freight undertaking Via Tera Spedition SRL).		
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(1) **Legal basis of the investigation:** i= According to the Safety Directive, ii= Upon the national legal basis (that covers the possible areas excluded by the art.2, paragraph 2 of the Safety Directive), iii= Optional – other criteria (National norms/regulations, to which the Safety Directive does not refer).

### Investigations opened in 2022, that are going to be completed in 2023

No	Date of occurrence	Presentation	Legal basis of the investigation <sup>(1)</sup>	Date of completion
1	14.02.2022	In the railway county Cluj, track section Sighetu Marmăției-Salva (not-electrified single-track line), between Bocicoi and Valea Vișeului railway stations, km 233+100, in the running of passenger train no.4116 (got by the railway undertaking SNTFC „CFR Călători” SA), the first two axles in the running direction of the hauling locomotive GM 1138 derailed.	i	09.02.2023
2	19.02.2022	In the railway county Craiova, track section Caracal - Craiova (electrified double-track line), in Grozăvești railway station, , in the running of freight train no.57553 (got by the railway undertaking SC Cargo Trans Vagon SA), the first bogie in the running direction of the main locomotive LEMA 011, derailed on switch no.7.	i	17.02.2023
3	24.02.2022	In the railway county Craiova, track section Băbeni - Alunu (not-electrified single-track line, a non-interoperable one), between Alunu and Berbești railway stations, km 40+283, the 10th, the 15th and the 16th wagons of the freight train no.60566 (got by the railway freight undertaking SNTFM „CFR Marfă” SA) derailed.	i	23.02.2023
4	25.02.2022	In the railway county București, track section București Nord - Videle (electrified double-track line), Bucureștii Noi railway station, Governmental line, km 0+280, , the first axle in the running direction of the locomotive EA 725 (got by the railway undertaking SC Constantin Grup SRL), running as banking engine of the freight train no.68400 (got by the railway undertaking SC Tehnotrans Feroviar SRL) derailed.	i	23.02.2023
5	01.03.2022	In the railway county Craiova, in Pârnu railway station, when the passenger train no.9035, consisting in the multiple unit AM DESIRO no.2005 (got by the railway undertaking SNTFC „CFR Călători” SA) stabled on the diverging track no.2, the multiple unit ran away to the running line Pârnu-Costești, passing the exit light signal X2 on danger „on stop” and it stopping at km 119+500.	iii	23.02.2023
6	13.03.2022	In the railway county Brașov, track section, Luduș-Măgheruș Șieu (non-interoperable track	i	01.03.2023

		section managed by RC-CF Trans SRL Braşov – not-electrified single-track line), between Sărmaşel and Lechinţa railway stations, km.56+712, in the running of passenger train no.11020 (got by the railway passenger undertaking SC Regio Călători SRL), the 3 <sup>rd</sup> bogie of the trailer wagon no.1704-7 of multiple unit AMX 1704 derailed.		
7	24.03.2022	In the railway county Cluj, track section Cluj Napoca - Oradea (not-electrified single-track line), when the freight train no.57557 (got by the railway undertaking SC CARGO TRANS VAGON SA), was dispatched from line 5 of Ciucea railway station, two wagons, loaded with crops, derailed, that is the 13 <sup>th</sup> and the 14 <sup>th</sup> ones in the train composition.	i	21.03.2023
8	01.04.2022	In the railway county Craiova, track section Turceni – Borăscu (electrified single-track line), when the freight train no.64220 (got by the railway undertaking SNTFM „CFR Marfă” SA) entered the railway station Turceni on the scissors no.28-38/44, three wagons, loaded with coal, derailed, that is the 9 <sup>th</sup> , the 10 <sup>th</sup> and the 11 <sup>th</sup> ones in the composition of the train	i	31.03.2023
9	02.04.2022	In the railway county Craiova, track section Caracal – Craiova (electrified double-track line), when the freight train no.66708 (got by the railway undertaking Deutsche Bahn Cargo Romania SRL) entered the line 9 of the railway station Craiova, coming from the railway station Banu Mărăcine, on the scissor 15/21-17-25/31-29, two wagons derailed, that is the 4 <sup>th</sup> and the 5 <sup>th</sup> ones of the train.	i	28.03.2023
10	06.04.2022	In the railway county Constanţa, track section Dorobanţu – Capu Midia (not-electrified single-track line, a non-interoperable one – managed by SC Grup Feroviar Român SA), in Nazarcea railway station, on the entry route to the line no.2 of freight train no.66683006 (got by the railway undertaking SC Grup Feroviar Român SA), on switch no.5, the rear two wagons derailed (the 37 <sup>th</sup> and 38 <sup>th</sup> ones).	i	05.04.2023
11	11.04.2022	In the railway county Cluj, track section Cluj Napoca – Câmpia Turzii (electrified double-track line), in Cojocna railway station, on the entry route to the direct line IV, the passenger train Regio no.3087 (got by the railway undertaking SNTFC „CFR Călători” SA), the first bogie in the running direction of the hauling locomotive EA 798 derailed on switch no.7.	i	10.04.2023
12	13.04.2022	In the railway county Craiova, track section Drăgoteşti - Turceni (electrified single-track line), on the exit of the freight train no. 64208, (got by the railway undertaking SNTFM „CFR Marfă” SA),	i	11.04.2023

		from the diverging track 3 of Drăgotești railway station, all axles of the hauling locomotive ED 050 derailed at km 40+830, between the exit signal and the entry signal, situated against the running direction.		
13	07.05.2022	On 7th May 2022, at about 09:03 o'clock, in the railway county Constanța, track section Țândărei - Fetești (electrified double-track line), in Fetești railway station, in the running of freight train no.66704007 (got by railway undertaking SC Deutsche Bahn Cargo România SRL), both axles of first bogie in the running direction.from the 8th wagon derailed	i	20.04.2023
14	24.05.2022	On the metro network from București, main line M2, track II, km 10+200, between Piața Romană and Universitate metro stations, in the running of metro train no.15, path 04, the torque rod, broken from the fastening bearing of bogie no.2, of the wagon MP2 of the semi-train no.2314, first in the composition of the metro train and hit the contact rail (the third rail).	ii	16.05.2023
15	26.05.2022	In the railway county Timișoara, track section Petroșani - Simeria (electrified double-track line), on the direct line II of Merișor railway station, km 61+046, in the running of freight train no.L88151 (light locomotive got by the railway undertaking SC Constantin Grup SRL), the locomotive EC 91 53 043 0076-6 derailed and overturned.	i	25.05.2023
16	13.06.2022	In the railway county București, track section București Nord - Videle (electrified double-track line), Zăvestreni railway station, in the running of freight train no.66306 (got by the railway undertaking SC Grup Feroviar Român SA), it was observed a fire into the first wagon of the train, it being loaded with oil products (gasoline).	i	09.06.2023
17	22.06.2022	In the railway county București, track section București Nord - Videle (electrified double-track line), on track I between Zăvestreni and Videle railway stations, km 48+860, in the running of passenger train no.349 (got by the railway undertaking SNTFC „CFR Călători” SA), a fire burst into the hauling locomotive EA 889, that afterwards extended at the first train wagon.	i	15.06.2023
18	29.06.2022	In the railway county Iași, track section Pașcani - Iași (electrified double-track line), on line I, between Sârca and Podu Iloaiei railway stations, km 49+350, in the running of freight train no.56317027 (got by the railway undertaking SC Grup Feroviar Român SA), 15 wagons derailed (from 11 <sup>th</sup> one to the 25 <sup>th</sup> one), 11 of them overturned.	i	Investigation in process
19	08.07.2022	In the railway county Craiova, track section Drăgotești – Turceni (electrified single-track line),	i	Investigation in process

		when the freight train no.64220 (got by the railway undertaking SNTFM „CFR Marfă” SA) entered Turceni railway station, on the switch no.32, 2 wagons series Fals, from the rear of the train, loaded with coal, respectively the 15th and 16th ones, derailed.		
20	19.07.2022	In the railway county Cluj, track section Episcopia Bihor – Săcuieni Bihor (not-electrified single-track line), between Biharia and Diosig railway stations, km 675+600, in the running of passenger train no.6811 (got by the railway undertaking SNTFC „CFR Călători” SA), a fire burst into the locomotive DHC 410, a dead one in the train composition.	i	Investigation in process
21	28.07.2022	In the railway county Constanța, non-interoperable track section Năvodari - Dorobanțu, not-electrified single-track line (railway infrastructure manager SC Grup Feroviar Român SA), between Năvodari and Nazarcea railway stations, km 22+380, in the running of freight train no.66358028, (got by railway undertaking SC Grup Feroviar Român SA), two axles of head locomotive DA 1537 derailed in running direction	i	Investigation in process
22	09.08.2022	In the railway county Cluj, track section Cluj Napoca – Câmpia Turzii (electrified double-track line), in Cojocna railway station, on the entry route to the “diverging track” 2 of freight train no.57010 (got by the railway undertaking SC Unicom Tranzit SA), on switch no.9, both axles of first bogie in running direction from the 17 <sup>th</sup> wagon of the train derailed.	i	Investigation in process
23	27.08.2022	In the railway county Iași, track section Suceava - Dornești (not-electrified single-track line), on the entry route in the railway station Dornești of the freight train no.57010 (got by the railway undertaking SC Unicom Tranzit SA), a fire burst into the banking locomotive DA 1394.	i	Investigation in process
24	29.08.2022	In the railway county Brașov, track section Predeal – Brașov Triaj (electrified double-track line), on switch no.5 of Brașov Triaj railway station, all three axles of first bogie of hauling locomotive EA 903 of freight train no.86191 (got by railway undertaking SNTFM „CFR Marfă” SA), derailed.	i	Investigation in process
25	08.09.2022	In the railway county Brașov, track section Siculeni - Deda (electrified single-track line), between Izvoru Oltului and Izvoru Mureșului railway stations km 130+463, in running of freight train no.56012, (got by the railway undertaking SNTFM „CFR Marfă” SA), both axles of first bogie from wagon no.58536368 (CSI), the last but one in the running direction in the train composition, derailed.	i	Investigation in process

26	13.09.2022	In the railway county Cluj, track section Sărățel – Deda (electrified single-track line), between Monor Gledin and Râpa de Jos railway stations, km 37+659, in the running of freight train no.66014 (got by railway undertaking SNTFM „CFR Marfă” SA), two wagons (CSI), the 24 <sup>th</sup> and 25 <sup>th</sup> ones in the train composition, derailed and overturned.	i	Investigation in process
27	17.09.2022	In the railway county București, between Pajura and Mogoșoaia railway stations, the passenger train R7915 was dispatched from the railway station Pajura to the railway station Mogoșoaia, on the line occupied by passenger train R7032, both trains being got by the railway undertaking SNTFC „CFR Călători” SA.	iii	09.01.2023
28	17.09.2022	In the railway county Constanța, non-interoperable track section Năvodari - Dorobanțu, not-electrified single-track line (infrastructure manager SC Grup Feroviar Român SA), between Năvodari and Nazarcea railway stations, km 22+380, in the running of freight train no.66300016 (got by railway undertaking SC Grup Feroviar Român SA), both axles of first bogie from wagon no.33537850290-0 derailed.	i	Investigation in process
29	20.09.2022	In the railway county Brașov, track section Luduș-Măgheruș Șieu (non-interoperable track section managed by SC RC-CF Trans SRL Brașov – not-electrified single-track line), in the running of passenger train no.11011 (got by railway undertaking SC Regio Călători SRL Brașov), between Sărmășel and Luduș railway stations, km 6+052, the 3 <sup>rd</sup> axle in running direction of the trailer wagon 1704-7 from the multiple unit AMX 1704, composing the train, derailed.	i	Investigation in process
30	02.10.2022	In the railway county Craiova, track section Drăgotеști – Turceni (electrified single-track line), in Borăscu railway station, when the freight train no.64220 (got by the railway undertaking SNTFM „CFR Marfă” SA), passed on the switch no.4, km 23+421, 5 wagons loaded with coal, respectively the first 4 wagons and the 6 <sup>th</sup> one from the rear of the train, derailed.	i	Investigation in process
31	01.11.2022	In the railway county Craiova, track section Craiova – Filiași (electrified double-track line), in Răcari railway station, on switches from end X, track II, km 278+780, 9 wagons, loaded with coal, from the composition of freight train no.64316 (got by the railway undertaking SNTFM „CFR Marfă” SA) derailed.	i	Investigation in process
32	13.11.2022	In the railway county Craiova, track section Băbeni – Alunu (not-electrified single-track line), between Popești Vâlcea and Berbești railway stations, km 19+608, in the running of freight train no.6056513 (got by the railway undertaking SNTFM „CFR	i	Investigation in process

		Marfă” SA), first two axles in the running direction of the hauling locomotive DA 913 derailed.		
33	18.11.2022	In the railway county București, track section Videle – București (electrified double-track line), the inductor of the locomotive EA 194, hauling the passenger train Regio no.9016 (got by the railway passenger undertaking SNTFC „CFR Călători” SA) hit the track inductors between Bucureștii Noi and Grădinari railway stations.	iii	08.06.2023
34	23.11.2022	In the railway county Iași, in Roman the railway station, the indicator plate of freight wagon no.31537957147-6 from the composition of train no.5600023 (got by railway freight undertaking SNTFM „CFR Marfă” SA), detached from the fastening supports of the wagon and damaged the power supply pegs of the inductors of 500Hz and 1000/2000Hz of the caution signal PrX from the railway station Roman.	iii	31.01.2023
35	02.07.2022	In the railway county București, track section Brașov – Ploiești (electrified double-track line), between Florești Prahova and Buda railway stations, the freight train no.66005, hauled with the locomotive ED 079 (got by the railway undertaking SNTFM „CFR Marfă” SA) exceeded the maximum speed established for the train category.	iii	06.02.2023
36	01.12.2022	In the railway county Galați, track section Buzău - Mărășești (electrified double-track line), between Gugești and Sihlea railway stations, track II, km 180+800, there was a collision between the freight train no.57402 (got by the railway undertaking SC TIM RAIL CARGO SRL) and the freight train no.66706 (got by the railway undertaking SC Deutsche Bahn Cargo România SRL).	i	Investigation in process

- (1) **Legal basis of the investigation:** i= According to the Safety Directive, ii= Upon the national legal basis (that covers the possible areas excluded by the art.2, paragraph 2 of the Safety Directive), iii= Optional – other criteria (National norms/regulations, to which the Safety Directive does not refer ).

### 3.3. Researches (or safety surveys) completed or ordered in 2022 Surveys ordered in 2021 and completed in 2022

Order date	Study name (classification type, localization)	Legal basis of the investigation <sup>(1)</sup>	Complementary data
-	-	-	-

(1) **Legal basis of the investigation:** i= According to the Safety Directive, ii= Upon the national legal basis (that covers the possible areas excluded by the art.2, paragraph 2 of the Safety Directive), iii= Optional – other criteria (National norms/regulations, to which the Safety Directive does not refer).

#### Surveys ordered in 2022 and completed in 2022

Order date	Study name (classification type, localization)	Legal basis of the investigation <sup>(1)</sup>	Complementary data
- - - -	- - - -	- - - -	- - - -

#### Surveys ordered in 2022 and complete in 2023

Order date	Study name (classification type, localization)	Legal basis of the investigation <sup>(1)</sup>	Complementary data
10.10.2022	Technical Note no.C.G5REP170123, together with the laboratory analysis of torque rod of bogie no.2 from unit MP2 of semi-train no.2314. Expertise performed within the investigation of the incident happened on 24 <sup>th</sup> May 2022, at 08:42 o'clock, on Bucharest metro network, main line M2, between Piața Romană and Universitate metro stations, in the running of metro train no.15, path 04, consisting in the electric train (TEM) no.1314-2314, incident that consisted in the breakage of the torque rod and of current collector situated on left side in running direction, of bogie no.2 from unit MP2 of semi-train no.2314 and hit of the tunnel installations by them	iii	17.01.2023

(1) **Legal basis of the investigation:** i= According to the Safety Directive, ii= Upon the national legal basis (that covers the possible areas excluded by the art.2, paragraph 2 of the Safety Directive), iii= Optional – other criteria (National norms/regulations, to which the Safety Directive does not refer).

### 3.4. Summary of the investigations completed and closed in 2022

Along 2022 there was completed and closed a number of **56** investigations, from which 39 opened in 2021, the rest of 17 being opened in 2022.

Forwards, it is presented the synthetical situation of **56** investigation reports completed and closed in 2022.

**3.4.1.** The railway accident happened on 4th February 2021, in the railway county Timișoara, track section Orșova – Caransebeș (electrified single-track line), between Domașnea Cornea and Poarta railway stations, km 435+100, in the running of the freight train no.60516 (got by the railway undertaking SC Tim Rail Cargo SRL), consisted in a fire burst into the banking locomotive EA 1084.

The investigation report was completed on 3rd February 2022.

#### **Causal factors**

Breakdown of the insulation and the appearance of the electric arc between two cables of the power supply circuit of the traction electric motors from the banking locomotive EA 1084.

#### **Contributing factors**

- Appearance of the wheel slip process at the main locomotive EA 1020, in the hauling of the freight train no.60516-1;
- Keeping in operation the locomotive without it shall meet with the technical potential that had to be ensured through the planned repairs at the deadlines stipulated by the regulations in force.

#### **Systemic factors**

- Failure in the identification of the danger represented by „the use in operation of locomotives whose deadline for planned repair overdue”;
- Lack of some clear provisions, regarding the measures that have to be taken when the locomotives reach the norm of time/km for the performance of planned repairs, within the procedure Code: P – ERI 02 / III.

#### **Additional remarks**

During the investigation, the commission, analyzing the documents submitted by the factors involved, found that the duty time of the locomotive crew, from the locomotive EA 1020, main one hauling of the freight train no.60516-1, was 20h 30 minutes, that is out of the limits accepted and stipulated in the Minister of Transports' Order no.256 from the 29th March 2013.

The commission also found the duty time of the crew from the locomotive EA 1084, banking one in the hauling of the freight train no.60516-1, was 13h 31min after starting the duty in the railway station Caransebeș Triaj and until the accident occurrence, against the provisions of Minister of Transports' Order no.256 from the 29th March 2013.

Considering the stipulations from chapter 4.b. Infrastructure, the investigation commission found that in case of hauling the trains with two electric locomotives type EA (main and banking ones) between the railway stations Mehadia Nouă and Poarta, having the tonnage close to the maximum one accepted and stipulated in the Annex I of the Working Timetable for the running of the freight train within the railway county Timișoara, into unfavourable weather conditions, one could not meet with the running speeds and times.

Because the maximum accepted tonnage was established upon experience as well as that CNCF CFR SA could not submit documents to justify how this tonnage was set up, the commission considers necessary the checking/establishment of the maximum accepted tonnage that can be hauled on this track section, by making an experiment.

#### **Safety recommendations**

Considering the causal, contributing and systemic factors identified during the investigation, as well as the mentions from chapter 5.c. Additional remarks, for the prevention of similar accidents or incidents, in the future, in accordance with the provisions of art.26, paragraph (2) from the Emergency Government Decision no.73/2019 for the Railway Safety, the investigation commission issues the next safety recommendations:

Preamble at the recommendation no.376/1

The investigation commission found that SC Tim Rail Cargo SRL, like railway undertaking, did not identify, respectively did not manage effectively the risks associated to the danger represented by „use in operation of the locomotives with deadline for planned repair overdue”.

Safety recommendation no.376/1

ASFR shall ensure that SC Tim Rail Cargo SRL, like railway undertaking, getting rolling stock, will assess the danger represented by „the use in operation of locomotives with the deadline for planned repair overdue” and will establish viable safety measures for keeping it under control.

Preamble at the recommendation no.376/2

During the investigation one found that the locomotive EA 1084 was not withdrawn from running when it reached the norm of time between two planned repairs type overhauls. Following the analysis of the procedure code: P – ERI 02 / III, one found that it does not contain clear provisions regarding the measures that have to be taken when the locomotives used reach the norm of time/km for the performance of planned repairs.

Safety recommendation no.376/2

ASFR shall ensure that SC Constantin Grup SRL, like entity in charge with the maintenance will re-assess the procedure code: P – ERI 02 / III so that it shall contain clear provisions regarding the measures that have to be taken when the locomotives used reach the norm of time/km for the performance of planned repairs.

Preamble at the recommendation no.376/3

According to the mentions from chapters 4.b. Infrastructure and 5.c. Additional remarks, one found that the hauling of the freight train no.60516-1, that had a tonnage closed to the maximum accepted one, established upon experience, between the railway stations Mehadia Nouă and Poarta and .into unfavourable weather conditions could not be realized. On this distance, until the accident occurrence the speeds and running times could not be met.

Safety recommendation no.376/3

ASFR shall assure that CNCF CFR SA, like public railway infrastructure administrator and SC Tim Rail Cargo SRL, like railway undertaking, will take the necessary steps for checking the maximum accepted tonnage, that can be hauled between the railway stations Mehadia Nouă and Poarta, upon the calculation and experiment made meeting with the conditions imposed by the regulations in force.

This recommendation is not a restricting one, it could be extended also at other track sections for which the tonnages were established upon experience/experiment and for which there is no justifying documents regarding the conditions in which they were reached.

**3.4.2.** The railway accident happened on 16th February 2021, in the railway county București, track section București Nord - Videle (electrified double-track line), in Bucureștii Noi railway station, on the connecting line between the switches no.6C and no.30 („Governmental line”), km 0+230, consisted in the derailment of two axles (first from each bogie in the running direction) of the locomotive EA 2002, light engine one, running like train no.39512 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL).

The investigation report was completed on 27th January 2022.

### **Causal factors**

Loss of the support and guiding capacity of the inside rail of the curve, generated by the existence, at the accident site, a group of improper normal wooden sleepers, leanding to the fall between the rails of the left wheel from each of those two bogies, in the running direction of the locomotive EA 2002.

### **Contributing factors**

Performance of the track technical inspection with unauthorized staff, it leading to the decrease of this activity effectiveness.

### **Systemic factor**

- ineffective management of the risks associated to the danger represented by keeping in operation, within a small radius curve, a group of improper normal wooden sleepers;
- ensuring of insufficient material and human resources, in relation to the necessary ones, for the performance of proper maintenance of the line and keeping of the track geometry between the accepted tolerances.

### **Measures taken after the accident**

After the accident, the connecting rail between the switches no.6C and no.30 („Governmental line”), between the 17th÷25th February 2021, 61 improper wooden sleepers, existing within the track, were replaced, the gauge was rectified for 34 end of sleepers, 270 linear meters of rail were reversed, there was made the re-alignment of the track by manual packing operations.

**Additional remarks**

Non applicable

**Safety recommendations**

The railway accident happened on the 16th February 2021, on the passing route through the railway station Bucureștii Noi, on the connecting rail between the switches no.6C and no.30 (“Governmental line”), km 0+230, was generated by the improper technical condition of the infrastructure.

During the investigation one found that the improper technical condition of the track was generated by the unsuitable maintenance, that was not made in accordance with the provisions of the practice codes (reference documents associated to SMS procedures of the infrastructure administrator-AI).

Applying completely the own procedures of the safety management system, as well as the procedures of the practice codes, part of SMS, AI should have kept the technical parameters of the track geometry between the limits of tolerances imposed by the railway safety and, in a such way, could have been able to avoid the accident.

Considering the similar railway events happened between 2015÷2020, in the railway county București, presented within chapter 4.e Previous similar accidents or incidents” and considering that safety recommendations were issued in this respect, the commission considers that there is no more need to issue other similar recommendations.

**3.4.3** The railway accident happened on 26th March 2021, in the railway county Brașov, track section Brașov - Sighișoara, railway station Augustin, in the running of the freight train no.80599-2 (got by the railway undertaking SC Grup Feroviar Român SA), consisted in the derailment of both axles of first bogie from the 9th wagon, in the running direction.,

The investigation report was completed on 24th March 2022.

**Causal factor**

Improper condition of the track, within the switch no.27 of the diamond crossing with double slip TJD 21/27, caused the exceeding of the derailment stability limit, leading to the climbing of the straight stock rail by the guiding wheel of the first bogie from the wagon no.33539335900-5.

**Contributing factors**

Ineffective monitoring of ORE failures progress existing at the points and stock rails from the switch no.27a within the diamond crossing with double slip TJD 21/27, following the partial record of the results of the measurements with ORE gauge into other records that those stipulated by the practice codes. It generated a incomplete view of the progress of these failures in the condition of keeping the speed restriction of 5 km/h.

**Systemic factors**

- ineffective management of the risk associated to the danger generated by the lack of preventive and scheduled maintenance, lack of compliance with the cycles of track maintenance and repair;
- ensuring of inadequate material resources, regarding the necessary ones, for the performance of the proper maintenance and for keeping of the track condition between the normal operation parameters.

**Measures taken after the accident**

Following the analysis of the documents and questioning of staff involved, after the accident happened from the 26th March 2021, on the diamond crossing with double slip TJD 21/27 of the railway station Augustin, there were performed the next works:

- on the 29th and 30th March 2021 6 special wooden crossing timbers were replaced;
- on the 2nd June 2021 there were performed checking of the hidden parts of the switches no.27a and 27b;
- on the 18th and 19th November 2021, at the switches 27a and 21b there were replaced the curved points, the connection rail between them and the straight stock rails, with semi-good parts taken from the diamond crossing with double slip TJD 28/32 of the railway station Feldioara.

When the draft report was ended, the running speed on the diamond crossing with double slip TJD 21/27 of the railway station Augustin continues to be restricted at 5 km/h, according to the Sheet for the Restrictions Notification-BAR.

**Safety recommendations**

The railway accident happened on the 26th March 2021, on the exit route from the line no.5 of the railway station Augustin to the track II Augustin – Apața, was caused by the improper condition of the track within the switch 27a from the diamond crossing with double slip TJD 21/27.

During the investigation one found out that the improper condition of the track within the diamond crossing with double slip TJD 21/27 was generated by the unsuitable maintenance and the lack of compliance with the track maintenance and repair cycles, that were not carried out in accordance with the provisions of the practice codes (reference/associated documents of SMS procedures of the infrastructure administrator).

Applying the own procedures of the safety management system, completely, as well as the provisions of the practice codes, part of SMS, the infrastructure administrator should have kept the values of the technical parameters of the track between the limits of tolerances imposed by the railway safety and, so, could be able to avoid the accident.

Considering the findings and conclusions of the investigation commission above mentioned, for the prevention of similar accidents, AGIFER issues the next safety recommendation:

Recommendation no.378/1

Romanian Railway Safety Authority – ASFR shall ensure that the public railway infrastructure administrator will re-assess the risk associated to the danger generated by the lack of preventive and scheduled maintenance, non compliance with the track maintenance and repair cycles and it will establish effective measures for keeping them under control.

**3.4.4.** The incident happened on 29th March 2021, on the metro network SC TMB „METROREX” SA București, between Piața Victoriei 1 and Aviatorilor metro stations, in the running of metro train set no.18, path 15, the train consisting in the electric train set (TEM) no.1324-2324, consisted in the breakage the torque rod and of the left current collector, in the running direction, from the bogie no.1 of the unit M2 of the semi-train no.2324 and the hit of the tunnel installations.

The investigation report was completed on 22nd February 2022.

#### **Causal factors**

Breakage of the torque rod from the bogie no.1 of the unit M2 of the semi-train no.2324, this breakage being determined by the wrong application of the shot blasting, when this rod was manufactured.

#### **Contributing factors**

None.

#### **Systemic factors**

None.

#### **Measures taken**

Considering the quality problems resulted from the shot blasting of the torque rods and that this quality problem exists only at the last 8 train sets provided to METROREX (train sets no.1317-2317 ÷ 1324-2324), in order to remove any risk of future incidents, generated by the problems of quality above mentioned, on the 19th January 2022, CAF informed AGIFER that, following the result of the laboratory analysis and internal assessments, it took the next measures:

- placing of a purchasing order for torque rods for the replacement of the lot of 7 pieces, from which the torque rod, fitted on the bogie no.1 of the unit M2 of the half-train no.2324, was part, it generating the incident from the 29th March 2021;
- then, the replacement of the rest of torque rods fitted on the last 8 train sets type BM3-CAF, supplied to METROREX (train sets no.1317-2317 ÷ 1324-2324) and that were not replaced following the incidents happened previously this investigated by AGIFER.

#### **Safety recommendations**

The incident happened on the 29th March 202, on the metro network București, main line M2, between the station Piața Victoriei 1 and Aviatorilor was caused by the breakage of the torque rod from the bogie no.1 of the unit M2 of the half-train no.2324.

For the establishment of the conditions where the incident happened, as well as the setting up of the causes of the its breakage, AGIFER asked CAF to perform a technical expertise/laboratory analysis on the torque

rod involved. Following this expertise, one found that the breakage of the torque rod was determined by the wrong application of the shot blasting, within the manufacturing of this rod.

Before the incident above mentioned, in the running of of the metro train set type BM3-CAF there were 3 other similar cases (breakage of the torque rod, part of the unit anti-rolling rod).

After the occurrence of the first case, CAF performed an expertise on the rod broken, upon which it was established that the breakage of the torque bar happened following a quality problem appeared during the shot blasting, this process being performed wrong”.

During the same period of time there was a non-destructive control campaign (with ultrasound) of the torque rods equipping the train sets type BM3-CAF, in order to detect the incipient cracks. Following this campaign there were detected 7 rods, removed from the vehicles, because of presence of the surface failure indications. These rods were sent to CAF laboratory in order to determine the nature of the indications detected. According to the tests performed it was established that, the quality problem above mentioned affected only three lots.

Following the laboratory checking, CAF undertook to replace completely all the torque rods that were part of the lots affected, that is 49 ones, this action being completed within 2020. We stipulate that, the rod broken in the incident investigated was not from those 49 ones replaced.

Also, in December 2018, CAF ran out a campaign of checking with ultrasounds, for checking all the torque rods from the bogies of the last 8 train sets type BM3-CAF provided to METROREX (train sets no.1317-2317 ÷ 1324-2324). Following these checking there were not found failures at the rods controlled. We mention that within this checking campaign from the 4th December 2018, there was controlled also the torque rods broken in the last incident (happened on the 29th March 2021).

Because, following the expertise of the torque rod involved in the last incident, the result was that the causes of its breakage were the same (wrong application of the shot blasting, during the manufacturing of this rod), the manufacturer of the train involved notified AGIFER that, in order to remove all risks of future incident, caused by the quality problems above mentioned, it shall take measures for the replacement of the torque rods equipping the last 8 train sets provided to METROREX, being in operation, that were not replaced following the incidents happened previously the investigated one.

Considering the measures for the replacement of the torque rods that are parts of the lots with quality problems, planned by the manufacturer of the train set, AGIFER considers that it is not necessary to issue some safety recommendations.

**3.4.5.** The railway accident happened on 30th March 2021, in the railway county București, track section București Nord - Videle (electrified double-track line), in Vadu Lat railway station, when the freight train no.20574-1 (got by the railway undertaking SC CER FERSPEED SA) left the diverging track 2 in order to enter on the direct track I, to the railway station CF Zăvestreni, having route on the switches no.14 and 10, consisted in the derailment and overturning of two wagons (the 11th and 12th ones in the train composition).

The investigation report was completed on 9th February 2022.

### **Causal factors**

Keeping within the track, at the accident site, a group of improper special wooden consecutive sleepers, that led to the exceeding of the maximum accepted limit of the track gauge in operation and to the loss of the support and guiding capacity of the closure rail from the diverging track of the switch no.14 of the railway station Vadu Lat, generating the fall between the rails of the left wheel of the wagon no.84539305145-1, the 11th railway vehicle in the composition of the freight train no.20574-1.

### **Contributing factors**

- performance of the track technical inspections at longer periods of time higher than those stipulated in the practice codes, it favouring the decrease of this activity effectiveness and did not ensure the identification of the failures existing at the switch no.14 from the railway station Vadu Lat;
- performance of the controls without writing down in the finding notes of all the deficiencies found, setting up of measures and deadlines adequate for the removal, favoured the decrease of the monitoring activity and allowed the keeping within the track, without monitoring the removal of

the deficiencies existing at the switch no.14 from the railway station Vadu Lat and without setting up the measures for keeping the traffic safety.

#### **Systemic factors**

- ineffective management of the risks associated to the danger generated by keeping in operation improper wooden sleepers within the switches;
- providing with an insufficient human resources, against the necessary one, in order to run out the suitable maintenance of the lines and switches for keeping the track geometry between the tolerances accepted.

#### **Measures taken after the accident**

After the accident, within the switch no.10 (affected following the derailment) and within the track panel from its point, between 31st March÷2nd April 2021, improper wooden sleepers and concrete ones T17 were replaced for resuming the traffic on line III of the railway station Vadu Lat and on the running line track I Vadu Lat – Zăvestreni. The switch no.14 stayed closed.

#### **Safety recommendations**

The railway accident happened on 30th March 2021, on the exit route of the freight train 20574-1 from the deflecting section no.2 of the railway station Vadu Lat to the railway station Zăvestreni, within the closure rails of the switch no.14, was generated by the improper technical condition of the railway infrastructure.

During the investigation, one found that the improper technical condition of the track was generated by the unsuitable maintenance, that was not performed in accordance with the provisions of the practice codes (reference/associated documents of SSM procedures of the infrastructure manager – AI).

The investigation commission found that AI identified the risks generated by the keeping in operation, within a switch, two or more improper consecutive wooden sleepers, but it did not effectively monitor the application by the own staff of the measures established for keeping under control these risks.

By the application of the measures established in the own procedures of the safety management system, completely, respectively of the provisions of the practice codes, part of SMS, AI could be able to keep the technical parameters of the track geometry between the limits of tolerances imposed by the railway safety and, so, could be able to avoid the accident occurrence

Considering that this accident is similar with that happened on 13th September 2020 in the railway station București Obor, for which the next safety recommendation was issued ” Romanian Railway Safety Authority – ASFR shall ensure that the public railway infrastructure manager will re-assess the risk associated to the danger of keeping within the track improper wooden sleepers and will establish measures effective for keeping it under control ” there is no need for issuing a new recommendation in this respect.

**3.4.6.** The railway accident happened on 6th April 2021, in the railway county Braşov, track section Braşov - Sighișoara (electrified double-track line), in the railway station Sighișoara, when the passenger train R.3528 (got by the railway undertaking SNTFC „CFR Călători” SA) left the railway station, the first two cars of the train derailed (all axles of the first wagon and first axle of the second one derailed).

The investigation report was completed on 3rd March 2022.

#### **Causal factors**

Existence within the track, at the accident site, of some improper wooden sleepers, that deteriorated in an accelerated manner over time and that could no longer ensure the proper fastening of the metallic plates that support the rails and keeping of the track gauge between the limits of the accepted tolerances.

#### **Contributing factors**

- wrong interpretation during the works and inspections, performed by the staff responsible with the track superstructure maintenance, before the accident, of the risk generated by keeping of some improper wooden sleepers within the switch no.9 from Sighișoara railway station.
- use for the works performed, for the removal of the speed restrictions from the switches of the railway station Sighișoara, of some wooden sleepers impregnated, without these by certified in accordance with certification systems established upon EU legal framework and for which the Track Section L2 Sighișoara did not get documents that prove that the checking of the sleepers was made according to the harmonised standards.

#### **Systemic factors**

- assessment of the risk of railway vehicle derailment, generated by keeping within the track of some improper sleepers, that could not keep under control the respective risks.
- working out of the technical specification for contracting works for the removal of speed restrictions in Sighișoara railway station, without ensuring, that for these works, there will be contracted and used only products certified in accordance with the certification systems established upon EU legislation and in accordance with the harmonised standards.

### **Measures taken after the accident**

After the accident, Line Division summoned the work performer, asking it to make an inventory of the improper sleepers from the switches no. 7, 19, 13, 10, 20 and 22 of the railway station Sighișoara and setting up of deadlines and conditions for their replacement (supply) with the new ones, these being under warranty.

On the 14th April 2021, the commissions consisting in representatives of railway county and of the company that supplied the sleepers, identified 142 improper wooden sleepers within the switches above mentioned. SC Cristian Prodexim SRL supplied, in two lots, 142 sleepers, the last supply being on the 7th May 2021.

On the 12th May 2021, the commission consisting in the presentative of Track Section L2 Sighișoara and the work performer, SC Antrepriza de Construcții Căi Ferate SA, when took over the last lot of sleepers, supplied by SC Cristian Prodexim SRL, considered removed the nonconformities appeared over the time, after the end of the works.

### **Additional remarks**

During the investigation, there were done the next additional remarks regarding some deficiencies and gaps, without relevance for the causal, contributing or systemic factors of the accident occurrence:

- lack at the maintenance section of a "Special register – record of the failures appeared during the warranty", upon which, the client notifies in written the supplier and AFER, about any failure at a railway critical product, according to the provisions of Minister of Transports Order 490/2000.
- lack, into the contract for purchasing a railway critical product, of provisions regarding the setting up, composition and summons and the working of the commission consisting in the representatives of client and supplier, for the management of the failures during the warranty, according to art. 6, point 2 of Minister of Transports Order 490/2000.
- lack of authorized staff, site manager, permanent responsible for the tracking of the works and quality of the materials used, for the works performed upon the works contract for the removal of the speed restrictions on the switches from the railway station Sighișoara.

### **Safety recommendations**

#### ***Motivation of the lack of safety recommendations***

The investigated accident is part of a series of accidents with identical causes, happened on the railway infrastructure managed CNCF, investigated by AGIFER. The investigation reports contain a series of regulations for safety (for the same elements/findings that are also in this investigation report), aimed to prevent the occurrence of similar accidents, it being the reason for which the investigation commission does not consider necessary to issue more other safety recommendations.

We mention that, even some safety recommendations are missing, upon the remarks done by the investigation commission, following the nonconformities found, CNCF can dispose safety measures considered necessary, in order to keep under control, the risk of derailment.

**3.4.7.** The railway accident happened on 9th April 2021, in the railway county Constanța, non-interoperable track section Năvodari – Dorobanțu (infrastructure manager SC Grup Feroviar Român SA), between Năvodari and Nazarcea railway stations, not-electrified single-track line, km. 22+400, in the running of freight train no.89576, got by the railway undertaking SC Grup Feroviar Român SA), consisted in the derailment 3 wagons of the train (both axles of first bogie from the 3rd wagon, all axles of the 6th and the 11th wagons).

The investigation report was completed on 23.02.2022.

### **Causal factors**

The cumulated action from the track (existence within the track, at the accident site, a group of improper sleepers that exceeded the tolerances accepted for the cross level prescribed for a rail against the another one on the last 5 m before the point „0”) and the conditions found at the wagon (irregular distribution of the load transversely against the wagon centre and the values situated at the upper limit accepted in operation for the total clearance of the side bearers). The cumulated action of these conditions led to the cross-load transfer against the wagon centre, resulting in the load transfer of the wheel no.2 of the leading axle from the first bogie of the wagon no.89536950057-7, this wheel climbed the exterior rail of the curve (right rail in the running direction).

#### **Contributing factors**

- lack of repairs and maintenance of the track in accordance with the practice codes;
- not-ensuring of the conditions for the performance of the load distribution within the wagon and of the inspection during the composition of train.

#### **Systemic factors**

- unsuitable monitoring of the service render (regarding the way to perform the track repairs and maintenance) by the non-interoperable railway infrastructure manager;
- keeping within the track, for a long time, the speed restriction of 30 km/h;
- non-compliance with the provisions of the procedures has direct implications in the guaranteeing by the non-interoperable railway infrastructure manager that the infrastructure maintenance is safely supplied and that it meets with the specific needs of the track section where the derailment happened;
- the railway undertaking did not regulate how to take delivery the loaded wagons when they are taken for transport in the working point CRH - Luminița-Tașaul Pit.

#### **Measures taken after the accident**

The infrastructure manager supplied with the materials asked by the service render in order to remove the speed restriction from km 18+000 - 25+800.

#### **Safety recommendations**

The investigation commission found that the deficiencies identified at the derailed wagons were determined by the existence of some nonconformities in the activity of taking delivery and checking the loaded wagons. The railway undertaking identified the danger not checking of the wagons for loading, but in this working point (CRH - Luminița-Tașaul Pit) there was not regulated how to receive the loaded wagons when they are taken for transport. Considering that on the 22nd December 2021, when the investigation of the railway event, happened on the 28th December 2020, on the track section Dorobanțu - Medgidia PC2 - Romcim Medgidia, in the running of the freight train no.89170, consisting in the derailment of two wagons, was completed, there was issued a recommendation in this respect, the commission considers unnecessarily to issue another safety recommendations.

The investigation commission found that the deficiencies identified at the railway infrastructure were determined by the exceeding of the maximum tolerances accepted for the track cross-level. Considering that on the 17th May 2020, when there was completed the investigation of the railway event happened on the 4th June 2020, between PC2 Capu Midia and PC1 Capu Midia, in the running of the freight train no.89158, consisting in the derailment of four wagons of the train, there was issued a recommendation in this respect, the commission considers unnecessarily to issue another recommendation.

**3.4.8.** The railway accident happened on 11th April 2021, in the railway county Constanța, track section Palas – Năvodari (railway infrastructure manager SC Grup Feroviar Român SA), between Palas and Constanța Mărfuri railway stations, km 1+330, consisted in the derailment of two wagons of freight train no.80639.

The investigation report was completed on 6th April 2022.

#### **Causal factors**

The load transfer of the wheel no.3 from the leading axle of the second bogie of the wagon no.33537924193-8 and the increase of the guiding force, following the running of the train on an improper track, the train composition did not meet with the regulation in force, having a locomotive that was not active at the rear of the train, that led to the amplification of the reactions within the train body and increase

of the force appeared at the contact wheel-rail. Upon these conditions, the wheel no.3 climbed the exterior rail of the curve, left rail in the running direction.

#### **Contributing factors**

Lack of repairs and maintenance at the track according to the practice codes.

#### **Systemic factors**

- keeping the speed restriction of 15 km/h for a long time and lack of an action plan for its cancellation;
- the improper monitoring of the service supplier (regarding the performance of track repairs and maintenance) carried out by the infrastructure manager;
- inobservance of the provisions of the procedures with the direct implications in the guarantee by the infrastructure manager that the infrastructure maintenance is supplied is supplied safely and it meets with the specific needs of the track section where the derailment happened;
- ineffective measures for keeping under control the danger represented by the inobservance of the conditions recorded in the running order.

#### **Additional remarks**

Following the analysis of how the freight train no.80639 was composed and dispatched, there was found that it had 671 m length, its length exceeding the maximum one established in the freight train working timetable, for the freight train no.79391, on whose route ran the above-mentioned train (no. 80639). It was a critical factor that did not influence the accident occurrence.

#### **Safety recommendations**

The investigation commission found out that the deficiencies identified at the railway infrastructure were generated by the improper condition of the track. The accident investigated is part of a series of accidents with superstructure deficiencies similar to those happened on the railway infrastructure managed by the infrastructure manager, investigated by AGIFER. The investigation reports completed (mentioned at point 4.e of this report), contain a series of safety recommendations, (for the same elements/findings that are also in this report), intended to prevent the occurrence of accident with similar causes, for this reason the investigation commission does not consider necessary to issue other safety recommendations.

The result of the investigation was that the regulations for the composition of the freight train no.80639 were not met (the running of the train with having a dead locomotive at its rear). Considering the findings and the conclusions of the investigation commission above mentioned, for the improvement of railway safety and prevention of some similar events, AGIFER considers timely to address to ASFR, the next safety recommendation:

Safety recommendation no.384/1

ASFR shall ask OTF a re-assessment of the risks associated to the danger represented by the inobservance of the conditions recorded in the running order and the establishment of proper measures for keeping it under control.

**3.4.9.** The railway incident happened on 1st June 2021, in the railway county Craiova, track section Titu - Golești (not-electrified double-track line), in Golești railway station, in the running of passenger train no.1897 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in passing on danger the signals XIC, XPIII, and XIII, they being on the position „STOP, without passing past the signal!”, followed by forcing the switch no.15 following the train stop on the insulated track section no.50/56.

The investigation report was completed on 31st May 2022.

#### **Causal factors**

- unsuitable working of the valves for the brake control (P106/1 and P106/2) of the multiple unit Desiro 2016, that led to the loss of the braking capacity of the indirect brake;
- improper operation of the multiple unit Desiro 2016 by the driver, that led to the shutdown of four braking systems, from those five ones that equip the multiple units.

#### **Contributing factors**

- lack of maintenances at the valves for the brake control (P106/1 and P106/2) of the multiple unit Desiro 2016, according to the provisions established by their manufacturer, regarding the norms of time and the operations that have to be performed in these cases;
- lack in the driver equipment of the operation guide corresponding to the multiple unit type Desiro.

**Systemic factors:**

- non provision by the organization the information necessary for the driver, for running in emergency mode, respectively an operation guide for the multiple unit type Desiro;
- ineffectiveness of the monitoring of the measures established for keeping under control the risks corresponding to the dangers identified and that developed in case of this incident;
- wrong schedule of planned repairs and keeping in operation the multiple unit Desiro 2016, after exceeding the norms of time/km for their performance;
- lack, in the operational procedure „Planning of inspections and repairs at locomotives, multiple units and electric train sets got by SNTFC „CFR Călători” SA” - PO-0-8.1-15, of some provisions regarding the withdrawal of locomotives/multiple units when they reach the norms of time/km, as well as the lack of appointment of staff responsible for the performance of this activity;
- drafting of some technical specifications for the performance of planned repairs type R8 and R9 without meeting with the manufacturer instructions for the tests of the valves for the brake control (P106).

**Measures taken after the incident**

Following the incident SNTFC „CFR Călători” SA drafted the program of measures no. RGSC1/9/429/08.06.2021 disposing the next relevant measures:

- checking of the performance way of the inspections at the multiple units Desiro, (meeting with the periodicity of the planned inspections, with the technological processes, performance way of the inspection at the multiple units when they enter/leave the depots);
- checking the organization and reading of the records of the speed recorders equipping the multiple units Desiro, as well as the dealing with the failures found;
- exact regulation of the cases where the multiple unit Desiro passes in „Emergency mode”, the operations that the driver have to make for passing the multiple unit in „Emergency Mode” as well as the distance for running in such conditions. So, on the 17th June 2021, one issued the paper no.DT2/2/214/17.06.2021 „Regulations for the running of multiple unit Siemens- Desiro 642 CFR (SR 20 D) in emergency mode”.
- discussion again the papers with the locomotive/multiple unit crew:
  - DT2/2/140/20.04.2021 regarding the performance of the braking tests at the multiple units Desiro;
  - DT2/2/158/07.05.2021 regarding the running of the multiple unit Desiro in case of some nonconformities in its operation;
  - instructions for the activity of the locomotive crew no.201, annex 2 regarding the cases where it is accepted the shutdown of the installations for safety, vigilance and control of the train speed.
  - Drafting a plan for downloading soon the memory containing the error messages registered in the central computer of the multiple units Desiro, this download going to be done at each planned inspection type R1 ÷ R6.

After the incident, the locomotive crew from the Passenger Depot București was equipped with guide for the operation of the multiple unit Desiro.

**Additional remarks**

Missing of the train manager in the driving cab of the multiple unit after the shutdown of the installation for the speed control (PZB) and of safety and vigilance installation (SIFA) according to the provisions of Instructions for the activity of the locomotive crew no.201, annex 2, art.4, approved by Minister’s Order no.2229 from the 23rd November 2006;

- inobservance of the norms of time and km between the inspections type R1 ÷ R6 for the multiple units Desiro stipulated in the Railway Norm 67-006:2011 „Railway Vehicles. Types of planned inspections and repairs”, table 3.1 no. crt.10;
- missing of notification of the movements inspector from the railway station Găești for sending an assisting locomotive, following the shutdown of the installation for the speed control (PZB) and of the safety and vigilance installation (SIFA), according to the provisions of the Instructions for the activity of the locomotive crew no.201 annex 2, art.7.1;

- inobservance of maximum running speed of 60 km/h imposed in case of running in „Emergency mode”, according to the provisions of SNTFC „CFR Călători” S.A paper no. DT2/2/158/07.05.2021.

### Safety recommendations

Considering the causal, contributing and systemic factors identified during the investigation, for the prevention in the future of some similar accidents or incidents, in accordance with the provisions of art.26, paragraph (2) of the Emergency Government Decision no.73/2019 for railway safety, the investigation commission issues the next recommendations:

Preamble of recommendation no.385/1

During the investigation there were found deficiencies about the working of the valves for the brake control P106 and that within the planned repairs type R8 and R9, there is not stipulated that these valves shall be checked on benches for proving their good working.

Safety recommendation no.385/1

Romanian Railway Safety Authority – ASFR shall ensure that SNTFC „CFR Călători” SA re-assesses the drafting of the technical specifications, so these include also the checking of the valves for the brake control P106 on authorized benches

Preamble of recommendation no.385/2

During the investigation, there was found that, SNTFC „CFR Călători” SA has the operational procedure „Planning of inspections and repairs at locomotives, multiple units and electric train sets got by SNTFC „CFR Călători” SA” - PO-0-8.1-15, for the regulation of the schedule of the planned inspections and repairs, but for the multiple units type Desiro, this schedule is made without meeting with the norms of time and km imposed by the Railway Norm 67-006:2011 „Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of planned inspections and repairs", approved by Order of Minister of Transports and Infrastructure no.315/2011, amended by Order of Minister of Transports and Infrastructure no.1359/2012, Order no.1255/2014, Order no.1187/2018, Order no.1744/2020 and Order no.2159/2020. With reference to the procedure above mentioned, there was found that it does not contain provisions for the withdrawal of locomotives/multiple units when they reach the norm of time/km as well as the lack of appointment of staff responsible for the performance of this activity.

Safety recommendation no.385/2

Romanian Railway Safety Authority – ASFR shall ensure that SNTFC „CFR Călători” SA revises the operational procedure „Planning of inspections and repairs at locomotives, multiple units and electric train sets got by SNTFC „CFR Călători” SA” - PO-0-8.1-15, so by its application be met the provisions imposed by Railway Norm 67-006:2011 „Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of planned inspections and repairs", approved by Order of Minister of Transports and Infrastructure no.315/2011, amended by Order of Minister of Transports and Infrastructure no.1359/2012, Order no.1255/2014, Order no.1187/2018, Order no.1744/2020 and Order no.2159/2020,

Preamble of recommendation no.385/3

During the investigation, there was found that, SNTFC „CFR Călători” SA identified the dangers mentioned at chapter „4.d. Mechanisms for feedback and control, including the management of risks and safety management, as well as the monitoring processes”, but the measures disposed for keeping under control the risks associated were not completely applied, and the monitoring process was ineffective.

Safety recommendation no.385/3

Romanian Railway Safety Authority – ASFR shall ensure that SNTFC „CFR Călători” SA re-assesses the monitoring of the measures established for keeping under control the risks associated to the dangers that developed in case of this incident.

**3.4.10.** The railway accident happened on 6th June 2021, in the railway county Timișoara, in Poarta railway station, on the line 4 - km 437+200, consisted in a fire burst into the locomotive EA 071, hauling the freight train no.81690 (got by the railway undertaking SNTFM „CFR Marfă” SA).

The investigation report was completed on 30th June 2022.

### Causal factors

The appearance of some electric arcs at the welding cracks of the connection between the joining bar and the windings of the coil from the electric filter, afferent to the power cables B1 and B2, that ignited the dust deposits, the covering paint and the polyvinyl chloride insulation of the conductors, from the tank of the electric filter;

#### **Contributing factors**

Keeping in operation of the locomotive after exceeding the operational life, without meeting with the technical potential that had to be ensured by the interventions stipulated by the regulations in force, for getting from AFER a Technical Approval for a vehicle with the operation life exceeded;

#### **Systemic factors:**

Lack from the procedure PO 04.3 of some clear rules regarding the withdrawal from traffic of the locomotives with the prescribed operation life exceeded, for the performance of the interventions necessary for getting from AFER a Technical Approval for a vehicle with the operation life exceeded;

#### **Safety recommendations**

The investigation commission found that in the procedure PO 04.3, part of Safety Management System-SMS of SNTFM, are missing clear provisions regarding the measures that have to be taken for the locomotives exceeding the operational life prescribed, respectively clear rules for the withdrawal of the locomotives from traffic, for the performance of the interventions necessary to get from AFER the Technical Approval for a vehicle with the operational life exceeded;

For decreasing the risks, for the future prevention of some similar accidents or incidents, in accordance with the provisions of art.26, paragraph (2) of the Government Decision no.73/2019, the investigation commission issues the next recommendation:

Safety recommendation no. 386/1

ASFR shall make sure that SNTFM revises the procedure PO 04.3, so it include clear provisions regarding the measures that have to be taken for the locomotives with the prescribed operational life exceeded, respectively their withdrawal from traffic for the performance of the interventions necessary for getting from AFER a Technical Approval for a vehicle with the operational life exceeded.

**3.4.11.** The railway accident happened on 15th June 2021, in the railway county Cluj, in Dej Triaj railway station, on the switch no.6A, in the running of freight train no.48375, hauled with the locomotive DA 897 (got by the railway undertaking SNTFM „CFR Marfă” SA) and consisting in 14 wagons type Faccpps (got by the railway infrastructure administrator CNCF „CFR” SA), the axle no.3 in the running direction, the first one at the second bogie of the wagon no.82536993612-5, the 3rd one in the train composition derailed, and all axles of the wagon no.82536993757-8, the 4th one of the train, derailed.

The investigation report was completed on 7th June 2022.

#### **Causal factors**

Load transfer of the left wheel from the first axle in the running direction of the wagon no.82536993757-8, generated by the quantity of 9,24 t stone existing in the right compartments of the wagon, it generated the increase of the ratio between the guiding force and the loads acting on this wheel, so exceeding the derailment stability limit.

#### **Contributing factors**

Coupling the wagon no. 82536993757-8 to the train no.48375, unloaded completely and with freight left on one side, provided that:

- the responsible from CNCF did not check and write down in the Register for Inspections Lines and Installations, Traffic Safety from Monor Gledin railway station;
- the staff of the railway undertaking SNTFM did not check it when it was coupled to the train in the railway station Beclean pe Someș;

#### **Systemic factors**

- there isn't an internal procedure of CNCF for the wagons used for the materials necessary to perform works at the lines, for assigning to the own staff the responsibilities of checking the uniform distribution of load left and sending of the respective information;
- lack of some specific regulation within SNTFM for transferring to the own staff the responsibilities for delivery-reception the wagons Faccpps, owed by CNCF „CFR” SA, before being coupled at the train.

**Additional remarks**

The wagons no.82536993757-8 and no. 82536993612-5, got by CNCF, involved in the accident, are not matriculated in the National Register of Vehicles, against art. 4. - (1) from Order no. 1484/2014 regarding the measures for application the Commission Decision 2007/756/CE from the 9th November 2007 for the ratification of a common specification of the national vehicle register, stipulated at art. 14 paragraphs (4) and (5) from the Directives 96/48/CE and 2001/16/CE.

**Safety recommendations**

The investigation commission concluded that the accident happened following the identified factors that led to the putting into service the wagon no. 825369937578, loaded partially, with load rested on a side, in the conditions where there were no internal procedures at CNCF and SNTFM, clear tasks for the control of the uniform distribution of the rested load.

CNCF has not an internal procedure for checking the wagons used for the transport of the materials necessary in the performance of works at lines. The handling after unloading of the wagons carrying pit or ballast products for the own units are mentioned in the paper no.41/73/1988 of the Traffic Safety Inspectorate within the Minister of Transports, Tourism and Constructions-DEP.C.F., that does not assign to the own staff the responsibilities for checking the distribution as uniform as possible the rested load.

During the investigation resulted that SNTFM has procedures for the delivery-reception and checking of the complete unloading of wagons, only for the own wagons or those got by the railway undertaking used by SNTFM for making transports in the system of successive carriers (that is a transport is made by many carriers from one point to another one). In case of wagons got by entities that are not railway undertakings, there are not drafted/used procedures/regulations for the delivery-reception of wagons.

For the prevention of some accidents, in accordance with the provisions of art.26, paragraph (2) of the Emergency Government Decision no.73/2019 for the railway safety, the investigation commission considers timely to issue for ASFR, the next safety recommendations:

**Safety recommendation 387/1**

Romanian Railway Safety Authority – ASFR shall ensure that CNCF drafts internal procedures for the wagons used for the material necessary in the performance of works at lines, that assign for the own staff the responsibilities for checking the distribution as uniform as possible of the rested load and notification of the respective information;

**Safety recommendation 387/2**

Romanian Railway Safety Authority – ASFR shall ensure that SNTFM re-assesses the procedures (regulations) for delivery-reception of wagons, including all cases of taking for transport, inclusively the wagons got by entities that are not railway undertaking.

**3.4.12.** The railway accident happened on 26th June 2021, in the railway county Braşov, Vânători railway station, there was the derailment of first axle in the running direction of the locomotive EA 317, it hauling the freight train no.21817-2 (got by the railway undertaking SNTFM „CFR Marfă” SA).

The investigation report was completed on 15th June 2022.

**Causal factors**

Existence within the track, at the accident site, in a track section with the slope of the track twist over the maximum accepted value, it leading to the load transfer of the guiding wheel and implicitly, to the increase of the ratio between the guiding force and the loads acting on this wheel, exceeding the derailment stability limit.

**Contributing factors**

- keeping within the joint, of some deteriorated constructive parts of the track superstructure, following of it, under the action of the dynamic forces generated by the locomotive running, at the joint, appeared a lateral shoulder.
- performance of track technical inspections at longer times than those stipulated by the practice codes.
- existence of a load transfer between the wheels of the guiding axle, it leading to a smaller load than the minimum accepted one on the right wheel, in the train running direction.
- ineffectiveness of the hydraulic dampers at the axle derailed.

**Systemic factors**

- non-ensuring of the staff necessary for the performance of the technical inspections at the times stipulated in the practice codes and for keeping the track superstructure in good traffic safety conditions;
- the entity, responsible with the track superstructure maintenance, performed with deficiencies the identification and assessment of risks generated by the own railway operations.
- the entity, responsible for the locomotive maintenance, performed with deficiencies the identification and assessment of the risks generated by the own railway operations.

**Additional remarks**

During the investigation, there were the next additional remarks on the deficiencies and gaps, without relevance for the causal, contributing or systemic factors of the accident:

- lack of schedule and performance of works for rectification the expansion joints at the accident site, works necessary to be run because the values of the expansion joints were not between the accepted tolerances.
- lack of mechanized overhauls and periodical repairs works, necessary to be made.
- The locomotive involved in the accident was kept in operation after reaching the norm of time for the performance of planned repairs.

**Safety recommendations**

Motivation of lack of safety recommendations

Considering the fact that both the factors, causing the accident and those increasing the possibility of the occurrence, by the acceleration of the affect during the time, are deviations from the practice codes and from keeping under control the risks associated to the railway operations, regarding the application of safety management system by the economic operators involved, that is obligation for each economic operator carrying out railway transports once getting the Safety Authorization or Unique Safety Certificate, the investigation commission does not consider necessary to issue some safety recommendations.

We underline that, just missing some safety recommendations, upon the remarks made by the investigation commission, following the nonconformities found, CNCF și SNTFM can dispose safety measures considered necessary for keeping under control the risk of derailment.

**3.4.13.** The railway incident happened on 28th June 2021, in the railway county Craiova, track section Craiova – Piatra Olt, in Robănești railway station, the entry route for passenger train no. 9036 (got by railway undertaking SNTFC „CFR Călători” SA) was wrong switched.

The investigation report was completed on 7th June 2022.

**Causal factors**

- non-operation of switch no.2 on position corresponding to the commanded route, and improper use of key 2-, resulted from the operation of switch no.2 on „minus”, in the operation of switch no.4 on „plus”.
- malfunction of the switch lock 4+, that allowed the operation on „plus”, access on direct line II, with another key (2-), than that namely intended (2+).

**Contributing factors**

None.

**Systemic factors**

Lack of a procedure for checking the technical parameters of the switch lock with two keys, during the planned periodical technical inspections at the switch locks with two keys.

**Safety recommendations**

The railway incident happened on the 28th June 2021, at 12:24 o'clock, in running of passenger train Interregio no. 9036 (got by railway undertaking SNTFC), consisting in the multiple unit DESIRO 2084, running between Craiova – Piatra Olt (not-electrified single-track line), in the railway county Craiova, in Robănești railway station, having passing route on the direct line II, the entry semaphore D1/2 on the position „FREE on the main line”, entered the diverging track 3, following the operation of switch no.2 on minus (on diverging route).

Following the investigation there was found that the railway incident was the result of multiple errors in the command and control in the switching the passing route commanded on the direct line II in Robănești railway station, consisting in the non-operation of switch no.2 on the position corresponding to the commanded route, conflicting with the signalling system necessary for the driving the passenger train no.9036, and improper use of the key 2-, resulted from the operation of switch no.2 on „minus”, in the operation of switch no.4 on „plus”(against the Regulations for the working of the interlocking system of Robănești railway station– chapter III, point 1), corroborated with the unsuitable working of the lock from the switch 4+, that allowed the operation on „plus”, access on the direct line II, with another key (2-), than that namely intended (2+), (against the Instruction no.351/2017, art.109). The installations for ensuring with locks and block and installations for ensuring with mechanic panels, for the control of the switches and signals positions, have to ensure the reciprocal locking of the switches and signals, by the control locks for switches and signals, according to the schedule for locking established for each station).

Considering the findings and conclusions of the investigation commission above mentioned, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to address ASFR the next safety recommendations:

Preamble recommendation no.389/1

The investigation commission found that the railway incident was the result of multiple errors in the command and control in the switching the passing route commanded on the direct line II in the railway station Robănești, consisting in the non-operation of switch no.2 on the position corresponding to the commanded route, conflicting with the signalling system necessary for the driving the passenger train no.9036, and improper use of the key 2-, resulted from the operation of switch no.2 on „minus”, in the operation of switch no.4 on „plus”(against the Regulations for the working of the interlocking system of the railway station Robănești – chapter III, point 1)

Safety recommendation no.389/1

Romanian Railway Safety Authority-ASFR shall ensure that the infrastructure manager reinforces the training and surveillance of operating staff (movements inspectors, pointsmen, points inspectors), regarding the legal issues connecting to the operation of safety installations, focussing on the compulsory dispositions specific to their use rules specified in the instructions in force (operation) or the user’s guide.

Preamble recommendation no.389/2

The investigation commission found that the railway incident was the result of unsuitable working of the locking from the switch 4+, that allowed the operation on „plus”, access on the direct line II, with another key (2-), then that namely intended (2+), (against the Instruction no.351/2017, art.109. Installations for ensuring with locks and block and installations for ensuring with mechanical panels for the control of the switches position and signals have to ensure the reciprocal interlocking of the switches and signals, by the control locks for the switches and signals, according to the schedule of locking established for each station).

Safety recommendation no.389/2

ASFR shall ensure that the infrastructure manager draws a procedure that includes the checking of technical parameters of the switch lock with two keys, during the planned periodical technical inspections at the switch locks, so there was no more allowed the operation and securing of a lock with two keys, with another key than that namely intended.

**3.4.14.** The railway accident happened on 8th July 2021, in the railway county Cluj, in Câmpia Turzii railway station, on the track section 022, track I, km 452+255, consisted in the derailment of two axles of the wagon no.50538483005-3 of passenger train Regio 3081 (got by the railway undertaking SNTFC „CFR Călători” SA).

The investigation report was completed on 5th July 2022.

#### **Causal factors**

Breakage of the solebar from the bogie no.2 of the wagon no.50538483005-3 (having cracks in the solebar from the side corresponding to the wheels 5-7), that led to the load transfer of the wheel no.6 (situated on the right side in the train running direction);

#### **Contributing factors**

Nonidentification of cracks existing in the solebar of the bogie, during the inspection type RTI-2, as well as during the performance of technical inspections at the trains in the composition of which the wagon no.50538483005-3 ran, on the 7th July 2021 and on the 8th July 2021.

#### **Systemic factor:**

Nonidentification of the risks generated by the situations where, within the works performed during the inspections type RTI, as well as during the technical inspections at the own trains, there are not identified failures that can endanger the railway safety.

#### **Measures taken after the accident**

Following the accident SNTFC notified the next measures taken:

The General Traffic Safety Inspectorate worked out the Plan of measures no.RGSC1/2/510/08.07.2021, hereinafter referred to as Plan of measures, including additional tasks and responsibilities for the inspection of the wagons endowed with bogies type GP200, both for the wagon inspections and for CFR acceptances in the repairing units, as follows:

- during the monthly radical technical preparation of wagons endowed with bogies type GP200, during the inspection of the bogie on the line with inspection pit, shall participate also technical-engineering staff, which shall confirm, upon sign, the performance of these works;
- during the technical inspection in the composition, a high attention shall be paid to the inspection of wagons endowed with bogies type GP200, at these inspections being compulsory the presence of the wagon foreman;
- during RTI2, for the identification of possible cracks, the measure of cleaning the bogie frame of the deposited materials shall be taken, for all types of wagons, operation that shall be carried out by specific methods (scrapping, polishing, etc.). The cleaning of the bogie frame shall be surveyed and confirmed, upon sign, by the technical-engineering staff in the specific registers;
- along the technological process for the performance of specific works at the bogie type GP200 into the repairing plants, technical reception department CFR shall pay high attention to the inspection and repair of the failures found at this type of bogie;
- Wagon Direction, together with the SC Atelierele CFR Grivița shall perform a technical analysis of the cracks appearance at the bogie GP200 and, in accordance with the analysis result, the imposing measures shall be taken.

The Plan of measures was notified to all wagon units, and staff responsible for the training and control included into the control themes the checking of the compliance with the measures disposed and immediate reporting of all cases of cracks found at the bogie frames;

There was disposed that at all the wagons endowed with bogies type GP200, during the repair type RTG, bogies be cleaned by sanding and checked with penetrating liquid for the identification of possible microcracks on bogie surfaces. This measure was introduced in all technical specifications got planned repairs at cars endowed with these types of bogies.

#### **Additional remarks**

During the investigation there were the next additional remarks on some deficiencies and gaps, without relevance for the causal, contributing or systemic factors of the accident occurrence:

- the form „Presentation of the train wagons” is not filled in according to the art.40 from the Regulation for the train running and shunting of the railway vehicles no.005 from 2005, that is the form used does not contain the box for „necessary weight for automatic braking and keeping stopped with the handbrake”, and these records missing in the form.

#### **Safety recommendations**

The railway accident happened on the 8th July 2021, in the railway station Câmpia Turzii was caused by the improper technical condition of the frame of bogie no.2 from the wagon derailed (cracks in the solebar situated on the side corresponding to the wheels 5-7).

Considering the measures taken by SNTFC following the accident, presented into Cap.5.b., the commission considers that it is not necessary to issue a safety recommendation

**3.4.15.** The railway accident happened on 8th July 2021, in the railway county București, track section Ploiești – Brașov (electrified double-track line), on track I of the running line between Bușteni and Azuga railway stations, km 133+800, consisted in a fire burst at the upper part of wagon no.33877852226-2, the first one in the composition of freight train no.80498-1 (got by the railway undertaking SC Grup Feroviar Român SA).

The investigation report was completed on 2nd June 2022.

#### **Causal factors**

The sparks appeared following the electric arcs between the parts existing on the locomotive roof and pieces of vegetation, sparks that then led to the ignition of the petrol steams released in the upper part of the first wagon of the train.

#### **Contributing factors**

Existence of very dense and considerable height vegetation in the railway station where the train was composed, closed to the line where the train was dispatched from, this vegetation, in the weather conditions on the dispatching date, allowed that pieces of vegetation arrive on the roof of hauling locomotive of freight train no.80498-1.

#### **Safety recommendations**

The railway accident was caused by some electric arcs appeared on the locomotive roof, that then led to the ignition of the petrol steam released in the upper part of the wagon no.33877852226-2.

Following the investigation, the conclusion was that, the most likely, the existence of very dense and considerable height vegetation in the station for the composition of the train involved (Ploiești Est), close to the line where the train was dispatched from, increased the probability that, in conditions of wind blowing from the direction of the area with that vegetation, pieces of vegetation arrive on the roof of the locomotive hauling the freight train no.80498-1.

Considering the findings and conclusions of the investigation commission above mentioned, the degree of uncertainty in the establishment of the influence had in the accident occurrence by the existence of vegetation very dense and considerable height on the line where the train was dispatched from, as well as during the checking made at the rolling stock, there were identified any nonconformities, AGIFER considers that is not timely to issue some safety recommendations in case of this accident

**3.4.16.** The railway accident happened on 12th July 2021, in the railway county Brașov, track section Vânători – Brașov (electrified double-track line), in Beia railway station, on direct line II, km 263+407, in the running of freight train no.99514 (got by the railway undertaking SC VEST TRANSRAIL SRL), consisted in a fire burst into the first wagon of the train, loaded with logs.

The investigation report was completed on 4th July 2022.

#### **Causal factors**

Hot aluminium granules from the support of the pantograph slipper reached the wood load from the wagon no.33876735081-6.

#### **Contributing factor**

Lack of some barriers for stopping the arrival of some hot detachments from the pantographs of the electric locomotives on the fuel load of wagons, is a contributing factors, that could lead to similar accidents in the future.

#### **Systemic factor**

Non applicable

#### **Safety recommendations**

Preamble at the safety recommendation

Because the contributing factor of the accident is the most probably that above mentioned, the investigation commission considers that these are conditions that can repeat and generate fires in the future, if no additional safety measures are taken.

During the investigation resulted that the railway undertaking VTR could not reasonably anticipate the danger of detachment from the support of the pantograph slipper of some hot aluminium granules and that

those could trigger a load fire, because there are no practice codes for the control of risks of fires having the causes mentioned and there was not been a change upon which the railway undertaking VTR shall start the performance of a change analysis.

Although, the investigation commission found that within the railway field there are no previous documented cases investigated, fires caused by fall of hot particles from the support of the pantograph slipper, lessons for VTR to learn that it is necessary to control the risks of fires having the mentioned causes.

We underline that the national regulations recommend that the locomotive 060-EA shall run with the back pantograph working (the closest to the train set), these being the circumstances that can lead again to a similar accident.

The investigation identified that, with a few exceptions, the national safety norms do not prohibit the use of front pantograph of the locomotive, the farthest one from the first wagon after the locomotive. So, using the front pantograph, the fuel loads from the first wagon after the electric locomotive could be better protected, increasing the time available for cooling the hot particles detached from the pantograph slipper, before these shall reach the first wagon after the locomotive.

The investigation also identified that the type of pantograph slipper with mechanical fastening has the drawback of an electric contact by points, having like consequence the zone overheating of the aluminum support of the pantograph and the release of some aluminium particles heated over 600 °C. These particles overheated at 600 °C, generate risks of ignition of the materials with the ignition temperature under 600 °C.

The contact defects between the pantograph and the contact wire led to transitory electric phenomena similar to those generated when the electric circuits are on. In case of electric traction, the electric sparks appeared when the electric circuits are on and that can be avoided, are mostly fire sources, according to the work Fires Prevention. It stands to reason that the wagons loaded with hazardous/fuel products, open ones, being close to those electric phenomena, generate the risks of load ignition.

Considering these above mentioned, in accordance with the provisions of art.26, paragraph (2) from the Emergency Government Decision no.73/2019 for the railway safety, the investigation commission considers necessary an analysis of the risks of fires at the fuel load of open wagons, being in the composition of trains hauled with electric locomotives, without excluding safety measures that consist in the use of the front pantograph of the locomotives, use of the pantograph slippers version with glazed brush or the use of safety wagons, therefore the next safety recommendation is issued

Safety recommendation nr. 392/1

ASFR shall ask the railway undertaking VTR to assess the risks of a fire at fuel load from the open wagons, being in the composition of trains hauled with electric locomotives, not excluding the draft of a specific regulation or the request spread to the other railway undertakings.

**3.4.17.** The railway accident happened on 15th July 2021, in the railway county București, track section București Nord - Videle (electrified double-track line), in Bucureștii Noi railway station, on the switch no.12C, km0+550, in the running of freight train no.83548G-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), consisted in derailment of the first 3 axles in the running direction of the hauling locomotive ED 022.

The investigation report was completed on 14th June 2022.

#### **Causal factors**

Exceeding of the derailment stability limit, following the improper technical condition of the track leading to the climbing of the ga by the guiding wheel from the first bogie of the locomotive ED 022 on the planned area of the curved point of the switch 12C.

#### **Contributing factor**

- performance of the fortnightly inspection of the track, with an incomplete team, it leading to the decrease of the activity efficiency;
- ineffective monitoring of the development of the failures registered at the trolley for the track measurement, it leading to their deterioration.

#### **Systemic factors**

- ineffective management of the risks associated to the dangers generated by the exceeding of the tolerances accepted for the level on a switch;
- provision with an improper trained human resources, in relation to the necessary ones, for the performance of the proper line maintenance and keeping the track condition between the tolerances accepted.

#### **Measures taken after the accident**

When the draft report was completed, the switch no.12C rested closed for traffic and shunting.

#### **Safety recommendations**

The accident happened on the 15th July 2021, on the route for passing on line no.2 of Bucureștii Noi railway station, on the switch no.12C operated on „diverging track” was generated by the improper technical condition of the railway infrastructure.

During the investigation, there was found that the improper technical condition of the track was generated by the unsuitable maintenance, that was not made in accordance with the provisions of the practice codes (reference documents associated to the procedures of infrastructure administrator safety management system).

Applying the own procedures from the safety management system, completely, as well as the provisions of the practice codes, part of safety management system, the infrastructure administrator should keep the technical parameters of the track geometry between the limits of tolerances imposed by the railway safety and, so, it could be avoided the accident occurrence.

Considering the findings and conclusions of the investigation commission above mentioned, for the prevention of some similar accidents, AGIFER issues the next safety recommendations:

Preamble recommendation no.393/1

The investigation commission found that the public railway infrastructure administrator did not keep the technical parameters of the track geometry between the limits of the tolerances imposed by the railway safety and did not effectively manage the risks associated to the dangers generated by the exceeding of the tolerances accepted for the gauge level at the switch 12C.

Recommendation no.393/1

Romanian Railway Safety Authority – ASFR shall ensure that the railway public infrastructure administrator re-assesses the risks associated to the danger generated by the exceeding of the tolerances accepted for the gauge and level at the switch.

**3.4.18.** The railway accident happened on 18th July 2021, in the railway county Constanța, track section Fetești – Ciulnița (electrified double-track line), end X of the railway station Jegălia, in the running of passenger train no.8008 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in a fire burst at the diesel engine (traction one) no.2 of the multiple unit AMD no.2084.

The investigation report was completed on 13th July 2022

#### **Causal factors**

- cumulation of dust and vegetable rests on the upper side of diesel engine no.2, that, together with the diesel and oil rests from the engine, generated an inflammable mixture;
- generation of a short-circuit at the cables of the speed sensors from the diesel engine and gear box, the short-circuit led to the ignition of the deposits existing on the diesel engine.

#### **Contributing factors:**

- running of the multiple unit Desiro no.2084 with the diesel engine no. 1 switched off, it leading to the working of the diesel engine no.2 at a high temperature, favouring the appearance and extension of the fire in the upper site of this engine;
- non-performance of planned repairs types R8 and R9 at the multiple unit Desiro no.2084.

#### **Systemic factors**

The multiple unit Desiro no.2084 was not withdrawn from operation, after reaching the norm of time/km for the performance of planned inspections and repairs;

#### **Additional remarks**

- in the Technical Specification „Planned repairs types R1, R2, R3, R4, R5, R6 at the multiple unit Desiro SR 20D” code: ST 9 – 2019 edition 1 revision 0, in the list of works, point 21 „Trains and

electronic groups”, for the works performed at ZSG computer of the multiple unit it is stipulated the operation „One reads the failures stored” during the periodical repairs type R2÷R6.

- At the analysis of data downloaded from the memory of ZSG computer of the multiple unit Desiro no.2084, the investigation commission found that those data were completely wrong, so unusable. The events found were from 1996, so long time before the date of putting into operation the multiple -units.
- Following the repairs made after the accident, the first valid events were registered in the memory are starting with the 20th September 2021.
- The investigation commission concluded that the multiple unit Desiro no.2084 worked a long time with ZSG event registering out of service, because these data are not downloaded and analyzed periodically in order to check the technical condition of the multiple unit, as it is stipulated in the Technical Specification.
- The investigation commission considers that the recovery of the information stored in the memory of ZSG computer could signal early possible failures and in a such way it could allow taking early measures that can prevent the occurrence of similar accidents in the future.
- the norms of time and km between the inspections types R1 ÷ R6 for the multiple units Desiro stipulated in the Railway Norm 67-006:2011 „Railway vehicles. Types of planned inspections and repairs”, table 3.1 no. crt.10 were not met with;

### Safety recommendations

In case of railway accident happened on the 18th July 2021, in the running of passenger train no.8008 there was found that the fire at the multiple unit Desiro no.2084 was generated by the dust cumulations, vegetable rests and oil rests on the upper side of the group power-pack no.2, the cleaning operations of this area being stipulated to be performed during the periodical repairs types R8 and R9, but the multiple unit was not withdrawn from traffic when it reached the norm of time, respectively km, for carrying out those repairs, it being kept in operation up to the fire

Regarding the non-performance of periodical repairs types R8 and R9, respectively the non-withdrawal of the multiple unit when it reached the norm of time, respectively km for the performance of those repairs, there was issued a safety recommendation during the investigation of the railway incident happened in the railway station Golești, on the 1st June 2021, consisting in the passing of the signals XIC, XPIII and XIII in stop position, these being on „STOP without passing the signal in stop position!” (safety recommendation no.385/2).

**3.4.19.** The railway incident happened on 12th July 2021, in the railway county Craiova, track section Filiași – Turceni, in the railway station Filiași, consisted in the exceeding of the speed of 30km/h, by the freight train no.80230-1 (got by the railway undertaking SC Grup Feroviar Român SA), when it ran on the diverging track, on switches no.4 and 8.

The investigation report was completed on 27th June 2022.

### Direct cause

It is represented by the human error appeared in the train driving, carried out by the driver which did not see the positions of: entry signal X, passing signal X II P, exit signal X II provided with direction indicator and he did not take measures for decreasing the speed, when the train entered the deflecting section, on the switches no.8 and 4, end Y of the railway station Filiași.

### Contributing factors

- fatigue of the driver, generated by the long working time, having, when the incident happened, an working time of 114 hours and 53 minutes;
- the running of the locomotive, hauling the train, with the installations INDUSI and DSV insulated unjustifiably;
- non-communication of the positions of the signals between the and the driver’s assistant.

### Underlying causes

The infringement of some provisions from the regulations and instructions in force, respectively:

- infringement of the provisions of art.7, from Signalling Regulation no.004, approved by Order of Minister of Transports, Constructions and Tourism no.1482 from 4th August 2006, that is the driver did not meet with the maximum speed accepted for the running on the switches for diverging track;

- infringement of the provisions from art.2, art.9 and art.10 of Norms for the maximum continuous duty accepted for the locomotive crew on Romania railway network, approved by the Order of Minister of Transports no.256/2013, that is the driver did neither receive nor asked rostering of staff, because he exceeded both the maximum continuous duty for the locomotive, and the rest outside the home;
- infringement of provisions from art.9, paragraph (1), letter o) from Instructions for the activity of the locomotive crew no.201/2006, regarding the obligation of the locomotive crew to perform the operations stipulated in the specific instructions, for the traffic safety systems put into the locomotive;
- infringement of the provisions from annex 2, art.1, paragraphs (3) and (4), from Instructions for the activity of locomotive crew no.201/2006, that is the driver isolated unjustifiably the installations INDUSI and DSV;
- infringement of the provisions art.137 paragraph (2) from Instructions for the activity of the locomotive crew no.201/2006, that is the driver's assistant did not stay at his working place, into the driving cab, he did not watch carefully the position of signals, line condition and the conditions for entry into the station and he did not communicate them to the driver.

#### **Root causes**

Non-application completely the provisions of Disposal no.7 from 17th June 2013, part of safety management system, it allowing the driver of the locomotive EA 477, on 12th July 2021, to exceed 3 times the maximum continuous duty accepted for the locomotive and to have 4 times rest outside the home between 8th-12th July 2021.

#### **Safety recommendations**

None.

**3.4.20.** The railway accident happened on 20th July 2021, in the railway county Constanța, track section Palas - Medgidia (electrified double-track line), in Dorobanțu railway station, in the running of freight train no.50830-1 (got by the railway undertaking SC EXPRESS Forwarding SRL), consisted in the derailment all axles of wagon no.83536652305-7.

The investigation report was completed on 20th July 2022.

#### **Causal factor**

The guiding wheel (no.7) from the first axle of the wagon no. 83536652305-7 climbed the rail at the common crossing of switch no.22. The climbing of the rail by the guiding wheel happened following the hit of the buffing gear body, fallen on the left track, following the breakage of the welded joint between the buffing gear body and the fastening flange on the front beam of the wagon no.82536653595-2.

#### **Contributing factors**

Existence of some deficiencies at the buffing gear, from the left side in the train running direction, corresponding to the wheel no.1, from the wagon no.82536653595-2, not identified during the technical inspections at the train in the composition of which it was, on the 20th July 2021.

#### **Systemic factors**

- inobservance of the operational procedures for the monitoring of the train technical inspections.
- lack of some agreements/ contracts, having like object the performance of technical inspections at trains, so not being established the obligations and responsibilities of parties.

#### **Measures taken after the accident**

In accordance with the telegram no. 131/29.03.2022, closing completely the track I 800 Dorobanțu – Basarabi and the line 8 from the railway station Dorobanțu, there are performed replacements of concrete normal sleepers, special sleepers on the bridge, welding of the line and packing of sleepers between the 1st April 2022 – the 20th May 2022, in order to remove the speed restriction established by the working timetable.

#### **Safety recommendations**

The railway accident happened on the 20th July 2021, in the railway county Constanța, track section Medgidia - Palas (electrified double-track line), in Dorobanțu railway station, on switch no.22, in the running of freight train no.50830-1, was caused by the impact between the wagon wheel and a buffing

gear, detached from the welded joint and fallen on the line (left side in the train running direction, corresponding to the wheel no.1) from the wagon no.82536653595-2.

During the investigation, one found that the technical condition of the buffing gear (corresponding to the wheel no.1 from the wagon no.82536653595-2) was improper.

Preamble recommendation no.1

During the investigation, one found that SC EXPRESS FORWARDING SRL identified the dangers mentioned into chapter „4.d.Mechanisms of feedback and control, including the management of risks and management of safety, as well as the monitoring processes”, but the measures disposed for keeping under control the risks associated were not completely applied, and the monitoring process was ineffective. There was also found the lack of agreements/contracts, having like object the performance of train technical inspections, so not being established the obligations and responsibilities of parties.

Recommendation no. 395/1

Considering these above mentioned, the investigation commission considers necessary to issue a safety recommendation for Romanian Railway Safety Authority – ASFR, that is it shall ensure that, SC EXPRESS FORWARDING SRL, like railway undertaking, re-assesses the own prevention measures for keeping under control and reducing the risks associated to the technical inspections and maintenances of wagons in operation, respectively of the risk to perform works/render services with thirds, without setting obligations and responsibilities for the parties by agreements/contracts.

**3.4.21.** The railway accident happened 21st July 2021, in the railway county Constanța, track section București - Constanța (electrified double-track line), in Fetești railway station, end X, in the running of freight train no.64288 (got by the railway undertaking SC ROFERSPED SA), consisted in the derailment of three wagons derailed (the wagon no.31539337010-3, being the 8th one, having all the axles derailed and being reclined, wagon no.31539332040-5, the 9th one with all the axles derailed and reclined, and the wagon no.31539333491-9, being the 15th one with the first bogie derailed in the running direction)

The investigation report was completed on 20th July 2022.

#### **Causal factors**

Fall, between the rails, of the third shutter cover (hinged unloading trap) and hit of the front beam of bogie no.2, in the running direction of the train, leading to the load transfer of the wheels no.5-6, corresponding to the axle no.3, of the wagon no.31539337010-3, it generating the stress-relief and fall of those two sets of helical suspension springs from the guides.

#### **Contributing factors**

- lack of blocks-limiting devices of the shutter cover from the third downloading orifice (in the running direction) of the wagon no.31539337010-3, under the conditions in which its ensuring system was on open.
- technical inspection at the composition of train.

#### **Systemic factors:**

- nonidentification of the risks generated by the situations where, during the works performed within the technical inspections at the trains, there are not identified the failures that can endanger the traffic safety, and there are not met the provisions of art.87, table 7 – „failures and wears at the wagon body” from the Instructions for the technical inspection and maintenance of wagons in operation no.250/2005, regarding the withdrawal from traffic of the wagons with failures and parts missing at the closing devices.
- lack of operational procedures for the identification of risks associated to the railway safety and technical inspection at wagons and of the measures corresponding to the dangers not identified.

#### **Measures taken after the accident**

After the accident, between the 28th July – 11th August 2021, one stored up with special wooden sleepers for the affected switches no.9 and 11, one performed works for stone downloading and mechanic packing of sleepers, so, the speed of trains was raised at 50km/h.

#### **Safety recommendations**

The railway accident happened on the 21st July 2021, on the exit route of the freight train no.64288, on the direct line 3 of the railway station Fetești, on the switches no.33 and 11, km 145+620, to Lehliu railway station, was caused by the fall between the rails of the third shutter cover of the wagon no.31539337010-3.

During the investigation, there was found that, for the fastening of the shutter cover, the lock that is operated through the handle of the wheel of the safety system, the wheel outside the wagon was not operated (put) on “closed”, fact for which the unit for closing/opening of the shutter cover, consisting in “drive head (toothed wheel) – rack rail(fitted on by welding on the shutter cover)”, following the vibrations appeared in the wagon running, moved the shutter cover on “open”. Following the inspections there was found the lack of blocks-limiting devices from the shutter cover, without traces that show that they existed previously.

Preamble recommendation no.1

During the investigation, there was found that SC ROFERSPED SA did not identify and assess the dangers mentioned within chapter „4.d. Mechanisms for feedback and control, including the management of risks and the management of safety , as well as the monitoring processes” and did not get operational procedures for the identification of the risks associated to the railway safety, to technical inspection of the wagons and to measures corresponding to the dangers not identified and that developed in case of this accident.

Recommendation no. 396/1

Considering these above mentioned, the investigation commission considers necessary to issue a safety recommendation for Romanian Railway Safety Authority – ASFR, that is it shall ensure that SC ROFERSPED SA, like railway undertaking, re-assesses the own prevention measures for keeping under control and decrease of the risks associated to the technical inspection and maintenance of the wagons in operation.

Preamble recommendation no.2

During the investigation, there was found that SNTFM „CFR Marfă” SA identified the dangers mentioned within chapter „4.d. „4.d. Mechanisms for feedback and control, including the management of risks and the management of safety , as well as the monitoring processes”, but the measures disposed for keeping under control the risks associated were not completely applied, and the monitoring process was ineffective.

Recommendation no. 396/2

Considering these above mentioned, the investigation commission considers necessary to issue a safety recommendation for Romanian Railway Safety Authority – ASFR, that is it shall ensure that, SNTFM „CFR Marfă” SA, like entity in charge with the maintenance, re-assesses the own preventive measures for keeping under control and decrease the risks associated to the technical

**3.4.22.** The railway accident happened on 28th July 2021, in the railway county Constanța, track section București - Constanța (electrified double-track line), in the railway station Fetești, end X, on the direct line II of track I, consisted in end collision of the freight train no.50790-1 (got by the railway undertaking SC EXPRESS Forwarding SRL) by the freight train no.60514-1 (got by the railway undertaking SC TIM RAIL CARGO SRL).

The investigation report was completed on 21st July 2022.

### **Causal factors**

The driver lost the capacity to drive the locomotive, he being alone in the driving cab of the locomotive, with the equipment DSV and INDUSI isolated, without meeting with the provisions in the field, it leading to the passing on danger of the entry signal XC of the railway station Fetești in stop position, that was on „Red” – „STOP without pass the signal in stop position!” by the freight train no.60514-1 and the end collision with the freight train no.50790-1.

### **Contributing factors**

- the driver of the locomotive EA 194, hauling the freight train no.60514-1, involved in the accident, drove it on a track section where he did not do the route reconnoitring according to the regulations in the field.
- exceeding of the maximum continuous duty accepted for the locomotive, that led to a serious fatigue of the driver.

### **Systemic factors:**

- lack of some provisions (barriers) within the General Procedure PG-20 – Maximum continuous duty accepted on the locomotive, that prevent the inobservance of the provisions of Minister of Transports' Order no.256/2013 by the staff of the railway undertaking TRC;
- lack of control and assessment of the driver performance, on the track section București – Constanța (track section where the accident happened) or their formal making on the other track sections by the staff with tasks of training, routing and control within the railway undertaking TRC (without identifying the deviations from the practice codes and the drafting of some action plans with measures for the decrease/removal of these deviations);
- inclusion in the complementary certificate of the track section București – Constanța, without meeting with the conditions regarding the performance of the route reconnoitring;
- ineffective measures for keeping under control the next dangers identified by the railway undertaking TRC, represented by:
  - „failures at the devices of safety, vigilance, control of train speed and recording of the locomotive parameters”;
  - „lack of compliance with the stop positions of the signals or in case of a situation that endangers the traffic safety”;
  - „the locomotive crew did not do the route reconnoitring of the track section on what the train runs”;
  - „exceeding of the maximum duty accepted for the locomotive”.
- lack of an assessment, within the railway undertaking TRC, of the risks associated to the danger represented by the unjustified isolation (without meeting with the regulation in the field) of the devices of safety, vigilance, control of train speed and recording of the locomotive parameters.

#### Measures taken after the accident

Following the accident happened on the 28th July 2021, in the railway county Constanta, ASFR restricted the single safety certificate of the railway undertaking TRC „list of track sections”, starting with the 29th July 2021.

In order to resume the activity, the railway undertaking TRC undertook to implement the measures included in the Monitoring Program no.SC/ 346 /11.08.2021.

Assessing the documentation submitted by the railway undertaking TRC, by the paper no.2000/1712/20.08.2021, ASFR allowed the resuming of the activity of the railway undertaking TRC for 6 months, sending fortnightly the situation on the compliance with the monitoring program and monthly performance of surveillances by the State Railway Inspectorate Timișoara.

Following the railway incident happened on the 11th October 2021, in the railway station Craiova (locomotive DA 1660 being found with the device INDUSI isolated unduly by the driver), at the monitoring program there were added measures from the Supplement at the monitoring program no.SC/799/03.11.2021.

During the implementation of the measures assumed by the railway undertaking TRC notified the revision of the next procedures of SMS too, as follows:

Procedure name	Change in brief
PG-12/ Safety and planning objectives. Assessment of the performance	-raise of the minimum month norm of control; -drafting of a monthly control summary, that is submitted to the general manager; -addition of responsibility for the general manager and for the head of traffic safety department; -setting of deadlines for the removal of the nonconformities found following the controls;
PG-15/ System of the competence management	- for the staff selection, one will use an interview sheet with questions about the safety culture;
PO-01/ Performance of the railway traffic process	-there was changed the activity of staff scheduling and command in order to comply more strictly with the Minister of Transports 'Orders 256/2013 and 866/1986;
PS-10/ Competence, training, awareness	• for the periodical training of the staff are added information about safety culture;

PO-21/ Management of the route sheets	-it was drafted, establishing deadlines for the route sheets arrival at the company headquarters, on decades.
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### Additional remarks

The impossibility to establish the moment when the driver drank alcoholic drinks determined the investigation commission not to include this infringement into the causal chain of the accident occurrence. As it was presented into chapter 4.c.2. Factors in connection with the working place the alcohol consumption even after the event occurrence is during the duty of the driver, job with tasks in the traffic safety, being an infringement of the regulations in the field.

### Safety recommendations

Following the investigation of this accident resulted that the passing of the entry signal XC of the railway station Fetești in stop position, that was on „Red” – „STOP without pass the signal in stop position!”, taking over and coming into collision of the freight train nr.50790-1 by the freight train no.60514-1, happened following the lack of some measures of braking both taken by the human factor and by the devices of safety, vigilance, control of train speed. Considering the findings and conclusions of the investigation commission presented in this report, and taking into account the measures already taken after the accident, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to issue the next safety recommendations.

#### Preamble safety recommendation no.397/1

During the investigation, it emerged the inobservance of the regulations in the field regarding the maximum duty accepted for the locomotive and ensuring of rest at home or during the duty, and from the analysis of the content of this procedure and from the questioning of the staff that had to apply it resulted that this procedure reiterates the provisions of the Minister of Transports' Order no.256/2013 without establishing clear barriers that prevent the infringement of these provisions.

Considering these findings and conclusions of the investigation commission, above mentioned, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to address to Romanian Railway Safety Authority - ASFR, the next safety recommendation:

#### Safety recommendation no.397/1

ASFR shall ask the railway undertaking TRC to revise the General Procedure PG-20 – Maximum continuous duty accepted for the locomotive, in order to establish provisions (barriers), that have both preventive character and effective applicability during the driving of the freight trains, for ensuring that the staff of the company involved in the railway freight transport complies with the provisions of Minister of Transports' Order no.256/2013.

#### Preamble safety recommendation no.397/2

During the investigation, it emerged that the railway undertaking TRC had issued, at the conclusion of the individual employment contract, a complementary certificate that was indicating like infrastructure on which the driver was authorized to drive, including the track section Bucuresti – Constanta, track section where the accident happened, without meeting with the regulations in the field regarding the route reconnoitring.

Following the checking of how the issuing of the complementary certificates is regulated within the railway undertaking TRC, the investigation commission found that, within this railway undertaking, this activity is not regulated.

Considering these findings and conclusions of the investigation commission, above mentioned, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to address to Romanian Railway Safety Authority - ASFR, the next safety recommendation:

#### Safety recommendation no.397/2

ASFR shall ask the railway undertaking TRC to regulate its own activity of issuing complementary certificates for the drivers, in order to eliminate the cases of issuing these certificates, before they meet with all the requirements.

#### Preamble safety recommendation no.397/3

During the investigation, there was found that the railway undertaking TRC identified and assessed the risks associated to the dangers stipulated into chapter „4.d. Mechanisms of feedback and control.....”, but the measures disposed for keeping under control these risks were ineffective.

Considering these findings and conclusions of the investigation commission, above mentioned, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to address to Romanian Railway Safety Authority - ASFR, the next safety recommendation

Safety recommendation no.397/3

ASFR shall ask the railway undertaking TRC to re-assess the risks associated and to establish effective measures for keeping under control the next dangers:

- „failures at the devices of safety, vigilance, control of train speed and recording of the locomotive parameters”;
- „lack of compliance with the stop positions of the signals or in case of a situation that endangers the traffic safety”;
- „the locomotive crew did not do the route reconnoitring of the track section on what the train runs”;
- „exceeding of the maximum duty accepted for the locomotive”.

Preamble safety recommendation no.397/4

During the investigation it emerged that the locomotive EA 194, involved in this event had the the devices of safety, vigilance, control of train speed isolated unduly (without meeting with the regulations in field) and recording of locomotive parameters (DSV and INDUSI). The issues regarding the isolation of the devices DSV and INDUSI, and how these devices, if they had been in operation, they should have ordered the emergency braking of the freight train no.60514-1, was analyzed into chapter „3.a.4. Train composition and equipment”.

Considering these findings and conclusions of the investigation commission, above mentioned, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to address to Romanian Railway Safety Authority - ASFR, the next safety recommendation

Safety recommendation no.397/4

ASFR shall ask the railway undertaking TRC to make an assessment of the risks associated to the danger represented by the unjustified isolation of the devices of safety, vigilance, control of train speed and recording of the locomotive parameters (without meeting with the regulations in the field) and to establish the measures suitable for keeping them under control.

We mention that, although the safety recommendations issued are for the activity of the railway undertaking TRC (it being analyzed during the investigation of the railway accident) but, considering the existence of some cases with similar causes (presented into „Chapter 4.e”), these recommendations are not limitative, they could be extended also to other railway undertakings at which ASFR finds similar gaps during the surveillances.

**3.4.23.** The railway accident happened on 1<sup>st</sup> August 2021, in the railway county Constanța, in Medgidia railway station, on the industrial branch Antestație ROMCIM Medgidia, when the freight train no.30658-1 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL) was stabled, the first axle of first wagon of the train derailed.

The investigation report was completed on 20<sup>th</sup> July 2022.

#### **Causal factors**

Uneven loading of the wagon no.83536658166-7 in relation to its longitudinal axis, because of this condition the report between the guiding force and the load acting on the guiding wheel (1R) shall increase over the derailment stability limit.

#### **Contributing factors**

Taking over for transport the wagon no.83536658166-7 by the railway undertaking, without checking, visually, if the loading of the good in the wagon complies with the provisions from Book I – „Principles” and with the Loading rules established by UIC.

#### **Systemic factors**

- documents concluded between the railway undertaking and the forwarder of the goods don't meet with the provisions of national regulation framework regarding delivery-reception of wagons loaded with goods.
- ineffective management of the risk represented by the routing of the trains with wagons where the goods are not loaded in accordance with the Loading Rules established by UIC.

### **Measures taken after the accident**

The railway undertaking notified that, following the discussions had with the forwarder, it took additional safety measures for the loading process of the wagons. So, it appointed one employee, for each shift, having tasks of monitoring the loading of each wagon and the reporting of each nonconformity that appears within this process and that can endanger the traffic safety.

### **Additional remarks**

During the investigation there was identified a nonconformity in the running schedule of the train involved in the accident, without relevance on the accident factors.

So, following the request for path, made by the railway undertaking to the infrastructure administrator, on the 30<sup>th</sup> July 2021, by the information application, the department in charge with capacity allocation - SAC of the infrastructure administrator allocated a path for the freight train no.30658-1, it going to run between the railway station Mălina (situated on the private railway infrastructure got by Galați SA) and the industrial branch ROMCIM SA București – Working Point Medgidia and for the trains that the main train was going to be splitted in the railway station Medgidia.

The request and granting of paths above mentioned were made in accordance with the provisions stipulated into the operational procedure code PO 0-8.5-09 „Schedule of train running”, document that is part of Safety Management System developed within the infrastructure manager. This procedure stipulates it like reference document and the Law no.202/2016 for the integrity of Romanian railway system within European single railway space. According to the provisions of art.3 „Definitions” of this legal paper, the term path is defined like „infrastructure capacity necessary for allowing the running of a train between two points of the of the network, during a determined period of time” and the term network like „whole railway infrastructure managed by the infrastructure administrator”. We underline that the identical definitions of these two terms are also into chapter 4 „Definitions and abbreviations” from the operational procedure above mentioned.

In the Annex at the Safety Authorization – Part B no. ASB19004, valid when the accident happened, annex by which Romanian Railway Safety Authority - ASFR established the running track section that the infrastructure administrator is authorized to manage and operate, no track section that include the railway station Mălina is mentioned, this station being on the private railway infrastructure that is managed and operated by Liberty Galați SA.

By the same Safety Authorization, ASFR authorized the infrastructure administrator to manage and operate, actually, also the non-interoperable track section Dorobanțu – Romcim, whose terminus point (Romcim) industrial branch, on which was the destination point of the train involved in accident. The authorization by ASFR of the infrastructure administrator to manage and operate this noninteroperable track section was made upon the provisions of the Government Decision no.643/2011 for the approval of the Renting Conditions by CNCF „CFR” SA of some parts of the noninteroperable track section, as well as their management, this legal paper establishing in the Annex 2 the track sections that compose the noninteroperable railway infrastructure, including among these sections, at position no.100, also the track section Dorobanțu – Romcim.

Upon the opinion of the investigation commission, the terminus point of a track section can not be situated on the industrial branch involved, because, in fact, this industrial branch is not managed and operated by the infrastructure administrator, but by its owner, ROMCIM SA București – Working Point Medgidia. This owner gets, for this industrial branch, as it is stipulated at chapter 4.a „Roles and tasks”, regulation for technical operation, endorsed by the infrastructure administrator and approved by Romanian Railway Authority-AFER and authorization for the operation of the industrial branch, granted by AFER.

After analyzing these above mention, the result is that, in case of the train involved in this accident, the infrastructure administrator allocated a path that allow it to run between two points that are not within the network managed by that.

### **Safety recommendations**

The railway accident happened on the 1st August 2021, on the industrial branch got by ROMCIM SA București – Working Point Medgidia, was caused by the irregular loading of the wagon no.83536658166-7 in relation to its longitudinal axis, it leading to the increase of the ratio, between the guiding force and the load acting on the guiding wheel (IR), over the derailment stability limit.

During the investigation, one found that the wagon involved was in the composition of freight train no.30658-1, having the goods loaded irregularly, because it was taken over for transport by the railway undertaking, without checking visually if the loading of goods complies with the provisions from Book I – „Principles” of the Loading rules established by UIC.

Considering the findings and conclusions of the investigation commission, previously mentioned, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to address to ASFR, the next safety recommendations:

Preamble recommendation no.398/1

The investigation commission found that the documents concluded between the railway undertaking and the forwarder of the goods don't comply with the provisions of the national regulation framework regarding the delivery-reception of wagons loaded with goods.

Safety recommendation no.398/1

ASFR shall ensure, through specific surveillances, that the documents concluded between the railway undertaking and the forwarder of the goods comply with the provisions of the national regulation framework regarding the delivery-reception of wagons loaded with goods.

We underline that, although the safety recommendation concerns the activity of Deutsche Bahn Cargo Romania SRL (it being analyzed during the investigation of the accident), it is not limitative, it can be extended also to other railway undertakings at which, ASFR finds, during the surveillances, similar gaps.

Preamble recommendation no.398/2

The investigation commission found that the railway undertaking identified, but did not effectively manage the risk represented by the train routing with wagons where the goods are not loaded in accordance with the Loading rules established by UIC.

Safety recommendation no. 398/2

ASFR shall ensure that the railway undertaking re-assesses the risk represented by the routing of the trains with wagons where the goods are not loaded in accordance with the Loading rules issued by UIC and it establishes viable measures for keeping under control this risk.

**3.4.24.** The railway accident happened on 5<sup>th</sup> August 2021, in the railway county Constanța, in Medgidia railway station, in the running of freight train no.20934 (got by the railway undertaking SC Cargo Trans Vagon SA), consisted in the derailment of all axles of the 4<sup>th</sup> wagon of the train.

The investigation report was completed on 14<sup>th</sup> June 2022.

#### **Causal factors**

Exceeding of the maximum accepted limit for the track gauge in operation on a group of improper special wooden sleepers. It led to the fall, between the curved stock rail and right point, of the first right wheel from the first bogie of the wagon no.84539305086-7, the 4th one of the freight no.20934.

#### **Contributing factors**

Performance of inspections and controls, without recording all the deficiencies, without establishing suitable measures and deadlines for their removal, it led to keeping within the track a group of improper special wooden sleepers.

#### **Systemic factors**

- ineffective management of the risk associated to the danger generated by keeping in operation improper wooden sleepers;
- ensuring improper human resources, in relation to the necessary one, in order to perform the suitable maintenance of the lines and switches.

#### **Measures taken after the accident**

After the performance of the repairs, the train running and shunting on the switch no.45, lines no.10 and 11, end X, of the railway station Medgidia were resumed with the speed established on the 25th March 2022, 12:40 o'clock.

#### **Safety recommendations**

The railway accident happened on 5th August 2021, on the entry route of freight train no. 20934 on the diverging track no.10 from Medgidia railway station, on switch no.45, was caused by the improper technical condition of the railway infrastructure.

During the investigation one found that the improper technical condition of the track was generated by the unsuitable maintenance, that was not made in accordance with the provisions of the practice codes (reference/associated document of the procedures from the infrastructure administrator safety management system).

Considering the similar railway event happened on the 28th December 2020, in the railway county Constanța, track section L2 Medgidia, presented in Chapter 4.e., „Previous similar accidents or incidents” and considering the fact that there were issued safety recommendations in this respect, the investigation commission considers that there is no more necessary to issue other similar recommendations.

**3.4.25.** The railway accident happened on 7<sup>th</sup> August 2021, in the railway county Craiova, track section Caracal – Piatra Olt (not-electrified single-track line), between Vlădueni and Piatra Olt railway stations, km 206+850, in the running of freight train no.20536-1 (got by the railway undertaking SC CER - FERSPED SA), consisted in the derailment of first bogie of the 13<sup>th</sup> wagon of the train, in the running direction.

The investigation report was completed on 4<sup>th</sup> August 2022.

#### **Causal factors**

Following the existing failures at the track geometry, in dynamic conditions, the report, between the guiding force and the load acting on the guiding right wheel (wheel no.8) from the first axle (in the train running direction) of the wagon no.84539305346-5, exceeds the derailment stability limit.

#### **Contributing factors**

- performance of measurements with the testing and recording car or with the track trolley, at times longer those stipulated in the practice codes;
- performance of a detailed control of the curves from the running and main lines from the railway stations, with an incomplete commission, without the district inspector and the representative of the line section management, it favouring the decrease of the activity effectiveness and the failures existing at the track geometry not being identified.

#### **Systemic factors**

- lack of the assessment of the risks generated by the not-ensuring, in the sections of lines, a sufficient number of employees with high graduation and competences in line maintenance, who can have tasks of traffic safety, specific to the welded track;
- ineffective management of the risk associated to the danger of keeping the track geometry over the tolerances accepted in operation, on a curve.

#### **Measures taken after the accident**

After the accident, on the running line Vlădueni – Piatra Olt, from km 206+330 ÷ 206+925 there were put anchoring wires and on 7th August 2021, at 16:27 o'clock, the running of passenger trains was resumed with speed restriction of 10 km/h, and on 8th August 2021, at 16:16 o'clock the running of freight trains was resumed.

Afterwards, concrete sleepers were replaced, and on the 29th December 2021, after the mechanical packing of sleepers with the railway vehicle Plasser 09, from km 206+825 to km 207+200, the speed restriction of 10 km/h was changed at 30 km/h.

#### **Safety recommendations**

The railway accident happened on the 7th August 2021, between the railway stations Vlădueni and Piatra Olt, on a curve with left deviation, was caused by the failures existing at the track geometry.

During the investigation, one found that the keeping of the track geometry over the tolerances accepted in operation was generated by the improper maintenance, that was not carried out in accordance with the provisions of the practice codes (reference documents associated to the procedures of the Safety Management System got by the infrastructure administrator).

Applying the measures established by the own procedures of the safety management system, in their entirety, respectively of the provisions of the practice codes, part of safety management system, the

infrastructure administrator could have kept the technical parameters of the track geometry between the tolerances imposed by the railway safety and, in a such way, it could have avoided the accident occurrence. Considering the findings and conclusions of the investigation commission, above mentioned, for the prevention of similar accidents, AGIFER issues the next safety recommendation:

Preamble of recommendation no.1

The investigation commission found that the infrastructure administrator did not assess the risks generated by the lack, within the sections of lines, of a sufficient number of employees with high graduation and competences in line maintenance, who can carry out the traffic safety tasks specific to the welded track.

Recommendation no.400/1

Romanian Railway Safety Authority – ASFR shall ensure that the infrastructure administrator CNCF „CFR” SA re-assesses the risks generated by the lack, within the sections of lines, a sufficient number of employees with high graduation and competences in line maintenance, who can carry out the traffic safety tasks specific to the welded track and it establishes safety measures for keeping under control those risks.

**3.4.26.** The railway accident happened on 19<sup>th</sup> August 2021, in the railway county Timișoara, track section Simeria – Arad (electrified double-track line), on track II of the running line between Mintia and Brănișca railway stations, km 492+680, consisted in the derailment of first bogie of the wagon no.33539333447-9, the 13<sup>th</sup> wagon after the locomotive in the composition of freight train no.50783 (got by railway undertaking SC Express Forwarding SRL) derailed

The investigation report was completed on 28<sup>th</sup> June 2022.

#### **Causal factors**

- increase of the ratio between the guiding force and the load acting on the guiding wheel of the first bogie from the wagon no.33539333447-9 over the derailment stability limit. It was generated by the combination of the next events and conditions:
  - reclining of the wagon body, with the load on axle exceeded, on a curve with cant;
  - tangential shocks on the curve radius, generated following the application of the electric braking;
  - narrowing down of the guiding channel under the minimum value.

#### **Contributing factors**

Handling of the wagon no.33539333447-9 for its transport with the maximum load on axle exceeded

#### **Systemic factors**

Ineffective measures set by the railway undertaking EXFO, for keeping under control the risks associated to the danger generated by the existence within the trains the loaded wagons with the maximum accepted load on the axle exceeded.

#### **Measures taken after the accident**

On the track section affected by the derailment (1370 m track) the railway superstructure was partially affected. Soon after the accident, the infrastructure administrator performed works for the replacement of sleepers destroyed (especially on the metallic guideway beam situated on the transverse axis at km.493+740).

#### **Additional remarks**

Performance of transports on public railway infrastructure without meeting with the specific regulations, respectively with the load on axle exceeded at the wagon no.33539333447-9 from the composition of freight train no.50783, got by the railway undertaking EXFO, is a fact that (before the accident investigated in this report) is already an incident for the railway safety, in accordance with the provisions of art.8 point 3 Group C point 3.13 of the Government Decision no.117/2010 for the approval of Regulation for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety. Because the derailment of wagon no.33539333447-9 of freight train no.50783 (in running) the notified incident was included in the category of railway accidents, being fallen at art.7, paragraph (1), letter b of the Investigation Regulation.

#### **Safety recommendations**

The railway accident happened on the 19th August 2021, between Mintia and Brănișca railway stations, km 492+680, in the running of freight train no. 50783, was caused by the load transfer of the guiding wheel, left wheel in the running direction, from the first axle of the wagon no.33539333447-9, being the 13th one

in the composition of the freight train no.50783, got by the railway undertaking EXFO, that ran on the public railway infrastructure with the maximum accepted load on axle exceeded.

Considering the findings and conclusions of the investigation commission above mentioned, for the improvement of railway safety and prevention of similar events, AGIFER considers timely to address Romanian Railway Safety Authority the next safety recommendation, without excluding its extension also to other railway undertakings:

Safety recommendation no.401/1

The railway undertaking EXFO shall re-assess the risks associated to the danger generated by the reception of the wagons after their loading by the economic operators (forwarders), with which it has concluded railway transport contracts/agreements type B, for excluding the cases of existence within the trains the wagons without complying with the specific regulations, respectively the wagons with the maximum accepted load on axle exceeded.

**3.4.27.** The railway accident happened on 23<sup>rd</sup> August 2021, in the railway county Timisoara, track section Timișoara - Arad (electrified single-track line), between Șag and Vinga railway stations, km.36+400, consisted in a fire burst into the locomotive EA 251, hauling the passenger train no.2602 (got by the railway undertaking SNTFC „CFR Călători” SA).

The investigation report was completed on 18.08.2022.

#### **Causal factors**

Appearance of the electric arc, in the area where the positive electric cable ( „ + ” ), providing the locomotive with direct current supply, crosses the floor, following the deterioration of its isolation.

#### **Systemic factors**

Use of the locomotive, involved in the accident, in the hauling of passenger trains, after exceeding the norm of time, for the performance of a planned repair, repair that had to provide the technical potential necessary for a safety, comfortable and security transport.

#### **Measures taken during the investigation**

During the investigation, AGIFER together with the representatives of SNTFC found similar failures appeared at the cable „+” of BA also at other locomotives from the locomotive stock in operation of the railway undertaking.

SNTFC proceeded to the control of the whole locomotive stock and to the re-cabling with new conductors. For the electric protection of the connection cables from the niche BA at the block S7, there were assembled in its hole, some fuses (to see photo no.22)

Also, the cables were put into a metallic flexible tube type COPEX, that has an electric isolation on its whole length. This flexible tube was then put into the metallic tube crossing the locomotive floor, avoiding in a such way the direct contact between the cable and the locomotive body (photo no.23)

Also, assembling, additional fuses close to the battery pack and fixing the electric cable from BA to the block S7, it is removed the body contact on the cable with potential „+”, and in case of appearance body contact from any reason, the fuse shall interrupt the electric circuit.

#### **Safety recommendations**

Considering that during the investigation, SNTFC took measures for the prevention, in the future, of similar accidents, the investigation commission does not consider necessary to issue safety recommendations.

**3.4.28.** The railway accident happened on 23<sup>rd</sup> August 2021, in the railway county Craiova, track section Strehaia – Orșova (electrified single-track line), between Valea Albă and Balota railway stations km.345+460, in the running of freight train no.29114 (got by the railway undertaking SC Rail Cargo Carrier Romania SRL), consisted in the derailment of both axles of first bogie from the 12<sup>th</sup> wagon of the train, in the running direction.

The investigation report was completed on 12<sup>th</sup> August 2022.

#### **Causal factors**

Load transfer of the left wheel of the leading axle and implicitly the increase of the ratio between the guiding force and the loads acting on this wheel, so exceeding the derailment stability limit, following the existence within the track, at the accident site, a track section where the track twist gradient was exceeding

the accepted value for the running speed, an excessive cant, accentuated also by the difference between the values of the transversal level measured between the extreme axles of the wagon.

#### **Contributing factors**

Non removal, at the regulated deadlines, the failures registered following the checking of the track geometry with the power car TMC.

#### **Systemic factors**

Non provision with the human and material resources necessary for the performance of the corresponding maintenance at the lines and keeping of the track geometry between the tolerances accepted, following the non-performance, at the deadlines established and meeting with the technological processes, the periodical repairs.

#### **Additional remarks**

During the investigation, there were done the next additional remarks on some deficiencies and gaps, without relevance on the causal, contributing or systemic factors of the accident:

- following the lack of supplying with the materials necessary, there were kept within the track rails with the wear over the value accepted in operation, in 2018.
- analyzing the values written down in the book for the curve inspection, there was found that the limit accepted wear was exceeded, on the track section where the accident happened. These rails were replaced in 2019/2020.
- in 2020, the thorough inspection of the track was not made in accordance with the provisions of Instruction 305 for the setting of deadlines and order how the track inspections have to be carried out, for the management staff of the maintenance section.

Following the measures taken for the management and prevention of pandemic COVID 19 cases, the controls/audits scheduled were not performed completely, following the disposal of CNCF general manager.

So, in 2020, one did not meet with the art.2 Sheet no.12 from the *Instruction 305 for the setting of deadlines and order how the track inspections have to be carried out*, that stipulates that the thorough inspection program of the maintenance section manager has too be established so, together with the deputy of the maintenance section manager, ensure along 2 moths, the checking of whole lines afferent to the maintenance section.

#### **Safety recommendations**

Motivation of the lack of safety recommendations

The factors, that caused the accident and those that increased the probability of its occurrence, represents the deviations from the practice codes and from keeping under control the risks associated to the railway operations, in connection with SMS application by the economic operator involved.

Considering that AGIFER issued safety recommendations that aim actions for the identification of the risks generated by the existence of some failures at the track geometry, because of the improper wooden sleepers (to see chapter 4.e.), and that Romanian Railway Safety Authority - ASFR notified in June 2022 that the measures taken like consequence of the recommendations issued are yet in implementation process and they will be checked during the surveillances organized and performed according to the Minister of Transports' Order no.650/1998 and of the Regulation (EU) 761/2018, the investigation commission does not consider necessary to issue safety recommendations.

We mention that, failing the safety recommendations, upon the remarks of the investigation commission, following the nonconformities found, CNCF can dispose safety measures considered necessary for keeping under control the derailment risk.

**3.4.29.** The railway incident happened on 24<sup>th</sup> August 2021, in the railway county Craiova, track section Filiași – Craiova, between Coțofeni and Răcari railway stations, consisted in the hit of the shunt signal M2 and of two pegs of insulated sections by the freight train no.23052-1 (got by the railway undertaking SNTFM „CFR Marfă” SA)

The investigation report was completed on 31<sup>st</sup> May 2022.

#### **Direct cause and contributing factors**

The direct cause of the incident was uncontrolled opening of lateral doors from the first two compartments, in the running direction, of the wagon no.33546653054-0, downloading of clingy load, then it hit two

impedance bonds, two pegs of the insulated track and the light shunt signal M2, from the railway station Coțofeni.

#### **Contributing factors**

Incomplete closing of the mechanism for the operation of the lateral downloading doors, following not passing over „dead point” of the operation bar.

#### **Underlying causes**

infringement of the provisions from technical specification: code ST-SIRV-DA-001 – repairs of accidental failures (DA) at the wagons, regarding checking of passing the bars over „dead point” with the special pattern endowing the units, respectively addition of safety hooks, of the doors and removal of the failures at the locks of the central axis.

#### **Root causes**

None.

#### **Measures taken**

The wagon was sent to a repair workshop for the removal of failures found and there were no other measures taken for this incident.

#### **Safety recommendations**

None.

**3.4.30.** The railway accident happened on 27<sup>th</sup> August 2021, in the railway county București, track section Titu – Târgoviște (not-electrified double-track line), consisted in the derailment of 6 wagons (from the 9th wagon to the 14th one) when the freight train no.59401 (got by the railway undertaking SC UNICOM TRANZIT SA) stabled on diverging track 5 in Nucet railway station.

The investigation report was completed on 27<sup>th</sup> June 2022.

#### **Causal factors**

Exceeding of maximum accepted limit of the track gauge, on the curve after the switch no.11 of the railway station Nucet, generated by the existence of a group of improper normal wooden sleepers. It led to the fall between the rails of the left wheels from the bogies of those 6 wagons derailed, in the running direction of the freight train no.59401.

#### **Contributing factors**

- performance of inspections and controls without recording all the deficiencies, without setting effective measures and suitable deadlines for retrieval, it leading to keeping within the track a group of improper normal wooden sleepers;
- carrying of quarterly measurements of the trolley, on the lines from the railway stations, at longer times than those stipulated in the practice codes.

#### **Systemic factors**

- ineffective management of the risks associated to the danger of keeping in operation, within a curve, a group of improper normal wooden sleepers;
- ineffective management of risks associated to the danger represented by the performance of quarterly measurements, with a trolley, at longer times than those stipulated in the practice codes;
- provision with insufficient material and human resources, against the necessary ones, for carrying out the suitable maintenance at line and keeping the track geometry between the accepted tolerances

#### **Measures taken after the accident**

After the accident, within the line no.5 of the railway station Nucet, between the 30th August and 6th September 2021, 15 concrete sleepers T13, in half-good condition, were replaced, there were replaced 80 sleepers plugs and there were performed manual packing of sleepers and slewing on 100 m.

#### **Additional remarks**

Non applicable

#### **Safety recommendations**

The railway accident happened on the 27th August 2021, when the freight train no.59401 was stabled on the diverging track 5 of the railway station Nucet, on the curve after the switch no.11, was generated by the improper technical condition of the railway infrastructure.

During the investigation, there was found that the improper technical condition of the track was determined by the unsuitable maintenance, that was not made in accordance with the provisions of the practice codes

(reference documents associated to the procedures of the safety management system got by the infrastructure administrator).

In cases with similar causes (presented at point 4.e), the final reports include safety recommendations. These were issued after the occurrence of this accident or they were in implementation process and consequently it is not considered necessary the issuing of new recommendations similar to those already issued

Considering the findings and conclusions of the investigation commission above mentioned, considering also the recommendations issued for the similar railway events occurred between 2019÷2021 in the railway county București, presented within chapter 4.e, „Previous similar accidents or incidents”, for the prevention of some accidents similar to those presented in this report, AGIFER issues the next safety recommendation: Preamble of recommendation no.404/1

The investigation commission found that the public railway infrastructure administrator did not keep the technical parameters of track between the limits of tolerances imposed by the railway safety and it did not efficiently manage the risks associated to the dangers generated by the exceeding of the deadlines stipulated by the practice codes for the performance of the quarterly measurements with the trolley.

Recommendation no.404/1

Romanian Railway Safety Authority – ASFR shall ensure that the public railway infrastructure administrator re-assesses the risk associated to the danger represented by the exceeding of deadlines stipulated by the practice codes for the performance of quarterly measurements with trolley and it establishes effective measures for the suitable management of it.

**3.4.31.** The railway accident happened on 3<sup>rd</sup> September 2021, in the railway county Brașov, track section Brașov - Sibiu (not-electrified single-track line), in the railway station Făgăraș, consisted in the derailment of first bogie of 10th wagon, in the running direction, when the freight train no.99974 (got by railway undertaking SC Rail Force SRL) left the line no.8.

The investigation report was completed on 25<sup>th</sup> August 2022.

#### **Causal factors**

There were at the accident site, a group of improper normal wooden sleepers, that were not ensuring the fastening of screws and that led to the exceeding of the maximum accepted limit of the gauge in operation, generating the loss of the support and guiding capacity of the rails.

#### **Contributing factors**

1.performance of the technical control of the track at longer times than those stipulated by the practice codes, it favouring the decrease of this activity effectiveness and did not ensure the identification on time of the deterioration of the failures existing at the line 8 of the railway station Făgăraș.

2.lack of schedule and non removal, in accordance with the deadlines regulated, of the failures registered following the measurements made with the trolley.

3.increase of the running speed over the value limited by the speed restriction, before the train passes by the speed restriction.

#### **Systemic factors**

- Non performance of the periodical repairs, in order to make the corresponding maintenance of the lines and switches, for keeping the track geometry between the tolerances accepted , following the allocation of insufficient material and human resources for these activities.
- Deficiencies in the identification and assessment of risks generated by the own railway operations, done by the entity in charge with the track superstructure maintenance, regarding the risk „derailment of railway vehicles”.
- Deficiencies in the identification and assessment of risks generated by the own railway operations, done by the entity in charge with the continuous professional training of the driver, regarding the risk „derailment, collision, passing the signals in stop position”.

#### **Measures taken after the accident**

After the accident, a multifunctional railway vehicle Geismar was routed to the railway station Făgăraș, to replace the improper sleepers. The Line District Făgăraș was supplied with 150 concrete sleepers T13, new plastic plugs for the sleepers supplied, track fastenings for ensuring the fastening rail - sleepers.

On the line 8 of the railway station Făgăraș, there were introduced 97 concrete sleepers T13(SB), between the 22nd -30th September 2021.

#### **Additional remarks**

During the investigation, there were the next additional remarks on the deficiencies and gaps, without relevance for the causal, contributing or systemic factors of the accident:

- The structure in charge with the line maintenance does not get the documents containing the elements of curves for the lines of the railway station;
- The wagon no.84535489632-4 (derailed) was loaded without complying with the instruction, that is the bulk goods was not uniformly distributed on the loading surface. This problem was found at the weighing of the axles no.1, 2 and 3 of the wagon, at which the ratio between those two wheels of the same wheelset exceeded the maximum value accepted of 1.25, according to the Annex II RIV- point 3.3 – Load distribution.

#### **Safety recommendations**

Justification of the lack of safety recommendations

Considering the fact that both the factor causing the accident and they increasing the probability of its occurrence, by accelerating the effect over time, are deviations from the practice codes and for keeping under control the risks associated to the railway operations in connection with SMS application by the economic operators involved, that is obligation of each economic operator that carries out railway transports, as soon as getting the Safety Authorization or Unique Safety Certificate, the investigation commission does not consider that it is more necessary to issue safety recommendations.

We underline that, just missing safety recommendations, upon the remarks made by the investigation commission, following the nonconformities found, CNCF and RFO can dispose safety measures considered necessary for keeping under control the risk of derailment occurrence.

**3.4.32.** The railway incident happened on 20<sup>th</sup> September 2021, in the railway county Craiova, track section Filiași – Strehaia, in Gura Motrului railway station, consisted in dispatching the train no.93759 (got by the railway undertaking SNTFM „CFR Marfă” SA) in another direction than the stipulated one, taking the switch that gave access to that direction.

The investigation report was completed on 28<sup>th</sup> February 2022.

#### **Direct cause**

The direct cause of the railway incident is the human error in the activity of staff in charge with the operation of interlocking system in the railway station Gura Motrului, which made passing route for freight train no.93759a to Turceni, instead Strehaia.

#### **Contributing factors**

Not-checking by the disposing station movements inspector on the track diagram if the passing route for the freight train no.93759a is in accordance with path from the working timetable and with the received disposal from the Traffic Controller.

#### **Underlying causes**

Infringement of the provisions from art.207 letter e) and from art.208 letter f) of „Regulation for the train running and for shunting the railway vehicle” no.005/2005, regarding the obligation to check on track diagram the correct performance of the route, respectively if it is for the ordered train, line and direction.

#### **Root causes**

None.

#### **Additional remarks**

The crew of the locomotive ED 049, hauling the freight train no.93759a, on 20<sup>th</sup> September 2021, did not meet with the provisions of art.127 (1), letter a and of art.127(2) from

„Instructions for the activity of locomotive crew” no.201/2007, regarding the careful tracking of the positions of fixed signals and taking the measures imposed by the remarks got along the route, in accordance with the specific regulations.

#### **Measures taken**

Following the incident, until the completion of the investigation report, there were disposed no measures by the involved parties.

## Safety recommendations

None.

**3.4.33.** The railway accident happened on 3<sup>rd</sup> November 2021, in the railway county Craiova, track section Berbești - Alunu (not-electrified single-track line), between Berbești and Popești Vâlcea, railway stations km. 25+300, consisted in the derailment of first bogie from the 19<sup>th</sup> wagon from the rear of the train, in the composition of freight train no.23686 (got by the railway undertaking SNTFM, „CFR Marfă” SA).

The investigation report was completed on 27<sup>th</sup> October 2022.

### Causal factors

Existence, at the accident site, a group of improper normal wooden sleepers, (that were no more able to ensure the suitable fastening of the rails and keeping the track gauge between the limits of tolerances accepted by the regulation framework), leading to the exceeding of the maximum accepted limit of the gauge in operation, generating the loss of the support and guiding capacity of the rails, under the dynamic action of the rolling stock.

### Contributing factors

Going beyond the deadlines stipulated by the applicable legislation, for the performance of the periodical repairs at the line, where the accident happened, keeping the high level of clogging the track bed due to vegetation and coal dust, it leading to their earlier rot.

### Systemic factors

Allocation of material and human resources under the requirements for the suitable maintenance of the lines, in order to keep the track geometry within the tolerances accepted.

Lack of management of risks associated to the danger generated by the keeping in operation, within a curve with small radius, two or many improper normal wooden sleepers in turn.

## Safety recommendations

Justification of the lack of safety recommendations

The accident investigated forms part of a series of accidents with identical causes happened on the railway infrastructure managed by CNCF (mentioned at point 4.e), that were investigated by AGIFER. The investigation reports contain a series of safety recommendations, (for the same elements/findings that are also in this investigation report), whose purpose is the prevention of accidents with similar causes, recommendations that are in implementation process, according to the notifications of Romanian Railway Safety Authority - ASFR, for this reason the investigation commission does not consider necessary to issue other safety recommendations.

We point out that, even safety recommendations are missing, upon the remarks of the investigation commission, following the nonconformities found, CNCF can dispose safety measures considered necessary for keeping under control the risk of derailment.

**3.4.34.** The railway incident happened on 10<sup>th</sup> November 2021, in the railway county Iași, track section Suceava – Ilva Mică, in the railway station Câmpulung Moldovenesc, consisted in passing the entry signal Y of the railway station in stop position by the freight train no.80672, hauled with the locomotive EA 1004 (got by the railway undertaking SC Grup Feroviar Român SA).

The investigation report was completed on 16<sup>th</sup> June 2022.

### Direct cause and contributing factors

The direct cause of the incident was a human error, consisting in late braking, corroborated with the wrong operation of the drivers brake valve KD2, it leading to passing the entry signal of the railway station Câmpulung Moldovenesc, that was on „STOP without pass by the signal!”.

### Contributing factors

The insufficient braking training of the driver for this type of locomotive, whose control desk is put on the left side of the driving cab.

### Underlying causes

Infringement of some provisions from the specific regulations in force, that is:

- Signalling regulation no.004/2006, art. 21 figure 26, regarding the positions of light entry signals, that is the position „STOP without pass by the signal!” Day and night – a light red unit to the train, was not met with;

- Instructions for the activity of the locomotive crew no.201/2006, chapter IV – Obligations of the locomotive crew along the route, art.125. – (4), that is it did not take soon measures for reducing the train speed, when the stop position of the caution and repeating signals, afferent to the entry signal, was seen.

#### **Root causes**

None.

#### **Measures taken**

The railway undertaking Grup Feroviar Român SA, after the incident, disposed an analysis regarding the opportunity to introduce in the Register for the Assessment of Risks Associated to the Processes with relevance for the Integrated Management System Processes, of the danger generated by the location of the control desk on left side of driving cab and implicitly drafting a operation/driving guide that describe the operation of the installations located in a such way.

#### **Safety recommendations**

Considering the incident occurrence and measures taken by SC Grup Feroviar Român SA, the investigation commission did not consider necessary to issue safety recommendations.

**3.4.35.** The railway incident happened on 24<sup>th</sup> November 2021, in the railway county Craiova, track section Caransebeş-Strehaia, in Balota railway station, consisted in runaway of 14 wagons from line no.4 and overtaking of a set of wagons, leading to its collision and derailment of 5 wagons (got by the railway undertaking SC CER FERSPED SA).

The investigation report was completed on 31<sup>st</sup> August 2022.

#### **Direct causes**

Direct cause of the incident is non-assurance of braked weight percentage for keeping stopped the rake of wagons from the line no.4 in the railway station Balota, during the shunting for train splitting up.

#### **Contributing factors**

- non-assurance of the set of 14 wagons, in accordance with the regulation provisions in force, by the application of active hand brakes and putting of the drag shoes at the wheels of the train ends;
- performance of shunting with an incomplete shunting gang and taking over of all duties by a single person, that is the train manager;
- performance of shunting without being a written request of the representative of the railway freight undertaking, respectively without drafting a shunting plan by which to be established the shunting operations that have to be carried out, as well as the conditions for their performance;
- not-checking, by the disposing station movements inspector, the assurance of the rake of wagons rested stopped on line no.4.

#### **Underlying causes**

- Infringement of the provisions from art. 67 from „Regulation for the train running and railway vehicles shunting” - no. 005/2005”, that is, „the railway vehicles, that are not shunted, have to be stabled between the fouling marks of the line serving a siding, with the doors closed, being coupled and assured against the runaway, by the application of hand brakes and drag shoes put at the extreme wheels of the first and last wagons of the rake”.
- Infringement of the provisions of Sheet no.25 from the Technical Plan for the Operation of Balota railway station, that is, „the train sets or the groups of wagons, stopped in the lines of the railway station, are assured against the runaway by the application of hand brakes necessary to get the braked weight percentage 9% and putting the drag shoes at the wheels of the extreme axles of first and last wagons of the train or group if wagons, before uncoupling the locomotive”;
- Infringement of the provisions of art.511 (1), letter a) of „ Regulation for train running and railway vehicles shunting” – no. 005/2005” that is it is prohibited to run shunting only with one foreman shunter, if the railway station has slopes over 6‰;
- Infringement of the provisions of art.43, point 5: that is „Shunting made on the station lines with shunting gangs of the railway undertakings, having like residence subunit or with train crew, as

well as the shunting made by a shunting operator, is performed in accordance with a shunting written plan, in two copies, made by the movements inspector, upon the written request of the representative of the shunting operator or of railway undertaking that is going to perform shunting”;

- Infringement of the provisions of Sheet no.25 from the Technical Plan for the Operation of railway station Balota, that is, „The disposing station movements inspector checks and continues to be responsible with the assurance of railway vehicles stopped on the station lines”.

#### **Root causes**

None.

#### **Measures taken:**

SC CER FERSPED SA disposed the presentation of that incident within the meetings from „Staff training”.

#### **Safety recommendations:**

None.

**3.4.36.** The railway accident happened on 28<sup>th</sup> November 2021, in the railway county Braşov, track section Luduş – Măgheruş Şieu (noninteroperable track section, managed by RC CF Trans SRL Braşov), in the running of passenger train no.16301 (got by the railway undertaking SC Regio Călători SRL Braşov), between uduş and Sărmăşel railway stations, km 6+757, consisted in the derailment of two bogies of the trailer wagon of the multiple unit AMX 1600 (both axles of bogie no.3 and one axle of bogie no.4).

The investigation report was completed on 24<sup>th</sup> November 2022.

#### **Causal factors**

Existence within the track, at the accident site, a group of improper normal wooden sleepers, that were not allowing the fastening of the screws for fixing the metallic plates and preventing the movement of the plates along the sleepers, favouring in a such way, the increase of the track gauge over the maximum value accepted in operation.

#### **Contributing factors**

Performance of the track technical inspection at periods of time longer than those stipulated in the practice codes, it favouring the decrease of the activity efficiency and did not duly ensure the identification of the deterioration of failures existing on the line Luduş – Sărmăşel.

#### **Systemic factors**

- Non-performance of periodical repair for getting the proper maintenance of the lines and keeping the track geometry between the tolerances accepted, following the grant of insufficient material and human resources for these activities.
- Deficiencies in the identification and assessment of the risks generated by own railway operations carried out by the entity in charge with the maintenance of the track superstructure, regarding the risk „derailment of railway vehicles”.

#### **Measures taken after the accident**

After the consolidation of the line, at the accident site, the railway traffic was resumed with speed restriction of 30 km/h, between km 0+340 ÷ 10+500.

During the investigation, RC CF submitted to the investigation commission a document called „Plan for the management of risks and opportunities” worked out on the 22nd September 2022.

After checking this document, it turn out that the process „maintenance of the railway infrastructure”, regarding the accident occurrence and the causal factor mentioned, for the risk of railway vehicle derailment, there were identified the dangers: *exceeding of the maximum accepted value for the track gauge and keeping within the track the improper wooden sleepers.*

For both dangers there were established the same criteria for the probability, respectively 3 (**possible** – it is possible to happened along an average time (1-3 years); it happened few times in the last 3 years) and impact, respectively 4 (major – with major impact on the organization activities and on the achievement of the objectives and/or major financial impact).

The exposure resulted was 12 (average tolerability – it needs control measures for average term).

For the first danger, the measure for the risk handling was the rectification of track gauge between normal parameters.

Upon the opinion of the investigation commission, the criteria used for the probability and impact were suitable established, and the measures for keeping under control, if they shall be met with, should prevent the future occurrence of similar accidents, in all likelihood.

#### **Additional remarks**

During the investigation there were the next *additional remarks* on some deficiencies and gaps, without relevance for the causal, contributing or systemic factors of the accident occurrence:

- checking of the track geometry, with the trolley or the testing or recording car, was not made during the analyzed time, between 2020 ÷ 2021.
- superficial working out of the initial documents specific to the railway maintenance:
  - following the rectification of the track gauge, in the worksite notebooks there are not written down the transversal level measurements;
  - measurements at the track gauge and transversal level, recorded in the line district books, are not analyzed and explained, these being made at different longitudinal bases of measuring;
  - during the detailed inspection of curves, there is not measured the wear on the exterior rail of the curve, as well as the vertical wear of the interior rail. The District for lines maintenance does not get callipers for the measurement of the vertical and lateral wears;
  - setting, planning and monitoring of the replacement of the improper sleepers were not made in accordance with the regulations in force.

#### **Safety recommendations**

Justification of the safety recommendations missing

During the investigation, it was found that both the factor causing the accident and that increasing the probability of its occurrence, were represented by the deviations from the practice codes (regarding the performance of periodical repairs, provision with the necessary material and human resources) and keeping under control of the risks associated to the railway operations, in relation to the Safety Management System – SMS, by the infrastructure manager, that is an obligation established with the getting of Safety Authorization. These deviations have to be a very serious warning signal, considering that in slightly different conditions, these can lead to accidents with very serious and expensive effects.

Considering the performance of an investigation as open as possible, the investigation commission worked out a Draft of investigation report, that was sent by AGIFER to Romanian Railway Safety Authority - ASFR and to economic operators involved. In the draft of investigation report there was worded a safety recommendation, addressed to ASFR, in order to establish possible measures, that it should have considered necessary, timely and effective, in order to check how RC CF Trans SRL complies with the obligations taken on with the getting of the Safety Authorization, in order to meet with the requirements of the Regulation EU no.762/2018 regarding:

- provision with the resources, including skilled staff and effective und useful equipment, necessary to establish, implement, maintain and improve continuously SMS;
- monitoring of the effectiveness of the safety measures established following the actions for the risks assessment.

Following the analysis of the Draft of investigation report, ASFR notified that on July 2022 carried out at RC CF Trans SRL a state control aiming, among others, also the control of the meeting with the requirements covered by the safety recommendation above mentioned, being found nonconformities, and RC CF Trans SRL worked out a Plan of remedy actions. According to the notification sent, the measures stipulated in this plan were implemented at the deadlines, excepting one of them, for which a minute on the finding and sanctioning of the contravention was drawn up.

Considering these above mentioned, the investigation commission does not consider timely to issue safety recommendation.

**3.4.37.** The railway accident happened on 29<sup>th</sup> November 2021, in the railway county Craiova, track section Drăgotesti-Turceni (electrified single-track line), consisted in the derailment of two wagons (all axles of 15<sup>th</sup> wagon and first two axles of 16<sup>th</sup> wagon), when the freight train nr.23644 entered the railway station Turceni (got by the railway undertaking SNTFM „CFR Marfă” SA), on switch no.6.

The investigation report was completed on 28<sup>th</sup> November 2022.

**Causal factors**

Leaving the line by the right wheel from the first axle from the wagon no.31536654628-3 (the 15th one of the train), in the running direction, following the longitudinal breakage between the web and the head of a small rail section introduced at the first joint from the toe of the switch no.6, it led to the appearance of a gap of 190 mm and generating the loss of the supporting and guiding capacity of the rails.

**Contributing factors**

Existence within the track, at the accident site, of the next conditions:

- wrong composition of the unit „joint”, from the right side in the running direction, from the toe of the switch no.6;
- a group of improper normal wooden sleepers;
- high level of the clogging of the broken stone bed with coal dust, that led to: excessive humidity, muddy joints and hidden gaps in the track bed.

Existence within the track, at the accident site, a group of improper normal wooden sleepers, a high level of clogging of the broken stone bed with coal dust, excessive humidity (drainage of the water being difficult because of choking with coal dust), existence of muddy joints and hidden gaps in the track bed, they favoured the longitudinal breakage between the web and the head of a small rail section introduced in order to correct the expansion joint of the first joint of a switch.

**Systemic factors**

Granting of material and human resources, under the requirements level for the performance of corresponding maintenance at the lines, in order to keep the track geometry between the tolerances accepted.

Lack of management of the risks associated to the danger generated by the keeping in operation, within a curve with small radius, two or more improper wooden sleepers in turn.

**Safety recommendations**

Motivation for the safety recommendations lack

The accident investigated is part of a series of accidents, happened in similar conditions on the railway infrastructure managed by CNCF (mentioned at point 4. E), that were investigated by AGIFER.

The investigation reports worked out contain a series of safety recommendations (for the same elements/findings presented also in this investigation report), intended for the prevention of similar accidents, recommendations that are in implementation process, according to Romanian Railway Safety Authority notifications, because of it the investigation commission does not consider necessary to issue other safety recommendations.

We underline that, just failing new safety recommendations, upon the remarks made by the investigation commission, following the nonconformities found, CNCF can dispose safety measures, considered necessary, for keeping under control the risk of derailment.

**3.4.38.** The railway accident happened on 6<sup>th</sup> December 2021, in the railway county Galați, track section Mărășești - Barboși (electrified double-track line), in Barboși Triaj railway station, on line 1D, consisted in the derailment of both axles of first bogie from the first wagon of freight train no.30630-1 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL).

The investigation report was completed on 6<sup>th</sup> December 2022.

**Causal factors**

Existence, within the track, at the accident site, a group of improper normal wooden sleepers (that did not ensure the suitable fastening of the inner rail of the curve and keeping of the track gauge between the limits of tolerances accepted by the regulation framework), leading to the exceeding of the maximum limit accepted for the track gauge in operation, it generating the loss of the supporting and guiding capacity of the rails, under the dynamic action of the rolling stock.

**Contributing factors**

None.

**Systemic factors**

- insufficient material and human resources granted to the Line District no.3 Barboși Triaj for the line maintenance.
- ineffective management of the risk generated by the keeping within the track the improper sleepers.

### Safety recommendations

The railway accident happened on the 6th December 2021, in Barboși Triaj railway station was caused by the failures existing at the track geometry, following of them, in dynamic conditions, under the load applied by the wheels of the leading axle from the wagon no.33535421218-5, the track gauge increased seriously. The accident investigated is part of a series of accidents with identical causes happened on the railway infrastructure managed by the infrastructure manager CNCF (mentioned at point 4.e), accidents investigated by AGIFER. The investigation reports worked out contain a series of safety recommendations (for the same elements/findings presented also in this investigation report), intended for the prevention of similar accidents, because of it the investigation commission does no more consider necessary to issue other safety recommendations.

We underline that, just failing safety recommendations, upon the remarks made by the investigation commission, following the nonconformities found, CNCF can dispose safety measures, considered necessary, for keeping under control the risk of derailment.

**3.4.39.** The railway accident happened on 27<sup>th</sup> December 2021, in the railway county București, track section București Nord - Videle (electrified double-track line), consisted in the derailment of both axles from the first bogie of 25<sup>th</sup> wagon of freight train no.67400 (got by the railway undertaking SC TIM RAIL CARGO SRL), when it was dispatched from line 2.

The investigation report was completed on 16<sup>th</sup> December 2022.

### Causal factors

- keeping within the track, at the accident site, a group of improper special wooden sleepers, in turn, whose technical condition could no more ensure the effective fastening of the metallic plates, following of it, in dynamic conditions, under the load applied by the wheels of the guiding axle of the wagon no.33535320016-5, the track gauge increased to much, allowing the fall from the left rail (inner rail of the curve) of the left wheel from this axle (in the running direction).
- failure at the wagon, represented by the thickness of the flange of wheel no.1 under the limit accepted in operation;

### Contributing factors

- performance of the fortnightly track inspection, by an incomplete team, at times higher than those stipulated by the practice codes, it favouring the decrease of this activity effectiveness, following the bad surveillance of the development of the failures existing at the switch no.19 from Chiajna railway station;

### Systemic factors

- ineffective management of the risk associated to the danger generated by the keeping into operation the improper special wooden sleepers within the switch;
- provision with insufficient material and human resources in relation to the necessary one, in order to get the suitable maintenance of the lines and switches, for keeping the track geometry between the tolerances accepted;
- ineffective management of the railway undertaking for the danger represented by the non-identification of all failures existing at the wagons.

### Measures taken after the accident

After the accident, there were replaced normal and special wooden sleepers, concrete sleepers and metallic parts, at the switches no.17 and 19, at the track section between these two switches. On the 29th December 2021, at 16:00 o'clock, the traffic was resume on the switch no.17, and on the 30th December 2021, at 14:55 o'clock the traffic was resumed on the switch no.19 with the speed established.

The railway undertaking TIM RAIL CARGO SRL notified, through the paper SC/32/10.01.2022, the measures disposed for the operations of checking the loading of the wagons during their delivery/reception to/from REMAT HOLDING CO SRL Drobeta Turnu Severin, in order to keep under control the risk generated by the unsuitable loading of the wagons, the measures consisting in the re-training of the interested staff and the re-discussion, upon signature, of the regulations in force for the checking of the uniform distribution of the load into the wagons.

**Additional remarks**

Non applicable

**Safety recommendations**

The railway accident, happened on the 27th December 2021, on the exit route of the freight train no.67400 from the diverging track no.2 of the railway station Chiajna to the railway station Bucureștii Noi, on the closure rails of the switch no.19, was caused by the technical condition of the track superstructure corroborated with the technical condition of the wagon.

During the investigation it was found that the improper technical condition of the track was generated by the unsuitable maintenance, that was not carried out in accordance with the provisions of the practice codes (reference/associated documents of the SMS procedures gets by the infrastructure administrator - AI).

Considering the similar railway events happened between 13th September 2020÷30th March 2021, in the railway county București, presented into the chapter 4.e., „Previous similar accidents and incidents” and taking into account the fact that there were issued safety recommendations in this respect, the commission considers that it is no more necessary to issue other similar recommendations for the track maintenance.

During the investigation, it was found that the wagon no.33535320016-5 ran in the composition of the freight train no.67400, with the thickness of the flange of wheel no.1 under the limit accepted in operation and that the railway undertaking - OTF managed ineffectively the danger represented by the non-identification of all failures existing at the wagons.

**Preamble of the recommendation**

During the investigation it was found that SC TIM RAIL CARGO SRL identified the dangers presented into chapter „4.d. Mechanisms of feedback and control, including the management of risks and the management of safety, as well as the monitoring processes”, but the measures disposed for keeping under control the risks associated were not completely applied, and the monitoring process was ineffective.

In order to prevent accidents that could happen in conditions similar to those presented in this report, AGIFER issues only the next safety recommendation:

**Recommendation no.410/1**

Romanian Railway Safety Authority – ASFR shall ensure that OTF TRC re-assesses the danger represented by the non-identification of all failures existing at the wagons, establishing additional effective measures for keeping under control the risks generated by it.

**3.4.40.** The railway accident happened on 30<sup>th</sup> December 2021, in the railway county Constanța, track section Dorobanțu – Năvodari (not-electrified single-track line, noninteroperable one and managed by SC Grup Feroviar Român SA), in the railway station Nazarcea, consisted in the derailment of 8 wagons ( the 5<sup>th</sup> one, from the 6<sup>th</sup> one to the 13<sup>th</sup> one of the train) of freight train no.66648030 (got by the railway undertaking SC Grup Feroviar Român SA), when it ran on the deflecting section 2.

The investigation report was completed on 24<sup>th</sup> November 2022.

**Causal factors**

Keeping within the track, at the accident site, a group of improper normal wooden sleepers whose technical condition were no more able to ensure the effective fastening of the metallic plates, following of it, in dynamic condition, under the load applied by the wheels of the leading axle from the wagon no.89536950076-7, the track gauge increased excessively and allowed the fall from the left rail (inner rail of the curve) of the left wheel (in the running direction) from that axle.

**Contributing factors**

- uneven loading of the wagon no.89536950076-7 against the longitudinal axis, following of it the lateral forces applied to the rail by the wheels of the leading axle increased and contributed in a such way to the increase of the track gauge;
- taking over the wagon no.83536658166-7, by OTF, without visually checking if the loading of the freight into this wagon complies with the provisions from Book I – „Principles” of the Loading rules issued by UIC.

**Systemic factors**

- ineffective management, of the infrastructure manager, of the risk associated to the danger of keeping within the track the improper sleepers;

- ineffective monitoring, of the infrastructure manager, of the line repairs and maintenance, carried out by the render of line maintenance on the noninteroperable track section where the accident happened;
- failure in ensuring, by OTF, the conditions for the performance of checking the distribution of freight in wagons, during the delivery-reception of the wagons loaded, made between its representatives and those of the forwarder;
- the documents concluded between the OTF and the freight forwarder did not meet with the provisions of the national regulation framework regarding the delivery-reception of the wagons loaded with freight.

#### **Measures considered after the accident**

In order to resume the traffic, the render of maintenance replaced 93 sleepers type T13, 28 normal wooden sleepers and 140 m rail T49 SB (semi good).

On the 30th May 2022, there was concluded a minute between OTF and ROMCIM, establishing the tasks for each on them at the loading of wagons.

#### **Safety recommendations**

The railway accident happened on the 30th December 2021, in the railway station Nazarcea, was caused by the failures existing at the track geometry, following of it, in dynamic conditions, under the load applied by the wheels of the guiding axle of the wagon no.89536950076-7, the track gauge increased excessively. During the investigation, there was found that the wagon no.89536950076-7 ran in the composition of the freight train no.66648030 with the freight irregularly distributed, because it was took over for transport by OTF, without do the visual inspection if the freight loading complies with the provisions from Book I – „Principles” of the Loading Rules issued by UIC.

Considering the similar accidents happened between 2020 ÷ 2021 in the railway county Constanța, presented within Chapter 4.e., „Similar previous accidents or incidents” and taking into account that safety recommendations were issued in this regard, the investigation commission considers that there is no need to issue other similar safety recommendations.

**3.4.41.** The railway accident happened on 2<sup>nd</sup> January 2022, in the railway county București, track section București Nord - Ploiești Sud (electrified double-track line), between the railway stations Crivina and Brazi, track I, km 47+100, consisted in a fire burst into the locomotive DA 1547, hauling the freight train no.56300 (got by the railway undertaking SC Grup Feroviar Român SA).

The investigation report was completed on 29<sup>th</sup> December 2022.

#### **Causal factors**

Operation of the diesel-electric locomotive DA1547 with the maximum accepted values of the current amperage in the groups of the traction motors in operation, during the hauling of the freight train no.56300-1.

#### **Contributing factors:**

Lack of correlation of the low hauling performances of the locomotive (having the group no.2 of traction motors cut off) with the effective tonnage of the freight train no.56300-1, by the proportional decrease of the tonnage stipulated in the working timetable of the freight trains.

#### **Systemic factors:**

Non-identification of the danger represented by „Hauling of the trains with locomotives whose technical condition does not allow the hauling of the tonnage stipulated in the working timetables”.

#### **Additional remarks**

- The way the automatic brake was tested before the dispatching of the train 56300

Analyzing the records of MDA installation from the locomotive DA1547, it is found that the locomotive was coupled at the train no.56300 at 15:39:16 o'clock, according to the figure no.5.

The general air pipe was supplied at the working pressure at 14:50:35 o'clock. Until the dispatching of the train (14:42:55 o'clock) it is observed the performance of a single drop in air pressure in the general pipe about 90 seconds, at about 15:03 o'clock, insufficient time for the performance of the complete test according to the instruction provisions.

The investigation commission concluded that the complete test of the automatic brake, before the dispatching of the train no.56300, was not performed. The stop of the train 56300-1 in the railway station Crivina on the 26th December 2021 was imposing the performance of this braking test.

- The way the effectiveness of the automatic brake was tested, after the dispatching of the train no.56300

The train no.56300 was dispatched from the railway station Crivina, according to the records of MDA installation at 15:52:53 o'clock. From the train departure up to the accident, the air pressure into the general pipe rested constant at 5,1 bars. After the train departure, it had to be done a drop in the air pressure into the general pipe of 0,6-0,7 bars in order to test the effectiveness of the automatic brake.

The decrease of the train speed from 25 km/h to 21 km/h was made by the operation of the switchgroup, according to the records of the diesel engine speed and the currents of the groups of traction engines.

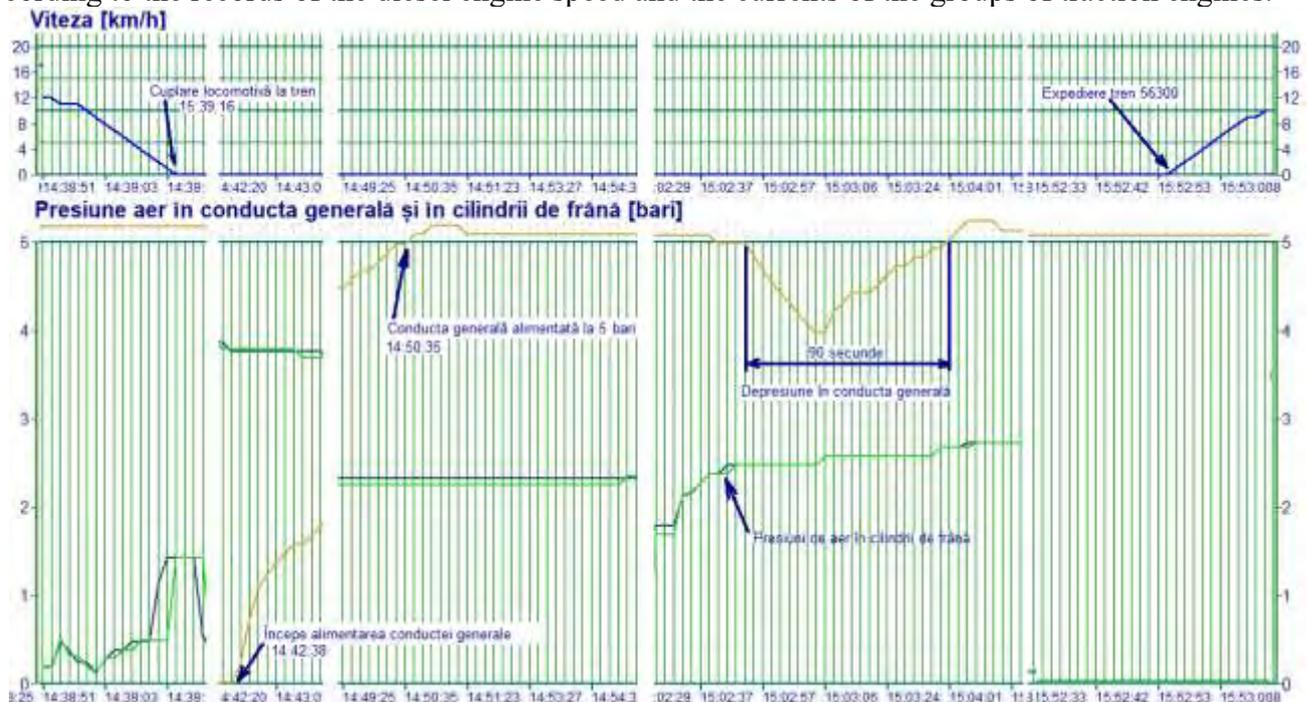


Figure no.5 - Air pressure into the general pipe and into the brake cylinders in the railway station Crivina.

Likewise, the slight increases of the pressure into the brake cylinder are due to some air losses at the triple valve of the locomotive and these pressures were removed periodically by the operation of the release valve by the driver. The investigation commission concluded the effectiveness of the automatic brake was not tested after the dispatching of the train 56300-1.

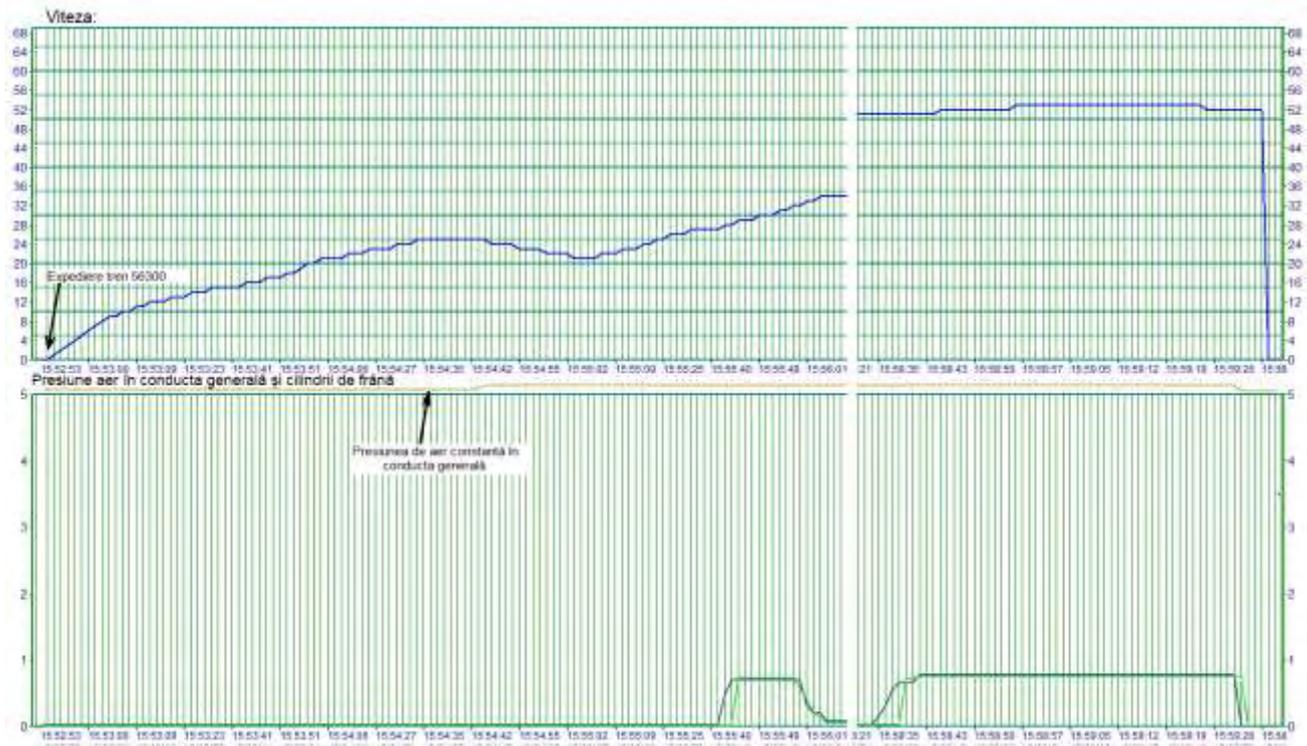


Figure no.6 – Air pressures into the general pipe and into the brake cylinders after the dispatching of the freight train no.56300-1 from the railway station Crivina.

### Safety recommendations

Considering the causal, contributing and systemic factors identified during the investigation, in order to prevent future similar accidents or incidents, in accordance with the provisions of art.26, paragraph (2) of the Emergency Government Decision no.73/2019 for the railway safety, the investigation commission issues the next recommendation:

Preamble of the recommendation no.412/1

The beginning of the fire at the locomotive DA 1547 happened because it was not suitable for hauling the tonnage stipulated in the working timetable, it leading to the exceeding of the maximum accepted current into the groups of engines in operation.

Considering that, during the investigation, it was found that the railway undertaking GFR did not identify the danger „Hauling of the trains with locomotives whose condition does not allow the hauling of the tonnage stipulated into the working timetables”, for the prevention of accidents with causes similar to those presented in this report, the investigation commission issues the next safety recommendation:

Safety recommendation no.412/1

Romanian Railway Safety Authority – ASFR shall analyze the opportunity to ask the railway undertaking SC Grup Feroviar Român SA the re-assessment of the risks associated to the danger „Hauling of the trains with locomotives whose condition does not allow the hauling of the tonnage stipulated into the working timetables” and the disposition of effective measures for keeping it under control.

We underline that, although the safety recommendation issued aims the activity of the railway undertaking SC Grup Feroviar Român SA (it being analyzed during the investigation of this accident) and considering the existence of some cases with similar causes, (presented into „Chapter 4.e”) this recommendation is not restricting, it can be extended to other railway undertakings to which ASFR finds similar gaps during the surveillances.

**3.4.42.** The railway accident happened on 7<sup>th</sup> January 2022, in the railway county Galați, track section Faurei – Galați (electrified double-track line), between the railway stations (Branch line CSG) and Cătușa (from the industrial branch with wide gauge got by SC Liberty Galați SA), km 2+773, in the running of freight train no.77146 (got by railway undertaking SC Unicom Tranzit SA), consisted in the derailment of 4 wagons (from the 3rd one to the 6th one).

The investigation report was completed on 29<sup>th</sup> December 2022.

### **Causal factors**

Existence within the track, at the accident site, a group of improper wooden sleepers (that could no longer ensure the suitable fastening of the rails and keeping of the track gauge between the limits of the tolerances accepted by the regulation framework), led to the exceeding of the limits accepted for the track gauge in operation, it generating the loss of the support and guiding capacity of the rails, under the dynamic action of the rolling stock.

### **Contributing factors**

Exceeding of the accepted running speed, established by the speed restriction of 5 km/h, stipulated into the Notification Sheet of Restrictions, restriction that was not signalled along the line.

### **Systemic factors**

Insufficient material and human resources supplied to the Lines District no.4 Galați Călători for the maintenance of the lines.

Ineffective management of the risk generated by the keeping within the track of improper sleepers.

Ineffective management of the risk generated by the danger represented by the exceeding by the trains of the maximum speeds, accepted by the line, of the maximum speeds from the working timetables or running slip.

### **Safety recommendations**

The railway accident happened on the 7th January 2022, between the railway stations Filești (Connection Line CSG) and CFU Cătușa (from the industrial branch with wide gauge, got by SC Liberty Galați SA), km.2+733, in the running of freight train no.77146 (got by OTF UTZ) was caused by the improper technical condition of the track superstructure and favoured by the operation way of the rolling stock.

During the investigation, there was found that the improper technical condition of the track was determined by the unsuitable maintenance, it not being made in accordance with the provisions of the practice codes (reference/associated documents of the infrastructure administrator SMS procedures).

Preamble of recommendation no.1

The investigation commission found that the infrastructure administrator identified, but did not effectively manage the risks generated by the non-performance of the line maintenance according to the provisions of the practice codes, in order to be able to dispose viable safety measures for the decrease of these risks.

Considering the findings and conclusions of the investigation commission, above mentioned, for the improvement of the railway safety and prevention of similar events, AGIFER considers timely to address to Romanian Railway Safety Authority - ASFR, the next safety recommendation:

Safety recommendation no.1/413

ASFR shall ensure that the infrastructure administrator CNCF „CFR” SA re-assesses the risks associated to the danger generated by the keeping in operation the improper wooden sleepers within the curves and it establishes viable safety measures for keeping them under control.

Preamble of recommendation no.2

The investigation commission found that the railway undertaking identified, but it did not effectively manage the risks generated by the danger represented by the exceeding by the trains of the maximum speeds accepted by the line, of the maximum speeds stipulated into the working timetables or into the running sheet, in order to be able to dispose viable safety measures for the decrease of these risks.

Considering the findings and conclusions of the investigation commission above mentioned, for the improvement of the railway safety and prevention of similar events, AGIFER considers timely to address to Romanian Railway Safety Authority - ASFR, the next safety recommendation

Safety recommendation no.2/413

ASFR shall ensure that OTF UTZ re-assesses the risks associated to the danger generated by the exceeding by the trains of the maximum speeds accepted by the line, of the maximum speeds stipulated into the working timetables or the running slip and it establishes viable safety measures for keeping them under control.

**3.4.43.** The railway incident happened on 13<sup>th</sup> December 2021 and found out during the state control performed between 14<sup>th</sup>-18<sup>th</sup> March 2022 by Romanian Railway Safety Authority - ASFR, in the railway county București, track section București Nord - Constanța, between Sărulești - Fundulea, consisted in exceeding of maximum accepted speed, established in the working timetable, by the freight train no.68102, hauled with the locomotive EA 1088 (got by the railway freight undertaking SC Constantin Grup SRL).

The investigation report was completed on 20<sup>th</sup> May 2022.

#### **Direct causes**

The direct cause of the incident is the failure of the driver in adapting the train speed between the railway stations Fundulea and Sărulești, in accordance with the maximum speed established in the working timetable, for freight train no.68102.

#### **Contributing factors**

- not tracking of the indication given by the equipment for the speed measurement and control, by the crew of locomotive EA 1088.
- driving of locomotive EA 1088, hauling the freight train no.68102, by a crew whose physical condition was affected by the fatigue accumulated following the exceeding of the maximum accepted duty for the locomotive;

#### **Underlying causes**

- infringement of the provisions of art.125 paragraph (1) and of art.127 paragraph (1) letter g) from „Instructions for the activity of locomotive crew” no.201/2007, regarding the obligation of locomotive crew to meet with the speed restrictions stipulated in the working timetable and to track carefully the train hauling, working of equipment for speed control.
- infringement of provisions from art.3 of Norms for the maximum accepted duty for locomotive, for the locomotive crew, on Romanian railway system, approved by Minister of Transport's Order no.256/2013, regarding the maximum continuous duty accepted for the locomotive in case of one-man driving.

#### **Root causes**

None.

#### **Safety recommendations**

None.

#### **Additional remarks**

On 13<sup>th</sup> December 2021, between Radomirești – Palas, the driver of the locomotive EA 1088 made out unduly two journey reports, one for the distance Radomirești- București Băneasa and another one for București Băneasa – Palas. On the second report series P1 no.0045, box „Locomotive exit from the depot” is stamped by the railway station București Băneasa, mentioning „Transit at 11:00 o'clock”. Considering that from the data provided by the installation IVMS of the locomotive EA 1088 resulted that the freight train no.68102 ran through that railway station at that date, there is the suspicious that that report was made and stamped fictitiously, before the date of real use.

**3.4.44.** The railway incident happened on 27<sup>th</sup> March 2022, in the railway county Constanța, in Cernavodă Pod railway station, consisted in the hit of a buffer, existing in the structure clearance, by the locomotive EA 649, hauling the passenger train no.8202 (got by SNTFC „CFR Călători” SA).

The investigation report was completed on 14<sup>th</sup> April 2022.

#### **Direct causes**

The direct cause of the incident is the entry into the structure clearance of the plate from the buffing gear fallen from wagon no.83536652956-7 of freight train no.66316027, followed by its hit by the locomotive EA 649.

#### **Contributing factors**

Wear at the part for fixing the rod of the plate of the buffing gear.

#### **Underlying causes**

Infringement of provisions from art.6(2), letter k of „Instructions for technical inspection and maintenance of wagons in operation” no.250 from 2005, that is during the technical inspection at composition of train, there was not identified the buffing gear, from the rear of the train, that it has the plate improperly assured.

#### **Root causes**

None.

#### **Safety recommendations**

None.

**3.4.45.** The railway incident happened on 7<sup>th</sup> May 2022, in the railway county Craiova, track section București Nord - Craiova (electrified double-track line) in Leu railway station, consisted in the dispatch of passenger train Regio no.9000, hauled with the locomotive EA 814 (got by the railway undertaking SNTFC „CFR Călători” SA), on track II occupied, to Jianca railway station. The investigation report was completed 29<sup>th</sup> July 2022.

**Direct causes**

The direct cause of the incident is the wrong switching off for the running of passenger train no.9000 on track II, instead track I, to the railway station Jianca, generated by the error of staff responsible for the operation of interlocking system from the railway station Leu.

**Contributing factors**

Not-checking, by the disposing station movements inspector, on the control desk, the passing route of passenger train no.9000, in accordance with the disposal received from the Traffic Controller.

Not-pushing of button BAV in the railway station Leu afferent to end X.

**Underlying causes**

Infringement of provisions of art.208 letter f) from „Regulation for train running and railway vehicle shunting” no.005/2005, regarding the obligation to check on the control desk the right switching off of the train, respectively if it is in accordance with the provisions of the disposal received from the Traffic Controller.

Infringement of the provisions from Instruction for the operation of the installations from the railway stations Jianca and Leu, regarding the obligation to push the button BAV, for signalling the interdiction of running on track II.

**Root causes**

None.

**Safety recommendation**

None.

**3.4.46.** The railway incident happened on 29<sup>th</sup> May 2022, in the railway county Timișoara, track section Caransebeș-Orșova (electrified single-track line), between Teregova and Armeniș railway station, consisted in the hit of the track inductor 1000/2000 Hz of signal PrX from km.446+500 by the locomotive LE-MA 027, hauling the freight train no.56718 (got by railway undertaking Deutsche Bahn Cargo România SRL).

The investigation report was completed on 10<sup>th</sup> October 2022.

**Direct causes**

The entrance into the locomotive structure clearance, of the track inductor of 1000/2000Hz, afferent to passing signal, having function of caution signal PrX from the railway station Armeniș, leading to its contact with the front protection of the inductor from the locomotive LE-MA 027.

**Contributing factors:**

Exit from the structure clearance, afferent to the elements of the railway installations, of the track inductor of 1000/2000Hz, afferent to the passing signal with function of caution signal PrX of the railway station (height against the rail head), following of external factors that could not be identified.

**Underlying causes**

None.

**Root causes**

None.

**Safety recommendations**

Considering the conditions, causes and factors contributing to the incident occurrence, the investigation commission does not consider necessary to issue safety recommendations.

**3.4.47.** The railway incident happened on 6<sup>th</sup> July 2022, in the railway county Craiova, track section Târgu Jiu – Turceni, in the railway station Amaradia, consisted in passing the exit signal Y of the railway Amaradia on danger, by the freight train no.57202, hauled with the locomotive ES 007 (got by the railway freight undertaking SC CERFERSPED SA).

The investigation report was completed on 10<sup>th</sup> October 2022.

### Direct causes

It is a human error of the locomotive driver, who did not take measures for the train braking, in order to stop it before the exit semaphore C of the railway station Amaradia, whose position was „**STOP without pass the signal in stop position!**”, it leading to its passing in stop position.

### Contributing factors

- serious fatigue of the driver generated by the long time since he was on duty, at the employer disposal, following the exceeding of the maximum continuous duty accepted for the locomotive, 27 hours and 45 minutes over;
- leaving the driving cab by train manager, whose obligation was to be driver's assistant and to track the position of fixed and mobile signals, and if he observed that the semaphore was on stop, he should notify soon the driver;
- not meeting with the maximum continuous duty accepted for the locomotive by the driver, traffic controllers, got by CER FERSPED.

### Underlying causes

There were not complied:

- art.11 (2) of the Signalling regulation no.004/2006, regarding the position of exit semaphore with an arm („STOP without pass the signal in stop position!”)
- art.121, paragraphs (1), (2) from the Instructions for the activity of locomotive crew no.201/2007, regarding the obligation of locomotive crew to track permanently the position of the exit signal of the railway station;
- art.3 letter b), from Norms for the maximum continuous duty accepted for the locomotive crew on Romanian railway network, approved by Order of Minister of Transports no.256/2013, that is in case of one-man driving of freight trains, the driver exceeded the maximum continuous duty for the locomotive and he did not take a rest.
- chapter 4.3 Additional duties for the locomotive staff, in case of one-man driving locomotive, hauling the freight trains, point 4.3.1 from Operational procedure for one-man driving of freight train PO–SMS-19 of CER FERSPED, that is the train manager did not occupy the normal working place in the driving cab, he did not track the position of the exit semaphore that was on stop and he did not notify soon the driver;
- point 5.9, 5.12, from the Operational procedure Maximum continuous duty accepted for the locomotive PO–SMS-20 a CER FERSPED, by the traffic controllers on duty, whose obligation was to track the maximum continuous duty accepted for the locomotive crew.

### Additional remarks

Lack of rest outside the home in special arranged sleeping rooms or in accommodation units (he took a rest into the locomotive) regulated by Order of Minister of Transports no.256/2013;

Exceeding of maximum continuous duty for the locomotive (regulated duty), on 5<sup>th</sup> July 2022 and on 6<sup>th</sup> July 2022.

### Safety recommendations

Considering the factors contributing to the incident, factors that are based on underlying and root causes, that are deviations from the practice codes and internal regulations, their observance being the responsibility of the railway freight undertaking, the investigation commission does not consider necessary to issue safety recommendations.

**3.4.48.** The railway incident happened on 5<sup>th</sup> May 2022 and found out on 28<sup>th</sup> June 2022, in the railway county Timișoara, track section Caransebeș – Lugoj, running line Găvojdia - Căvăran, consisted in the exceeding of speed of 50km/h, when the train no.73, running on 5<sup>th</sup> June 2022 (got by the railway undertaking SNTFC „CFR Călători” SA), on the track section with speed restriction established between km.493+600 ÷ 499+800.

The investigation report was completed on 26<sup>th</sup> October 2022.

### Direct causes

It is the human error of the driver, that is he did not pay attention in the train driving, he did not observe the positions of mobile signals for signalling the unconsolidated tracks, it leading to the exceeding of

maximum speed accepted for the line, imposed by the speed restriction stipulated in the Journal for Restrictions Notification - BAR, between km 493+600 and km 499+800.

#### **Contributing factors**

Reduced experience of the driver in driving on the track section Craiova – Timișoara Nord, that is he did not know in detail the track section.

Complexity of track section Timișoara – Craiova, on which the incident happened, includes a high slope and 131 speed restrictions stipulated in BAR, respectively he could not retain all the specific components of the track section.

#### **Underlying causes**

The infringement of the provisions from „Instructions for the activity of locomotive crew no.201/2007”: Art.125. (1) „The locomotive crew has to know the running of train driven and to ensure its running without delays and safely, meeting strictly with the running speeds, running times, stops and their length, stipulated in the working timetable or in the timetable drawn up at the train routing.”;

Art.132. „During the train driving, the driver must not:

b) exceed the speeds established for the locomotive, train and respective track section, as well as those notified by running order or indicated by signals or indicators”.

#### **Root causes**

None.

#### **Additional remarks**

None.

#### **Measures taken**

Following this incident, SNTFC „CFR Călători” SA disposed through the paper no. DMR2/8/433/19.09.2022, theoretical re-assessment of locomotive crew less 3 years experienced, increase of number of convoys and controls in the trains shunting and hauling.

#### **Safety recommendations**

None.

**3.4.49.** The railway incident happened on 22<sup>nd</sup> July 2022, in the railway county Galați track section Buzău – Adjud (electrified double-track line), between the railway stations Adjud and Pufești, km 241+000, consisted in hanging the contact wire by a cover opened at the 13<sup>th</sup> wagon of freight train no.67010 (got by railway undertaking SC Unicom Tranzit SA).

The investigation report was completed on 2<sup>nd</sup> November 2022.

#### **Direct causes**

The direct cause of the incident is the exit of the device for ensuring and sealing the dome cover from the 13<sup>th</sup> wagon of freight train no. 67010 from „WAGON ENLARGED GAUGE 1-VM” (Drawing no.10 from Instructions no.328/2008) and its entrance into „GAUGE FOR THE PARTS OF THE RAILWAY INSTALLATIONS” (Drawing no.4 from Instructions no.328/2008) corroborated with art.44 from Instruction no.353 since 1986 „Instruction for technical maintenance and repair of contact line installations of electrified railways” where the minimum height of the contact line, measured from the upper level of the rail, is 4990 mm for the existing art works.

#### **Contributing factors**

- the train routing with the device for ensuring and sealing the dome cover from wagon no.56791593 (being the 13<sup>th</sup> one in the composition of train no. 67010) „opened” (folded);
- non-observance of the real position of the device for ensuring and sealing the dome cover from wagon no.56791593, during the visual inspection of the train at its dispatching from the forming railway station, respectively at its reception/dispatching and passing through the stations along the route.

#### **Underlying causes**

- infringement of the provisions of art.75 point (1) letter (c) from Instruction no.250 „In the composition of the trains running on electrified lines there are not accepted tank wagons, special wagons and covered wagons having the dome covers, respectively the loading holes from the roof opened and up”;

- inobservance of provisions of art.153 point (3) from Regulation for the train running and railway vehicle shunting no.005/2005 „The staff established by this Regulation has to track carefully the condition of the railway vehicles and their loading, in order to identify the cases where the vehicles have failures visible/distinguishable by the noise generated and endanger the traffic safety and transports security (doors or covers of the wagons detached or opened according to art.153 pct.(7) letter (d))”.

#### **Root causes**

None.

#### **Safety recommendations**

Considering the factors contributing to the incident occurrence, factors that were based on the underlying causes, that are deviations from the practice codes, their observance being the responsibility both of the public railway infrastructure manager and of the railway undertaking, the investigation commission does not consider necessary to issue safety recommendations.

**3.4.50.** The railway incident happened on 27<sup>th</sup> July 2022, in the railway county Craiova, track section Turceni – Gura Motrului (electrified double-track line), in Gura Motrului railway station, consisted in passing the branch signal Y<sub>RT</sub> of the railway station Gura Motrului on position „stop”, by the freight train no.66344, hauled with the locomotive EA 090 (got by the freight railway undertaking SC Grup Feroviar Român SA), leading to the derailment of all axles from the locomotive and the first axle of the first wagon, on the track bed of the avoiding line, km 0+200.

The investigation report was completed on 7<sup>th</sup> December 2022.

#### **Direct causes**

The incident was generated by the human error appeared in the locomotive driving, that consisted in the lack of braking measures in order to stop it in front of the light branch signal YRT that was on: “STOP without pass by the signal! Day and night – a light red unit to the train”.

#### **Contributing factors**

- lack of attention of the locomotive crew at the position of the light branch signal YRT from the railway station Gura Motrului;
- not considering of the radio communication of the movements inspector from Gura Motrului railway station, regarding the position „STOP without pass by the signa! Day and night – a light red unit to the train” of the light branch signal YRT;
- not considering of the position of the light signal for entry on the branch line XT from Gura Motrului railway station, that was on: „FREE with established speed. ATENTION! The next signal orders stop. Day and night – a light yellow unit to the train.”;
- unjustified isolation, from the automatic fuse, of the installations for punctual control of the speed INDUSI and for safety and vigilance DSV;
- lack of communication between the driver and driver’s assistant regarding the position of the light branch signal YRT from the railway station Gura Motrului;
- improper route reconnoitring of the track section where the incident happened, by the driver of the locomotive EA 090;
- fatigue of the locomotive crew generated by the fact that before the incident, the locomotive crew exceeded the maximum accepted duty and did not comply with the minimum rest outside home corresponding to the duty carried before

#### **Underlying causes**

Inobservance of some provisions from the practice codes, as follows:

- art.59-(4) from the Regulation for railway technical operation no.002/2001, that prohibits passing a signal in stop position;
- art.23 paragraph (2) from Signalling Regulation no.004/2006, regarding the position of light branch signal YRT;
- art.119, paragraphs (2) and (3), art.121, paragraphs (1) and (2) from Instructions for the activity of locomotive crew no.201/2007, regarding the obligations of the train driver in order to occupy a running line;

- art.12-(1), point d) from Instructions for the activity of the locomotive crew no.201/2007, regarding the unjustified taking out of service of the safety and vigilance installations for the punctual control of the train;
- art.129-(1), from Instructions for the activity of locomotive crew no.201/2007, regarding the obligation of the locomotive crew to communicate each other the observations got along the route;
- art.7-(7), point a) from Instructions for the activity of the locomotive crew no.201/2007, regarding the obligation of the locomotive crew to do route reconnoitring of the hauling route, driving less two times/day and two times/night, on the respective track section;
- art.2 from Order of Minister of Transports no.256/29.03.2013 regarding the compliance with maximum continuous duty accepted for the locomotive, carried by Romanian locomotive crew;
- art.8-(1) from Order of Minister of Transports no.256/29.03.2013 regarding the compliance with the rest outside home;
- art.72, paragraphs (1) and (2) from the Regulation for hauling and braking no.006/2005, regarding the way the driver applies the normal brake;
- art.73, paragraph (1) from Regulation for hauling and braking no.006/2005, regarding the way the driver applies quick braking when the traffic safety is endangered.

**Root causes**

None.

**Additional remarks**

None

**Safety recommendations**

None.

**3.4.51.** The railway incident happened on 21<sup>st</sup> July 2022 and found out on 2<sup>nd</sup> August 2022, in the railway county Craiova, on track I, from Craiova to Banu Mărăcine, consisting in exceeding of maximum accepted speed for the line, imposed on the switches no. 65, 55 and 43/49 from X end of Craiova railway station, by the freight train no.68110 (got by the railway undertaking Constantin Grup).

The investigation report was completed on 5<sup>th</sup> December 2022.

**Direct causes**

It is represented by the human error happened in the train driving, that is the driver did not adjust the running speed on the diverging track, on the switches no.65, 55 and 43/49, end X of Craiova railway station and he did not strictly comply with the running speed of the train limited by the Sheet for Restrictions Notification-BAR for 10 days.

**Contributing factors**

Lack of attention of the driver, who did not permanently track the speed indication.

**Underlying causes**

The inobservance of the provisions „Instructions for the activity of locomotive crew no.201/2007”:

Art.125. (1) „The locomotive crew has to know the timetable of the driven train and to ensure its running without delay and safely, complying strictly the running speeds, running times, stops and their length, stipulated in the working timetable or in the timetable drawn up when the train was routed;

Art.127. (1) „ During the train driving, along the route, the locomotive crew has to know carefully:

f) the working way of the locomotive/multiple unit,tracking the indications of the devices for measurement, of the indicators, of the displays existing, in accordance with the operation regulations specific to each type”.

Art.132. „When he drives the train, the driver must not:

b) exceed the speeds established for the locomotive, train and respective track section, as well as those notified in written, by the running order or indicated by signals and indicators”.

**Root causes**

None.

**Additional remarks**

The maximum tonnage, hauled with electric locomotive type EA, for the freight trains on track section Craiova - Caracal is 3000 tons (according to Annex 1 of the working timetables for freight trains, page 16,

line 100). If, in operation it is needed to isolate a traction engine, the tonnage has to be reduced proportionally.

In this case, where the locomotive EA 725 had the traction no.3 isolated, the maximum tonnage that it could haul was 2500 tons.

#### **Safety recommendations**

None.

**3.4.52.** The railway incident happened on 3<sup>rd</sup> August 2022 and found on 4<sup>th</sup> August 2022, in the railway county Constanța, consisted in the hit of two wagons of the train no.1582 (the second and the third ones), that ran on track I , to Lehliu, by a part from the 21<sup>st</sup> wagon of freight train no.56006030 (got by railway undertaking SNTFM „CFR Marfă” SA).

The investigation report was completed on 25<sup>th</sup> August 2022.

#### **Direct causes**

The detachment and buckling of the indicator plate from wagon no.315379653134, being in the composition of freight train no.56006030, it leading to the hit of 2 cars of passenger train no.1582.

#### **Contributing factors**

The breakage aspect - old 100% of two from those 3 fixing points of the indicator plate.

#### **Underlying causes**

Nonidentification of the breakage of the points for fixing the indicator plate, at the train technical inspections, at its composition and through transit.

#### **Root causes**

None.

#### **Measures taken during the investigation**

Following the incident, SNTFM „CFR Marfă” SA took the next measures in order to avoid in the future similar incidents/accidents:

- the railway incident was analyzed with the own employees.
- it was disposed that during the technical inspections (at the composition, transit, arrival) the technical examiners shall pay high attention to the fastening way of the indicator plates.

#### **Safety recommendations**

Considering the incident occurrence, the measures taken by SNTFM „CFR Marfă” SA, the investigation commission did not consider necessary to issue safety recommendations.

**3.4.53.** The railway incident happened on 22<sup>nd</sup> August 2022, in the railway county Galați, consisted in the hit of 8 track magnets between the railway stations Cricov and Inotești by a damper broken from the locomotive EA359, hauling the passenger train no.1750 (got by the railway undertaking SNTFC „CFR Călători” SA).

The investigation report was completed on 24<sup>th</sup> November 2022.

#### **Direct causes**

The direct cause of the incident was the entrance of the locomotive damper, afferent to axle no.3, from the right side, in the running direction, into „the clearance for parts of the railway installations”. It was possible following the breakage of the upper fastening end of the damper and its turning round the inner support for fastening.

#### **Contributing factors**

- appearance and development over the time a crack in the material of the upper fastening support of the damper, following the transfer of the strengths from the locomotive body;
- non-identification of the old crack existing at the upper fastening support of the vertical damper from the axle no.3, right side, from the locomotive EA 359, during the planned inspection type R1, performed on 19th August 2022.

#### **Underlying causes**

Poor application of the provisions of Technical Specification Code: ST 31-2016, regarding the obligation to check, during the planned inspection type R1, the fastening of the dampers.

#### **Root causes**

None.

**Measures taken**

Following the incident SNTFC „CFR Călători” SA did not take and dispose any addition measures.

**Safety recommendations**

None.

**3.4.54.** The railway incident happened on 3<sup>rd</sup> September 2022, in the railway county Braşov, track section Braşov – Războieni (electrified double-track line), in Copşa Mică railway station, consisted in the hit of the wheel sensor from the switch no.1 and of the trough from the track II of the level crossing from 343+320, by a brake shoe detached from wagon no.335379193154 of the freight train no.66013 (got by the railway freight undertaking SNTFM „CFR Marfă” SA).

The investigation report was completed on 27<sup>th</sup> October 2022.

**Direct causes**

The breakage of ensuring splint, followed by the fall of the safety clip, it leading to the fall of the bolt from the brake shoe hanger from the upper part.

**Underlying causes**

None.

**Root causes**

None.

**Additional remarks**

During the investigation there were the next findings about some deficiencies and gaps, without relevance for the incident conclusions:

During the documentation of the investigation commission in the railway station Copşa Mică, there was found that during the running of the trains on direct line with maximum speed of 80 km/h (stipulated in the working timetable), it is very difficult for the movements inspector who does the visual inspection to identify some failures, that can endanger the traffic safety, as follows: the bars of the brake rigging or other parts detached but do not make noise (like in the investigated case), suspension springs broken or detached, etc. Also, in some cases the visibility is difficult because the height of the platforms.

**Measures taken**

Considering the incident occurrence and the findings of the investigation commission, SNTFM „CFR Marfă” SA started an analysis on the exposure level to the risk of accident/incident in the inspection of each wagon, according to the occurrence probability and the impact resulted, considering also the number of incidents occurred between Dej – Braşov, as well as the value of the damages registered following the incident investigation in order to avoid similar incidents/accidents in the future.

**Safety recommendations**

Considering the incident occurrence, findings and action taken by SNTFM „CFR Marfă” SA during the investigation, the investigation commission does no more consider necessary to issue safety recommendations.

**3.4.55.** The railway incident happened on 4<sup>th</sup> October 2022, in the railway county Cluj, track section Campia Turzii-Cluj Napoca, consisted in passing the exit signal Y1 of the railway station Tunel on stop position, by the passenger train no.10503, composed from multiple unit AM 701 (got by the railway undertaking SC Interregional Călători SRL).

The investigation report was completed on 5<sup>th</sup> December 2022.

**Direct causes**

The direct cause is the human error in the driving of multiple unit, that is the driver did not take the suitable braking measures in order to stop the train before the light exit signal X1 of the railway station Tunel that was on „STOP without pass by the signa! – a red light unit to the train”, it led to the passing by this signal.

**Contributin factors:**

Lack of attention of the driver in the driving of the multiple unit.

**Underying causes**

The inobservance of some provisions from the regulations and instructions in force, respectively:

- art.23 paragraph (2) corroborated with art.21 from Regulation 004/2006 regarding the light exit signals on position „STOP without passing by the signal! – a light red unit to the train”;
- art.8 from Regulation 004/2006, regarding the significance of red colour that orders the stop, in connection with the train traffic and shunting;
- art.121, paragraphs (1), (2) from Instructions 201/2006, regarding the obligation of the locomotive crew to track permanently the position of the station exit signal;
- art.127 paragraph (1), letter a) from Instructions 201/2006, that stipulates that along the route the locomotive crew has to track carefully the position of fixed signals put in accordance with the specific regulations in force;
- art.21 from Regulation 004/2006, regarding the light entry signals that have two light yellow units to the train, that indicate „FREE with low speed, ATTENTION! The next signal orders stop”.

#### **Root causes**

None.

#### **Safety recommendations**

During the investigation, the commission found that the incident was generated by an error of the driver, caused by the lack of attention. The activity of the locomotive crew was established into procedures by the railway undertaking, being also identified the circumstances that favour the risk of passing the exit signal in stop position, the consequences of a such situation. In these conditions the investigation commission considers unnecessary to issue safety recommendations.

**3.4.56.** The railway incident happened on 28<sup>th</sup> October 2022, in the railway county Cluj, track section Cluj Napoca – Oradea (not-electrified single-track line), consisted in the hit of track inductors situated between the railway stations Suncuiuş and Oradea by the suspension fork detached from the locomotive DA 506, hauling the freight train no.58807 (got by the railway freight undertaking SC Via Tera Spedition SRL).

#### **Direct causes**

The entrance into the gauge for the railway installations parts of a head broken from the pendular link afferent to the axles 2 and 3, left side, Of the locomotive DA 506.

#### **Contributing factors:**

Cracking of the pendular link, following the material fatigue, that led to the breakage of the pendular link.

#### **Underlying causes**

None

#### **Root causes**

None

#### **Safety recommendations**

The incident occurrence did not base on causes and factors generated by the deviations from the practice codes. During the investigation the result was the pendular link, that generated the incident, is not part of critical components for safety, not being compulsory for the railway undertaking and for the entity in charge with the maintenance to perform special activities of monitoring and management of information about the maintenance of that link.

In this Report there were presented, into chapter Other remarks, that the actors from the railway industry applied technical measures in order to prevent similar incidents, assembling some safety parts on the pendular link. During the investigation, SC Via Terra Spedition SRL applied similar technical measures, assembling some safety parts on the pendular links, in order to prevent incidents in the future.

In these conditions the investigation commission considers that it is not necessary to issue safety recommendations.

### 3.5 Accidents and incidents investigated over the last 5 years Investigations performed between 2018-2022:

Accidents investigated <sup>(1)</sup>		2018	2019	2020	2021	2022	TOTAL
Accidents (Art.19, 1 + 2)	Train collisions	-	-	2	1	1	4
	Collisions between trains and obstacles	-	-	-	-	-	-
	Train derailments	22	27	31	22	25	127
	Level crossing accidents	-	1	-	-	-	1
	Persons accidents generated by the rolling stock in motion	-	-	-	-	-	-
	Rolling stock fires	3	4	9	7	8	31
	Accidents involving dangerous goods	-	-	-	-	-	-
Other accidents (Art.21.6)	Trains collisions	-	-	-	-	-	-
	Collisions between trains and obstacles	-	-	-	-	-	-
	Train derailments	-	-	-	-	-	-
	Level crossing accidents	-	-	-	-	-	-
	Person accidents generated by the rolling stock in motion	-	-	-	-	-	-
	Rolling stock fires	-	-	-	-	-	-
	Accidents involving dangerous goods	-	-	-	-	-	-
<b>Incidents</b>		31	25	24	22	114	
<b>TOTAL</b>		37	63	67	54	56	277

(1) one considered the year of the investigation completion;

## 4 RECOMMENDATIONS

### 4.1. Brief presentation and analysis of the safety recommendations issued in 2022

Through the issued recommendations, Romanian Railway Investigation Agency-AGIFER aimed the improvement of the railway safety and the prevention of the accidents/incidents

No	Train/ rolling stock involved		Site of the railway event			Date of the report completion	Type of railway event		
	No. of train	Type of train	Occurrence site	Occurrence date	hour				
1.	60516-1	freight	Domaşnea Cornea- Poarta	04.02.2021	11:31	03.02.2022	<b>accident</b>	Fire into the electric locomotive	
		In the railway county Timișoara, between the railway stations Domaşnea Cornea and Poarta, km 435+100, in the running of the freight train no.60516-1, there was a fire into the banking locomotive EA 1084							
		Issued recommendati ons	3	<p><b>376/1.</b> Romanian Railway Safety Authority- ASFR shall ensure that SC Tim Rail Cargo SRL, like railway undertaking, getting rolling stock, assesses the danger represented by „the use in operation of locomotives with the deadline for planned repair overdue” and will establish viable safety measures for keeping it under control.</p> <p><b>376/2.</b> Romanian Railway Safety Authority- ASFR shall ensure that SC Constantin Grup SRL, like entity in charge with the maintenance, re-assesses the procedure code: P – ERI 02 / III so that it shall contain clear provisions regarding the measures that have to be taken when the locomotives used reach the norm of time/km for the performance of planned repairs</p> <p><b>376/3.</b> Romanian Railway Safety Authority- ASFR shall assure that CNCF CFR SA, like public railway infrastructure administrator and SC Tim Rail Cargo SRL, like railway undertaking, take the necessary steps for checking the maximum accepted tonnage, that can be hauled between the railway stations Mehadia Nouă and Poarta, upon the calculation and experiment made, meeting with the conditions imposed by the regulations in force</p>					
Implemented recommendati ons (closed)	3	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendations no.376/1, 376/2 and 376/3, issued following the investigation of the accident, were analyzed, the measures that have to be taken were identified and implemented.							
2.	80599-2	Freight	Augustin	26.03.2021	13:12	24.03.2022	<b>accident</b>	Derailement of a wagon	
		In the railway county Braşov, on the exit route of the railway station Augustin, the first bogie from the 9 <sup>th</sup> wagon of freight train no.80599-2 derailed							
		Issued recommendati ons	1	<b>379/1.</b> Romanian Railway Safety Authority – ASFR shall ensure that the public railway infrastructure administrator re-assesses the risk associated to the danger generated by the lack of preventive and scheduled maintenance, non compliance with the track maintenance and repair cycles and it establishes effective measures for keeping it under control.					
Recommendati on in implementatio n process (opened)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.379/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and they are partially implemented.							
3.	80639	freight	Palas- Constanța Mărfuri	11.04.2021	10:00	06.04.2022	<b>accident</b>	Derailement of 2 wagons	

		In the railway county Constanța, non-interoperable track section Palas – Năvodari, between the railway stations Palas and Constanța Mărfuri, km 1+330, two wagons of the freight train no.80639 derailed.						
		Issued recommendations	1	384/1. Romanian Railway Safety Authority-ASFR shall ask OTF (SC Grup Feroviar Român SA) a re-assessment of the risks associated to the danger represented by the inobservance of the conditions recorded in the running order and the establishment of proper measures for keeping it under control				
		Implemented recommendations (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.384/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and implemented.				
		passenger	Golești	01.06.2021	19:35	30.05.2022	incident	Signal passed on danger
		In the railway county Craiova, track section Titu - Golești (not-electrified double-track line), in the railway station Golești, in the running of passenger train no.1897, the signals XIC, XPIII, and XIII were passed in stop position, being on the position „STOP, without passing the signal in stop position!”, followed by the forcing of switch no.15 and the train stop on the insulated track section no.50/56.						
		Issued recommendations	3	385/1. Romanian Railway Safety Authority – ASFR shall ensure that SNTFC „CFR Călători” SA re-assesses the drafting of the technical specifications, so these include also the checking of the valves for the brake control P106 on authorized benches.				
				385/2. Romanian Railway Safety Authority – ASFR shall ensure that SNTFC „CFR Călători” SA revises the operational procedure „Planning of inspections and repairs at locomotives, multiple units and electric train sets got by SNTFC „CFR Călători” SA” - PO-0-8.1-15, so by its application be met the provisions imposed by Railway Norm 67-006:2011 „Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of planned inspections and repairs", approved by Order of Minister of Transports and Infrastructure no.315/2011, amended by Order of Minister of Transports and Infrastructure no.1359/2012, Order no.1255/2014, Order no.1187/2018, Order no.1744/2020 and Order no.2159/2020.				
				385/3. Romanian Railway Safety Authority – ASFR shall ensure that SNTFC „CFR Călători” SA re-assesses the monitoring of the measures established for keeping under control the risks associated to the dangers that developed in case of this incident.				
		Implemented recommendations (closed)	2	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendations no.385/1 and 385/3, issued following the investigation of the accident, were analyzed, the measures that have to be taken were identified and they were implemented.				
		Recommendation in implementation process (opened)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.385/2, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and they are in implementation process.				
4.	1897							
		Freight	Poarta	06.06.2021	01:20	30.05.2022	accident	Fire into the electric locomotive
5.	81690	In the railway county Timișoara, track section Caransebeș - Orșova (electrified single-track line), in the railway station Poarta, on the line 4, a fire burst into the locomotive EA 071.						

		Issued recommendations	1	386/1. Romanian Railway Safety Authority - ASFR shall make sure that SNTFM „CFR Marfă” SA revises the procedure PO 04.3, so it include clear provisions regarding the measures that have to be taken for the locomotives with the prescribed operational life exceeded, respectively their withdrawal from traffic for the performance of the interventions necessary for getting from AFER a Technical Approval for a vehicle with the operational lifetime exceeded.				
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.386/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and implemented.				
6.	48375	freight	Dej Triaj	15.06.2021	22:10	07.06.2022	accident	Derailement of two wagons
		In the railway county Cluj, in the railway station Dej Triaj, two wagons of freight train no.48375 got by CNCF „CFR” SA, hauled by SNTFM „CFR Marfă” SA, derailed.						
		Issued recommendations	2	387/1. Romanian Railway Safety Authority – ASFR shall ensure that CNCF drafts internal procedures for the wagons used for the material necessary in the performance of works at lines, that assign for the own staff the responsibilities for checking the distribution as uniform as possible of the rested load and notification of the respective information.				
				387/2. Romanian Railway Safety Authority – ASFR shall ensure that SNTFM re-assesses the procedures (regulations) for delivery-reception of wagons, including all cases of taking for transport, inclusively the wagons got by entities that are not railway undertaking.				
		Recommendation in implementation process (opened)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2023/205/06.07.2023, notified with reference to the safety recommendation no.387/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and they are partially implemented.				
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2023/205/06.07.2023, notified with reference to the safety recommendation no.387/2, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and implemented.				
7.	9036	passenger	Robănești	28.06.2021	12:24	07.06.2022	incident	Wrong switch of the entry routes
		In the railway county Craiova, track section Craiova – Piatra Olt, in the railway station Robănești, in the running of passenger train no.9036, having route for passing on the direct line II, the entry traffic semaphore D1/2 on the position „FREE on the main line”, entered the diverging track 3, following the operation of the switch no.2 on minus (diverging track).						
		Issued recommendations	2	389/1. Romanian Railway Safety Authority-ASFR shall ensure that the infrastructure manager CNCF „CFR” SA reinforces the training and supervision of operating staff (movements inspectors, pointsmen, points examiner), regarding the issues connecting to the operation of safety installations, focussing on the compulsory dispositions specific to their use rules specified in the instructions in force (operation) or the user’s guide.				
		389/2. Romanian Railway Safety Authority-ASFR shall ensure that the infrastructure manager CNCF „CFR” SA drafts a procedure that shall include the checking of technical parameters of the switch lock with two keys, during the planned periodical technical inspections at the switch locks, so there was no more allowed the operation and securing of a locks with two keys, with another key than that namely intended.						

		Implemented recommendations (closed)	2	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendations no.389/1 and 392/2, issued following the investigation of the accident, they were analyzed, the measures that have to be taken were identified and implemented.					
8.	99514	freight	Beia	12.07.2021	06:45	04.07.2027	accident	Fire at the wagon load	
		In the railway county Braşov, track section Braşov – Sighişoara (electrified double-track line), in the railway station Beia, on the direct line II, a fire burst at the logs load of first wagon of the train no.99514, got by the railway freight undertaking SC Vest Trans Rail SRL.							
		Issued recommendation	1	392/1. Romanian Railway Safety Authority-ASFR shall ask the railway undertaking SC Vest Trans Rail SRL to assess the risks of a fire at fuel load from the open wagons, being in the composition of trains hauled with electric locomotives, not excluding the draft of a specific regulation or the request spread to the other railway undertaking.					
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.392/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and implemented.					
9.	83548 G-1	freight	Bucureşti Noi	15.07.2021	19:00	14.07.2022	accident	Derailment of electric locomotive	
		In the railway county Bucureşti, in the railway station Bucureşti Noi, in the running of freight train no.83548G-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), the first 3 axles of the hauling locomotive ED 022derailed. on the switch no.12C							
		Issued recommendations	1	393/1. Romanian Railway Safety Authority – ASFR shall ensure that the railway public infrastructure administrator re-assesses the risks associated to the danger generated by the exceeding of the tolerances accepted for the gauge and level at the switches					
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.393/1, issued following the investigation of the accident, was analyzed, the measures that have to be taken were identified and implemented.					
10.	50830-1	freight	Dorobanţu	20.07.2021	02:45	20.07.2022	accident	Derailment of a wagon	
		In the railway county Constanţa, track section Medgidia – Palas, in the railway station Dorobanţu, in the running of freight train no.50830-1, all axles of the wagon no.83536652305-7 derailed							
		Issued recommendations	1	395/1. Romanian Railway Safety Authority – ASFR shall ensure that, SC EXPRESS FORWARDING SRL, like railway undertaking, re-assesses the own prevention measures for keeping under control and reducing the risks associated to the technical inspections and maintenances of wagons in operation, respectively of the risk to perform works/render services with thirds, without setting obligations and responsibilities for the parties by agreements/contracts.					
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.395/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and implemented.					
11.	64288	freight	Feteşti	21.07.2021	14:05	20.07.2022	accident	Derailment of three wagons	

		In the railway county Constanța, in the railway station Fetești, in the running of freight train no.64288 (got by OTF SC ROFERSPED SA), three wagons derailed.						
	Issued recommendations	2	<p><b>396/1.</b> Romanian Railway Safety Authority – ASFR shall ensure that SC ROFERSPED SA, like railway undertaking, re-assesses the own prevention measures for keeping under control and decrease of the risks associated to the technical inspection and maintenance of the wagons in operation.</p> <p><b>396/2.</b> Romanian Railway Safety Authority – ASFR, that is it shall ensure that, SNTFM „CFR Marfă” SA, like entity in charge with the maintenance, re-assesses the own preventive measures for keeping under control and decrease the risks associated to the technical inspection and maintenance of wagons in operation.</p>					
	Implemented recommendations (closed)	2	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendations no.396/1 and 396/2, issued following the investigation of the accident, they were analyzed, the measures that have to be taken were identified and they were implemented.					
	freight	Fetești	28.07.2021	23:20	21.07.2022	accident	Collision between two freight trains	
	In the railway county Constanta, track section București - Constanța (electrified double-track line), railway station Fetești, the freight train no.50790-1 (got by the railway undertaking SC EXPRESS Forwarding SRL).passed the entrance signal on danger and collided with the freight train no.60514-1 (got by the railway undertaking SC TIM RAIL CARGO SRL) .							
12.	60514-1 50790-1	Issued recommendations	4	<p><b>397/1.</b> Romanian Railway Safety Authority-ASFR shall ask the railway undertaking SC TIM RAIL CARGO SRL to revise the General Procedure PG-20 – Maximum continuous duty accepted for the locomotive, in order to establish provisions (barriers), that have both preventive character and effective applicability during the driving of the freight trains, for ensuring that the staff of the company involved in the railway freight transport complies with the provisions of Minister of Transports’ Order no.256/2013.</p> <p><b>397/2.</b>Romanian Railway Safety Authority–ASFR shall ask the railway undertaking SC TIM RAIL CARGO SRL to regulate its own activity of issuing complementary certificates for the drivers, in order to eliminate the cases of issuing these certificates, before they meet with all the requirements.</p> <p><b>397/3.</b>Romanian Railway Safety Authority-ASFR shall ask the railway undertaking SC TIM RAIL CARGO SRL to re-assess the risks associated and to establish effective measures for keeping under control the next dangers:</p> <ul style="list-style-type: none"> <li>• „failures at the devices of safety, vigilance, control of train speed and recording of the locomotive parameters”;</li> <li>• „lack of compliance with the stop positions of the signals or in case of a situation that endangers the traffic safety”;</li> <li>• „the locomotive crew did not do the route reconnoitring of the track section on what the train runs”;</li> <li>• „exceeding of the maximum duty accepted for the locomotive”.</li> </ul> <p><b>397/4.</b> Romanian Railway Safety Authority-ASFR shall ask the railway undertaking SC TIM RAIL CARGO SRL to assess the risks associated to the danger represented by the unjustified isolation of the devices of safety, vigilance, control of train speed and recording of the locomotive parameters (without meeting with the regulations in the field) and to establish the measures suitable for keeping them under control.</p>				
	Implemented recommendations (closed)	4	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendations no.397/1, 397/2, 397/3 and 397/4, issued following the investigation of the accident, they were analyzed, the measures that have to be taken were identified and implemented.					

13.	30658-1	freight	ROMCIM SA București – Punct de lucru Medgidia	01.08.2021	16:21	20.07.2022	<b>accident</b>	Wagon derailment
		In the railway county Constanța, track section Medgidia – Medgidia(PC2) – Antestație ROMCIM Medgidia (not-electrified single-track line), on the industrial branch got by ROMCIM SA București – Working Point Medgidia, in the running of freight train no.30658-1 (got by Deutsche Bahn Cargo Romania SRL), the wagon no.83536658166-7 derailed, it being first in the train composition.						
		Issued recommendations	2	<p><b>398/1.</b> Romanian Railway Safety Authority-ASFR shall ensure, through specific surveillances, that the documents concluded between the railway undertaking and the forwarder of the goods comply with the provisions of the national regulation framework regarding the delivery-reception of wagons loaded with goods.</p> <p><b>398/2.</b> Romanian Railway Safety Authority-ASFR shall ensure that the railway undertaking re-assesses the risk represented by the routing of the trains with wagons where the goods are not loaded in accordance with the Loading rules issued by UIC and it establishes viable measures for keeping under control this risk.</p>				
Implemented recommendations (closed)	2	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendations no.398/1 and 398/2, issued following the investigation of the accident, they were analyzed, the measures that have to be taken were identified and implemented.						
14.	20536-1	freight	Vlădueni-Piatra Olt	07.08.2021	02:32	04.08.2022	<b>accident</b>	Derailement of a wagon
		In the railway county Craiova, track section Caracal – Piatra Olt (not-electrified single-track line), between the railway stations Vlădueni and Piatra Olt, km 206+925, in the running of freight train no.20536-1 (got by the railway undertaking SC CER – Fersped SA) the first bogie from the 13 <sup>th</sup> wagon of the train derailed in the running direction.						
		Issued recommendations	1	<p><b>400/1.</b> Romanian Railway Safety Authority – ASFR shall ensure that the infrastructure administrator CNCF „CFR” SA re-assesses the risks generated by the lack, within the sections of lines, a sufficient number of employees with high graduation and competences in line maintenance, who can carry out the traffic safety tasks specific to the welded track and it establishes safety measures for keeping under control those risks</p>				
Recommendation in implementation process (opened)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.400/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and they are in implementation process.						
15.	50783	freight	Mintia-Brănișca	19.08.2021	14:20	28.06.2022	<b>accident</b>	Derailement of a wagon
		In the railway county Timișoara, track section Deva – Ilia (electrified double-track line), between the railway stations Mintia and Brănișca, track II, km 492+689, in the running of freight train no.50783 (got by the railway undertaking SC Express Forwarding SRL), the 13 <sup>th</sup> wagon of the train derailed.						
		Issued recommendation	1	<p><b>401/1.</b>Romanian Railway Safety Authority – ASFR shall take care that the railway undertaking EXFO re-assess the risks associated to the danger generated by the reception of the wagons after their loading by the economic operators (forwarders), with which it has concluded railway transport contracts/agreements type B, for excluding the cases of existence within the trains the wagons without complying with the specific regulations, respectively the wagons with the maximum accepted load on axle exceeded..</p>				
Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.401/1, issued following the investigation of the accident,						

				it was analyzed, the measures that have to be taken were identified and implemented.					
16.	59401	freight	Nucet	27.08.2021	20:50	27.07.2022	accident	Derailment of six wagons	
		In the railway county București, track section Titu – Târgoviște (not-electrified double-track line), during the stabling of the freight train no.59401 (got by the railway undertaking SC UNICOM TRANZIT SA) on the deflecting section 5 of the railway station Nucet, 6 wagons derailed ( from the 9th wagon to the 14th one).							
		Issued recommendations	1	404/1. Romanian Railway Safety Authority – ASFR shall ensure that the public railway infrastructure administrator re-assesses the risk associated to the danger represented by the exceeding of deadlines stipulated by the practice codes for the performance of quarterly measurements with trolley and it establishes effective measures for the suitable management of it.					
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.404/1, issued following the investigation of the accident, was analyzed, the measures that have to be taken were identified and they were implemented.					
17.	67400	freight	Chiajna	27.12.2021	15:35	16.12.2022	accident	Wagon derailment	
		In the railway county CF București, track section București Nord - Videle (electrified double-track line), in the railway station Chiajna, when the freight train no.67400 (got by the railway undertaking SC TIM RAIL CARGO SRL) was dispatched from the line 2, both axles from the first bogie in the running direction of the 25 <sup>th</sup> wagon of the train derailed.							
		Issued recommendations	1	410/1. Romanian Railway Safety Authority – ASFR shall ensure that the railway undertaking SC TIM RAIL CARGO SRL re-assesses the danger represented by the non-identification of all failures existing at the wagons, establishing additional effective measures for keeping under control the risks generated by it.					
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2023/205/06.07.2023, notified with reference to the safety recommendation no.410/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and they were implemented.					
18.	56300	freight	Crivina-Brazi	02.01.2022	16:00	29.12.2022	accident	Fire into a diesel locomotive	
		In the railway county București, track section București Nord - Ploiești Sud (electrified double-track line, between the railway stations Crivina and Brazi, track I, km 49+908, in the running of freight train no.56300 (got by the railway undertaking SC Grup Feroviar Român SA), a fire burst into the hauling locomotive DA1547.							
		Issued recommendations	1	412/1. Romanian Railway Safety Authority – ASFR shall analyze the opportunity to ask the railway undertaking SC Grup Feroviar Român SA the re-assessment of the risks associated to the danger „Hauling of the trains with locomotives whose condition does not allow the hauling of the tonnage stipulated into the working timetables” and the disposition of effective measures for keeping it under control.					
		Implemented recommendation (closed)	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2210/141/21.02.2023, notified with reference to the safety recommendation no.412/1, issued following the investigation of the accident, it was analysed, the measures that have to be taken were identified and implemented.					

		freight	Filești (Ramificație CSG)-Cătușa	07.01.2022	14:15	29.12.2023	<b>accident</b>	Derailment of four wagons
		In the railway county Galați, track section Făurei - Galați (electrified double-track line), between the railway stations Filești (CSG branch line) and Cătușa (on the line with wide gauge got by SC Liberty Galați SA), km 2+773, in the running of freight train no.77146 (got by the railway undertaking SC Unicom Tranzit SA), 4 wagons derailed ( from the 3 <sup>rd</sup> one to the 6 <sup>th</sup> one ).						
19.	77146	Issued recommendati ons	2	<p><b>413/1.</b> Romanian Railway Safety Authority-ASFR shall ensure that the infrastructure administrator CNCF „CFR” SA re-assesses the risks associated to the danger generated by the keeping in operation the improper wooden sleepers within the curves and it establishes viable safety measures for keeping them under control.</p> <p><b>413/2.</b> Romanian Railway Safety Authority -ASFR shall ensure that OTF SC Unicom Tranzit SA re-assesses the risks associated to the danger generated by the exceeding by the trains of the maximum speeds accepted by the line, of the maximum speeds stipulated into the working timetables or the running slip and it establishes viable safety measures for keeping them under control.</p>				
		Recommendati on in implementatio n process ( <b>opened</b> )	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2023/205/06.07.2023, notified with reference to the safety recommendation no.413/1, issued following the investigation of the accident, it was analyzed, the measures that have to be taken were identified and they are in implementation process.				
		Implemented recommendati on ( <b>closed</b> )	1	Romanian Railway Safety Authority, upon the answer sent by the paper no.2023/205/06.07.2023, notified with reference to the safety recommendation no.413/2, issued following the investigation of the accident, was analysed, the measures that have to be taken were identified and implemented.				

#### 4.2. Implementation of the safety recommendations issued within the last 5 years

Investigations completed in	Number of the issued recommend ations	Number of the implemented recommend ations	Number of the recommendati ons in implementati on process	Number of the recommendati ons about which ASFR communicated that they should not be implemented	Number of the recommendati ons without answer
2018	42	31	6	5	0
2019	60	26	17	8	9
2020	111	63	39	9	0
2021	52	44	4	3	1
<b>2022</b>	<b>31</b>	<b>26</b>	<b>5</b>	<b>0</b>	<b>0</b>
<b>TOTAL</b>	<b>296</b>	<b>190</b>	<b>71</b>	<b>25</b>	<b>10</b>

**General Manager**  
**Laurențiu Cornel DUMITRU**