



MINISTERUL TRANSPORTURILOR ȘI INFRASTRUCTURII  
AGENȚIA DE INVESTIGARE FERROVIARĂ ROMÂNĂ - AGIFER



# ROMANIAN RAILWAY INVESTIGATION AGENCY - AGIFER - ANNUAL REPORT

2020



## INTRODUCTION

This is the Annual Report of Romanian Railway Investigation Agency - AGIFER (hereinafter referred to as AGIFER) for 2020. It is worked out in accordance with the *Regulation for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and metro safety*, approved through the Government Decision no. 117/2010 and meets with the requirement of the Directive 2016/798/EC of European Parliament and Council, transposed into Romanian legislation through the Emergency Ordinance no.73/2019 *for the 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 Foreword of AGIFER general manager

The year 2020 was marked, both the railway field and the other economic sectors, by coronavirus pandemic, it leading to difficulties and new challenges in the carrying out of the activity.

The sanitary restrictions imposed, especially in the first half of the year, generated the decrease of the freight and passenger transport, generating also the decrease of the number of railway accidents and incidents. The most part of the accidents was represented, like in the previous years, by derailments, but an important share, of about 30%, is represented by fires at the rolling stock, one of them, unfortunately, even with a death.

The investigations, completed in the period of time analysed, revealed, mainly, the fact that the resources allocated for the maintenance and investments are not enough, so, in many situations, the deadlines for the repair of the rolling stock and railway infrastructure are not observed, it influencing the working environment and in many cases leading to the increase of the stress for the employees. Not at least, the human resources, inadequately specialized, influence the activity carrying out.

Suggestively for the support of the conclusions above mentioned is the fact that from 67 investigations of accidents and incidents, completed in this period of time, for 30 of them there were identified nonconformities at the line like direct cause or contributing factors, 17 of them being generated by the improper condition of the wooden sleepers, it having a direct contribution for the accident occurrence.

Concerning the rolling stock condition, it is rather similar, that is from those 19 accidents and incidents, having like direct cause or contributing factor, the deficiencies found at the rolling stock, in case of 9 of them, the locomotives or the multiple units involved were kept in operation after exceeding the norms of time/km established by the railway norms.

Another element, frequently existing among the causes identified during the investigations, is the human mistake, it being identified at 10 incidents and 2 accidents.

From the accidents and incidents completed in 2020, there are 3 of them that were a challenge, by complexity and workload, that is:

- the railway incident happened on the 26th January 2019, in the activity of SC TMB „METROREX” SA București, within the shunting of the rake of vehicles, consisting in the electric train TEM no.1322-2322 (being in active state) and its hauling locomotive LDH no.92 53 0 86-0100-7, from the overground depot DSB to the underground one DSB, consisted in the uncontrolled increase of the speed of the rake of vehicles, it leading to hard hit of the stop buffer from the line no.8, by the unit of the electric metro half train no.1322, followed by its derailment and the injury of a REM driver;
- the accident happened in the railway county Brașov, track section Brașov – Sighișoara (electrified double-track line), between the railway stations Augustin and Racoș, consisting a fire burst into the wagon no.50532049202-6 then, the fire extended to the wagon no.50531954009-0, these wagons composing the train. After the fire extinguishing, the wagon no.50532049202-6 (first in fire), a male victim was found carbonized;
- the railway serious accident, happened on the 18th December 2019, in the railway county București, in Ploiești Triaș railway station, switches no. 62-76/84, in the running of freight train no. 30558-1 (got by the railway undertaking Deutsche Bahn Cargo Romania SRL) and of the passenger train no. 5008 (got by the railway undertaking SNTFC „CFR Călători” SA), there was a collision between the hauling locomotives of the trains.

Although AGIFER had to overtake some special situations, especially in the first half of 2020, when the pandemic affected our daily life, AGIFER specialists, through their efforts and seriousness, got each time to collect in good time the information and evidences from the accident site.

Even if the findings and conclusions of the investigation reports are not always convenient for the economic railway operators, they are meant to be lessons to be learnt for the railway system, that lead to the improvement of the railway safety. For this, I'd like to express my thanks to all the railway operators, infrastructure administrator/managers and entities in charge with the maintenance, that support us in our activity, to their employees cooperation within the investigation.

**AGIFER General Manager**  
Mircea NICOLESCU

## 1.2 Role and purpose

### Role of Romanian Railway Investigation Agency-AGIFER

AGIFER role is to carry out investigations of the accidents/incidents and to analyse and study the causes and circumstances that led to their occurrence. AGIFER can, also, perform other tasks established through Government Decision for the investigation of other events than the railway accidents and incidents.

According to the provisions of the Safety Directive 2016/798/EC, 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 does not investigate:

- railway incidents that are not relevant for the railway transport system;
- level crossing collisions between the running trains and road vehicles, that are not generating by the not-closure of the barrier or the malfunction of the signalling equipment;
- hits of the persons by the running railway vehicles;
- suicides;

For any of these above-mentioned cases, an investigation can be open, considering those presented in the previous paragraph.

### AGIFER purpose

Through the investigations of the accidents and incidents, AGIFER aims 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 AGIFER proposal for the improvement of the railway safety.

## 1.3 General data about AGIFER

### Employees at the end of 2020

At the end of 2020, AGIFER had 42 employees, that is:

- 1 deputy general manager;
- 1 economic director;
- 3 counsellors of the general manager;
- 5 department heads;
- 1 office department
- 21 investigators;
- 1 auditor;
- 6 experts;
- 1 technician;
- 1 referent;
- 1 economist.

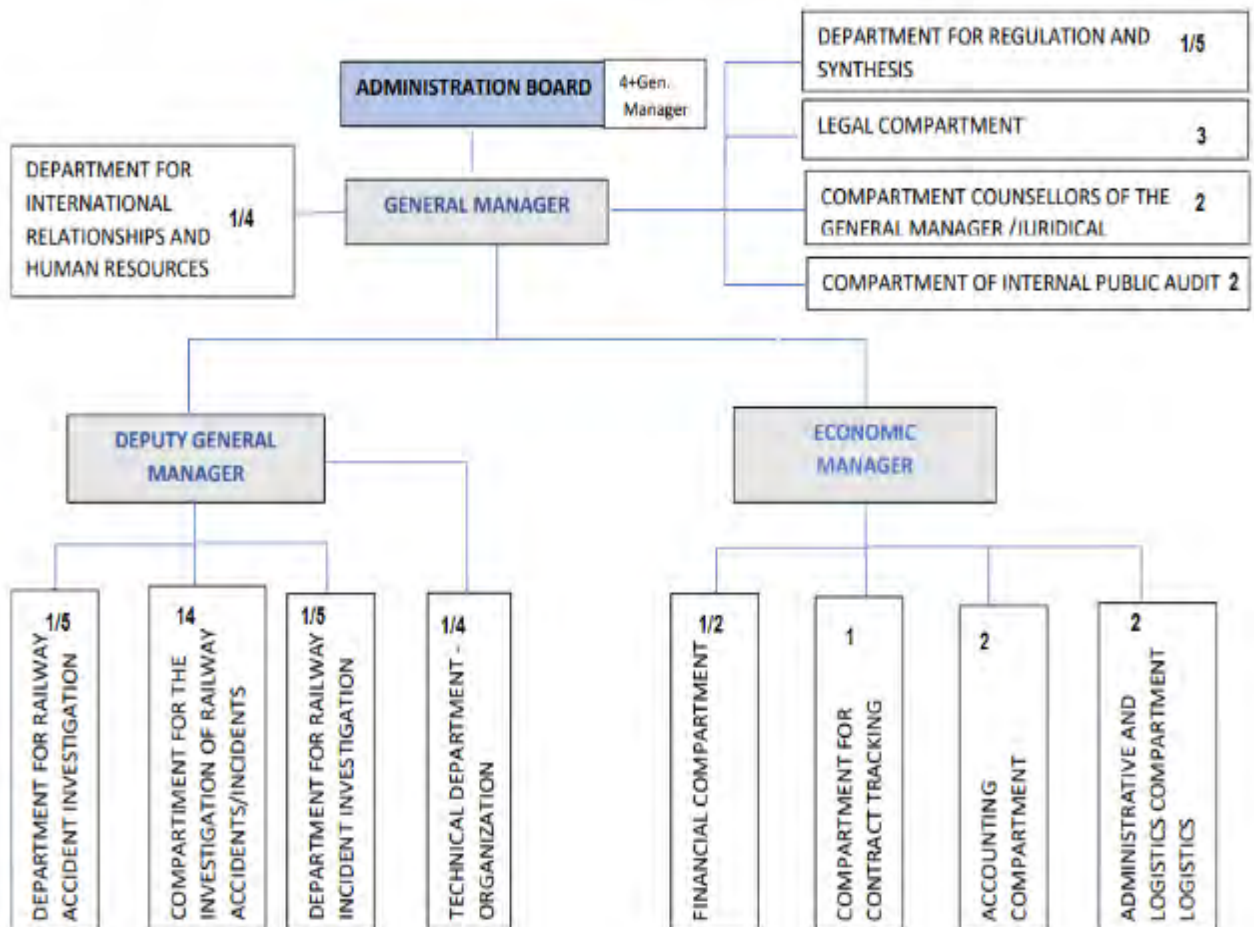
## Budget

For its activity in 2020, AGIFER had a budget of 5.743.949 RON, that is 1.186.766 EUR (considering an exchange rate 1 € = 4,84 lei).

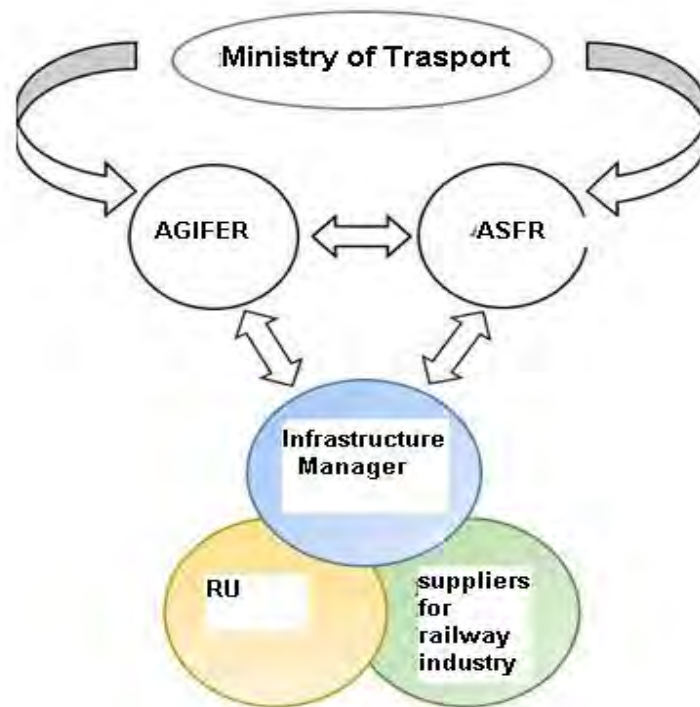
## 1.4 Organization

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:

Total number of employees 50  
Leading positions 9



## 1.5 Organization relation chart



## 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, the issuing of some safety recommendations.

The investigation is, from legal point of view, an administrative fact, allowing the main investigators to fulfil their tasks as efficiently as possible and as soon as possible. The investigation is independent of any legal inquiry. The investigation does not aim in any way the establishment of the level of blame or the 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.

Before drafting the investigation report (the final investigation report) one works out a draft report, that, according to the provisions of the Emergency Ordinance no. 73/2019, it is submitted to the infrastructure administrator/manager, involved railway undertakings, Romanian Railway Safety Authority, victims and their relatives, owners of the damaged goods, manufacturers, involved emergency services and the representatives of the staff and the users, in order to inform them about the investigation and its progress and to give them the possibility to present their opinions on the investigation and to express their comments on the information of the draft report.

If the opinions and comments on the draft report are relevant for the investigation, they will be taken into account in the working out of the final report.

After the completion of the investigation report, it is submitted to the management of Romanian Railway Investigation Agency - AGIFER for the endorsement and uploading on its site.

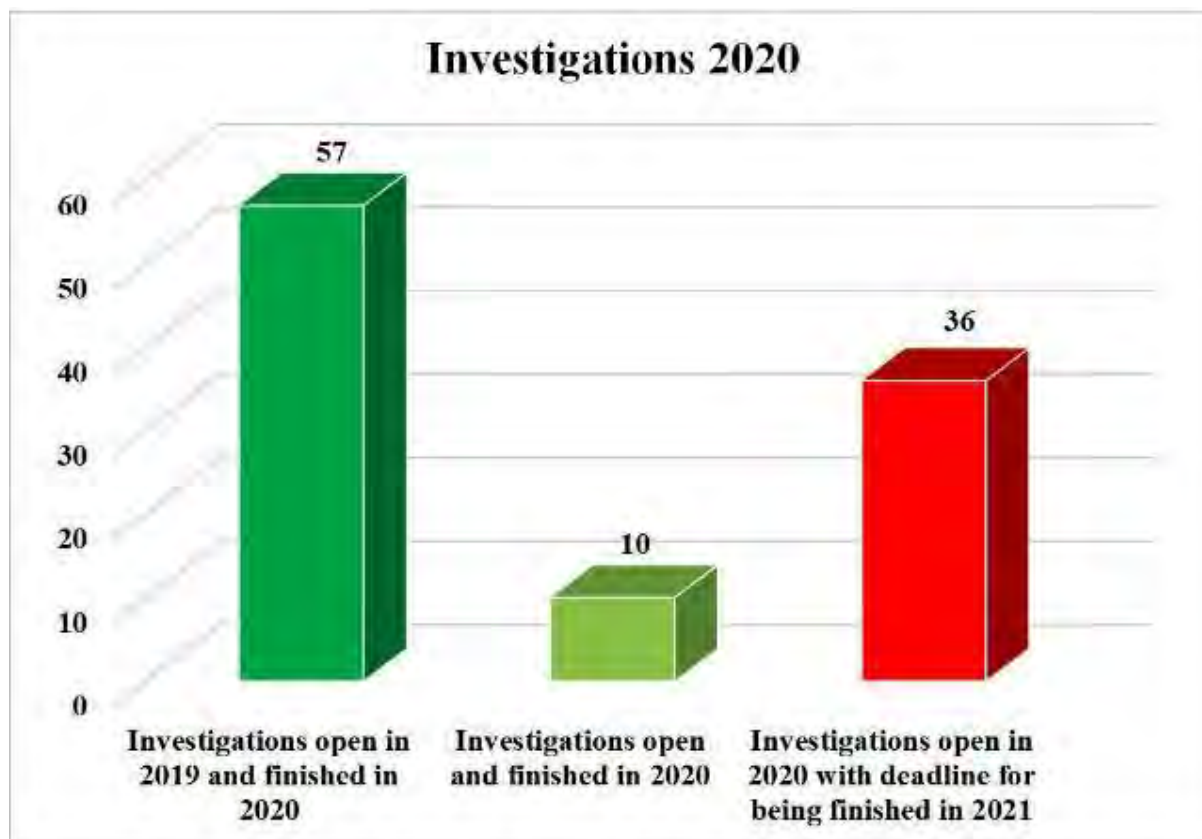


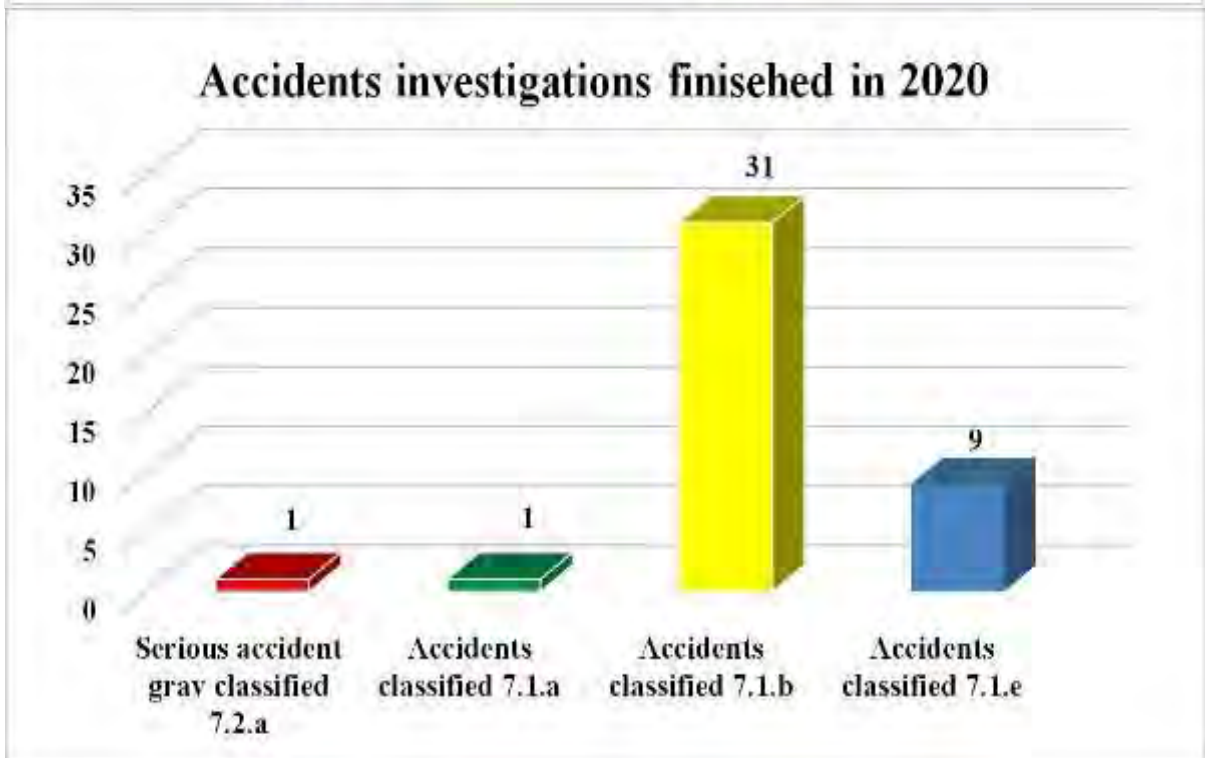
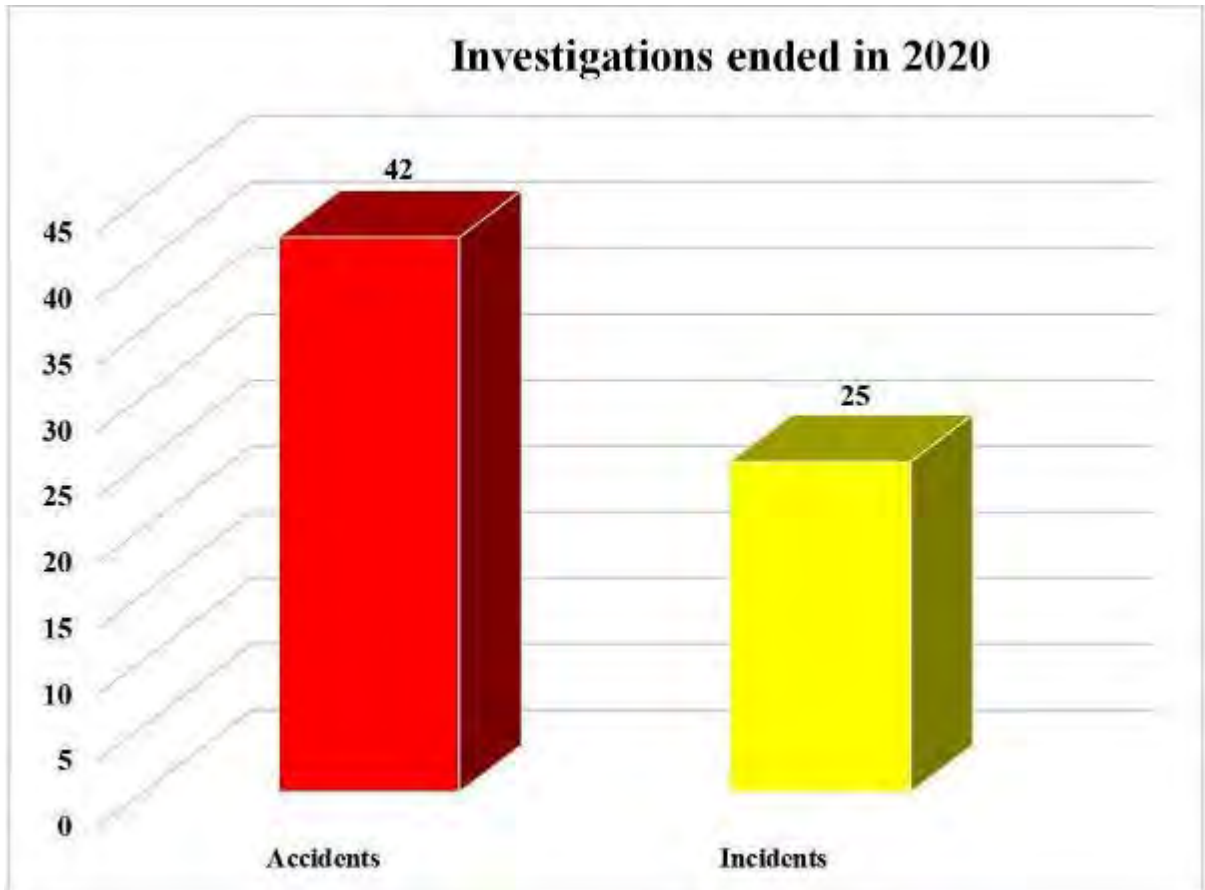
## 2.1 Cases investigated

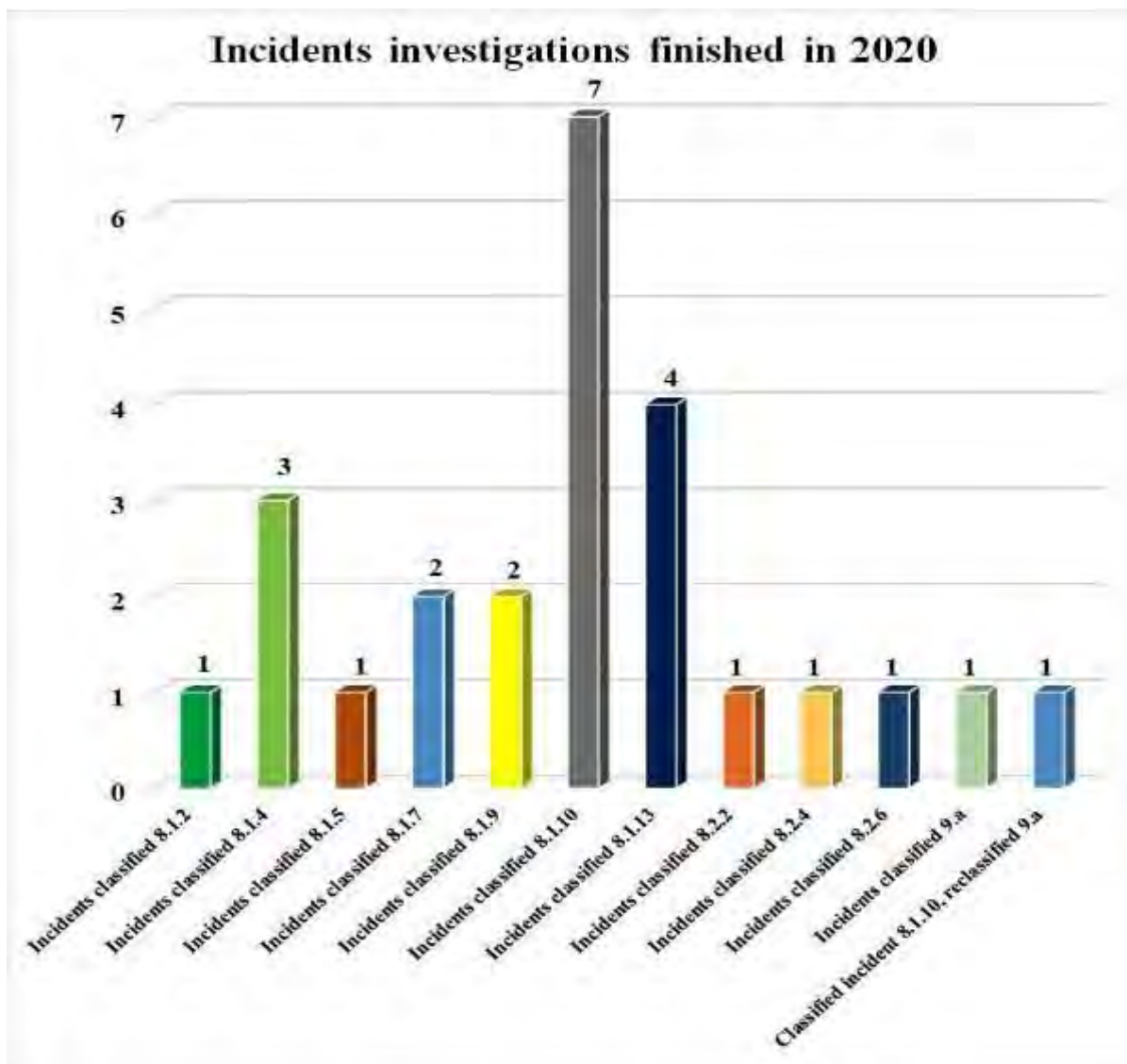
In 2020, AGIFER staff investigated **103** accidents/incidents, according to the provisions of *the Emergency Ordinance no. 73/2019* and of *the Regulation for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety*, approved by the *Government Decision 117/2010* – hereinafter referred to as *Investigation Regulation*. From those **103** investigations, **57** were open in 2019, and the other ones of **46** were open in 2020.

In 2020, one, also, finished and closed **67** investigations, respectively:

- **42 railway accidents, from which one serious accident;**
- **25 railway incidents, from which:**
  - 22 cases 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, from these, for 1 case, following the investigation, the classification was changed according to art.8.2.6, because it happened into the shunting activity, and for another one case it was considered that it is not incident according to the provisions of the *Investigation Regulation*;
  - 2 cases classified according to the provisions of art.8.2 group B from the *Investigation Regulation*, for which AGIFER General Manager decided to begin the investigation and appointed the members of the investigation commission, that, following the investigation, classified it again at art.9.a (natural causes), according to the provisions of the *Investigation Regulation*;
  - 1 case classified according to the provisions of art. 9.a (natural causes) from the *Investigation Regulation*, for which AGIFER General Manager decided to begin investigation and appointed the members of the investigation commission.







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

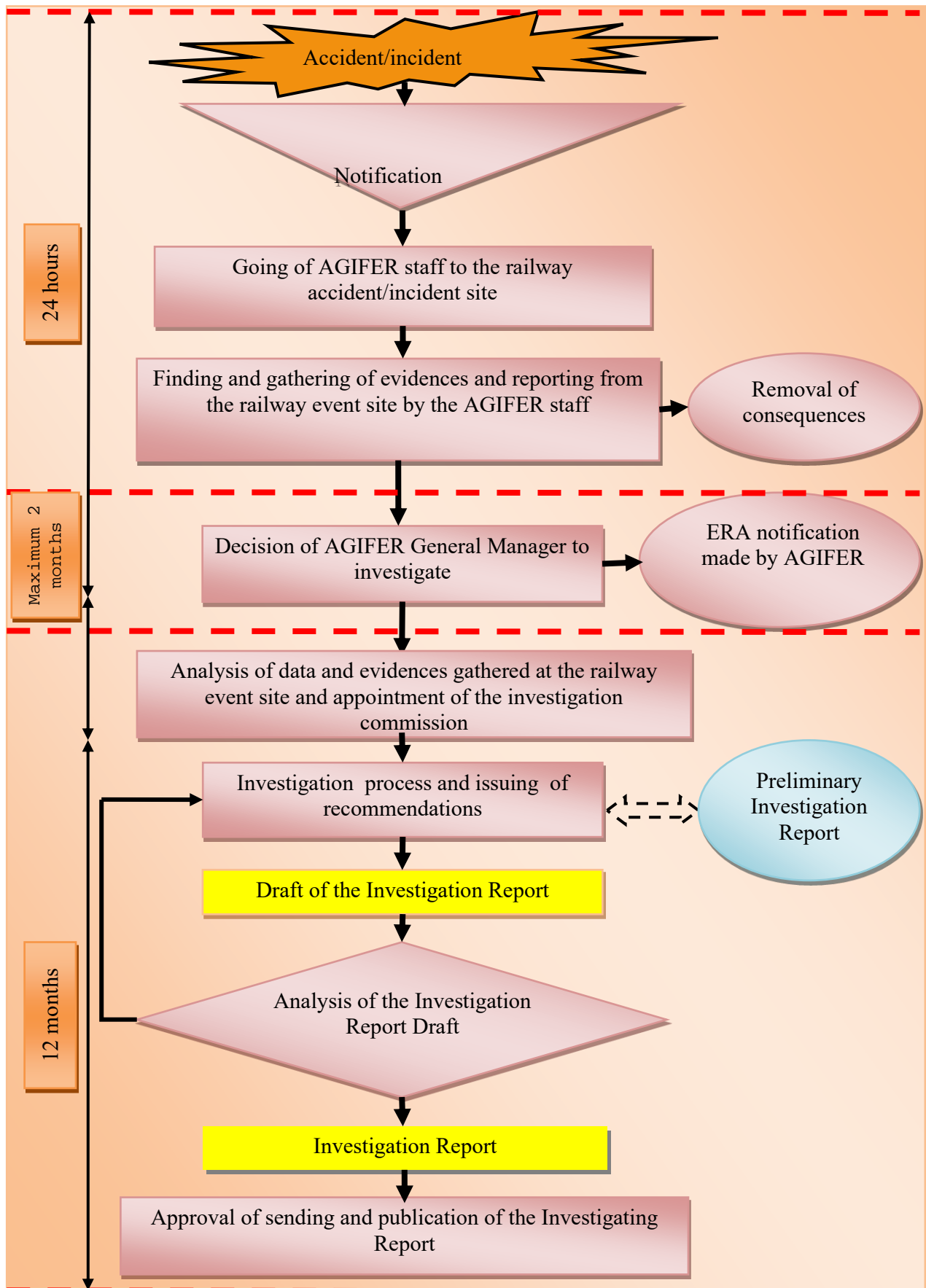
	Number of the investigations open			Number of the investigations completed		
	Accidents	Incidents	TOTAL	Accidents	Accidents	TOTAL
2016	29	17	46	23	14	37
2017	28	13	41	31	17	48
2018	32	26	58	25	12	37
2019	45	24	69	32	31	63
2020	29	17	46	42	25	67

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

From its setting up until 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 2020 there was no case of appointment specialists outside AGIFER within the commissions for the investigation of the railway accidents.

2.4 Chart flow of the investigation process



### 3 INVESTIGATIONS

#### 3.1 Overview of the investigations completed in 2020 as against to 2019, identification of the main tendencies

Type of the accidents investigated in 2019 <sup>(1)</sup>	Number of accidents	Number of victims		Damages (lei)	Damages (€)	Tendency of the accident number, as against to 2019 (difference between the number of cases and percentage)
		Deaths	Seriously injured			
Trains collisions	2	-	12+1	7.116.852,62	1.460.689,22	+2 (200%)
Trains derailments	31	-	-	1.486.403,66	316.643,81	+4 (+14,81%)
Road vehicles hits at the level crossings	0	-	-	-	-	-1 (100%)
Fires in the rolling stock	9	-	-	9.957.754,61	2.054.947,84	+5 (125%)
<b>Total</b>	<b>42</b>	<b>-</b>	<b>12+1</b>	<b>18.561.010,89</b>	<b>3.832.280,87</b> €	<b>+10</b> <b>(+31,25%)</b>

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

#### 3.2. Investigations completed and started in 2020

In 2020 Romanian Railway Investigation Agency (AGIFER) completed and closed 67 investigations (from which 57 investigations open in 2019) and open the investigation in 46 cases from which 10 investigations were completed and closed 2020, and 36 ones are going to be completed and closed in 2020.

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 2020

No	Date of occurrence	Presentation	Legal basis of the investigation <sup>(1)</sup>	Date of completion
1	19.01.2019	In the railway county Cluj, <b>between Jibou and Mirșid railway stations</b> , not-electrified single-track line, the multiple unit ADH no.1420 derailed, being in the composition of the passenger train no. 4456.	<b>i</b>	16.01.2020
2	26.01.2019	In the activity of SC TMB „METROREX” SA București, during the shunting of the rake of vehicles, consisting in the electric train TEM no.1322-2322 (being in active state) and its hauling locomotive LDH no.92 53 0 86-0100-7, from the <b>overground depot DSB to the underground one DSB</b> , the speed of the rake of vehicles raised uncontrolled, it leading to hard hit of the stop buffer	<b>iii</b>	23.01.2020

		from the line no.8, by the unit of the electric metro half train no.1322, followed by its derailment and the injury of a REM driver.		
3	31.01.2019	In the railway County Cluj, track section Salva - Sighetu Marmației (not-electrified single-track line), between <b>Valea Vișeului and Leordina railway stations</b> , km 10+342, in the running of passenger train no.4111-2, there was the collision between a piece of rock detached from the rocky slope and the train vehicles, leading to the damage of the hauling locomotive DA 1228 and the inactive one DA 881, also to the damage and derailment of the first two cars.	iii	22.01.2020
4	01.02.2019	In the railway county Iași, in the running of the passenger train Regio no.5421, between the <b>railway stations Mircești și Muncel</b> , the inductor of the locomotive DA 1272, being a dead one in the composition of the train, hit the bond impedance from the signal BL17.	iii	29.01.2020
5	05.02.2019	In the in the Railway County Timișoara, track section Orșova – Caransebeș (electrified single-track line), in <b>Topleț railway station</b> , on the line no. 3, km 398+710, in the running of the freight train no. 80676-1( belonging to the freight railway undertaking GFR SA), the second bogie from the wagon no. 31537912336-9, the 7th one in the train composition, derailed in the running direction.	i	04.02.2020
6	10.02.2019	In the railway county Cluj, track section Sărățel - Deda (electrified single-track line), <b>between the railway stations Sărățel and Mărișelu</b> , km 5+709, in the running of passenger train Regio no.13642, got by the railway undertaking SNTFC „CFR Călători” SA, two axles of the multiple unit ADH no. 1421 (the 5 <sup>th</sup> and 6 <sup>th</sup> ones) derailed.	i	06.02.2020
7	02.03.2019	In the railway county Brașov, track section Brașov – Sighișoara, line 300, track I, electrified double-track line, <b>between the railway stations Augustin and Racoș</b> , km 228+463, in the running of passenger train R 3501, got by the railway passenger undertaking SNTF „CFR Călători” SA all axles of the bogie no. 2 from the electric locomotive EA 014 derailed, being the first one in the running direction.	i	02.03.2020
8	02.03.2019	In the railway county Timișoara, track section Radna - Iliia (electrified double-track line), in the <b>railway station Săvârșin</b> , when the passenger train IR no.74-1 (got by the railway undertaking SNTFC „CFR Călători” SA), was dispatched from the deflecting section 1, to Vărădia, on the track I, the first axle from the first bogie from the first bogie of the locomotive EA 689 derailed, in its running direction and the wheels from the axles no. 2 and 3 of the same bogie climbed the profile of the check	i	28.02.2020

		rail of the switch no.18 from the end Y of the railway station.		
9	01.03.2019	In the railway county Iași, track section Dărmănești – Cacica (electrified single-track line), in the <b>railway station Cacica</b> , the inductor of the locomotive EA 156, being in the composition of the passenger train Regio no.5739 (got by the railway undertaking SNTFC „CFR Călători” SA) hit the inductor of the permanent indicator for the track sections provided with interlocking system, km 20+170, and the protection cover of the lock of the switch no.1 from km.20+623.	iii	20.02.2020
10	23.02.2019	In the Railway County Cluj, <b>between Valea Vișeuului and Leordina, km 4+250</b> , in the running of the passenger train no. 4650 ( belonging to the railway undertaking SNTFC „CFR Călători” SA) , the maximum accepted speed was exceeded (speed restriction of 20 km/h).	iii	19.02.2020
11	08.03.2019	In the railway county Cluj, <b>between the railway stations Telciu and Coșbuc</b> , km 10+718, in the running of the passenger train no.4136, got by the railway undertaking SNTFC ”CFR Călători” SA, the first axle from the second bogie of the car no.50537131042-4, the 5th one of the train, derailed in the running direction of the train.	i	05.03.2020
12	14.03.2019	In the railway county Timișoara, track section Arad - Simeria (electrified double-track line), in the <b>railway station Zam</b> , on the switch no. 5 operated on “deflecting section” and passed trailing, in the running of the freight train no.30684 (got by the railway undertaking SC DEUTSCHE BAHN CARGO ROMÂNIA SRL), the first axle from five wagons of the train, type Hbbills, derailed.	i	05.03.2020
13	23.03.2019	In the railway county <b>Brașov</b> , track section Brașov–Sighișoara, line 300 (electrified double-track one), <b>between the railway stations Bod and Feldioara</b> , on the track I, km 188+190, in the running of the freight train no.20258, got by the railway freight undertaking Rail Cargo Carrier – România SRL, hauled with the locomotive EA 520, owned by the railway freight undertaking SC Constantin Grup, the second bogie of the wagon series Ha, no.31812743581-2, derailed in the running direction.	i	16.03.2020
14	29.03.2019	In the railway county Brasov, track section Brașov – Ploiești Vest (electrified double-track line), in the <b>railway station Dârste</b> , in the running of passenger train no.12392, got by the railway passenger undertaking SNTFC „CFR Călători” SA, the first bogie of the electric hauling locomotive no.91-53-0-477-268-3, derailed in the running direction .	i	23.03.2020

15	06.04.2019	In the railway county Braşov, track section Luduş – Măgheruş Şieu (noninteroperable single-track line and non-electrified one, managed by SC RC-CF TRANS SRL Braşov), km 72+700, in the <b>railway station Sângiorgiu Nou</b> , in the running of the passenger train R 16013, got by the railway passenger undertaking REGIO CALĂTORI SRL Braşov, a fire burst into the motorised wagon train no.95 53 997 1602-1 of the multiple unit type AMX, composing the train.	i	03.04.2020
16	15.04.2019	In the railway county Craiova, in the <b>railway station Piteşti</b> , the passenger train no.1894, got by the railway undertaking SNTFC „CFR Călători” SA, was received in the railway station on a wrong entry route to the line no.4, occupied, instead the entry route ordered by the movements inspector for the line no. 2, free.	iii	09.04.2020
17	16.04.2019	In the railway county Timișoara, the freight train no.70940-1, got by the railway freight undertaking SC MMV Rail România SRL, that was going to be parked on the line no. III, in the <b>railway station Milova</b> , passed the light exit signal X III on stop position, being on the position „STOP without passing the signal on stop position! <i>Day and night</i> – a light unit of red colour to the train”, the train continued to run after passing the signal in stop position, it ran on the track II, to Radna (track closed following the rehabilitation of the railway corridor IV), then the first 5 axles of the locomotive derailed in the running direction, because of lack of rails and sleepers.	iii	09.04.2020
18	20.04.2019	In the railway county Constanța, track section Palas – Capu Midia (noninteroperable track section, managed by SC GRUP FERROVIAR SA), non-electrified single-track line, <b>between the railway stations Năvodari and Constanța Mărfuri</b> , km 17+573, in the running of the freight train no.89970, got by SC Tehnotrans Feroviar SRL, the 4th wagon of the train derailed.	i	15.01.2020
19	21.04.2019	In the railway county Timișoara, on the noninteroperable running line, single-track and non-electrified one, managed by the non-interoperable railway infrastructure manager RC-CF Trans SRL <b>between the railway stations Vasiova and Reșița Nord</b> , in the running of the freight train no.69492-1 (got by the railway freight undertaking Tim Rail Cargo SRL), two wagons derailed.	i	13.04.2020
20	28.04.2019	In the railway county Craiova, track section Craiova – Filiași, electrified double-track line, in the <b>railway station Craiova</b> , the light electric locomotive EA 028, got by the railway undertaking SC Deutsche Bahn Cargo România SRL, stopped	iii	22.04.2020



		on the line no.9, started to run and passed the light exit signal X9 on stop position, the signal being on the position „a light red unit to the train – Stop without pass the signal in stop position!”, forced the switch no.62 from the end Y of the railway station, stopping on the cross-over between the switches no.54-56.		
21	07.05.2019	In the railway county Brasov, track section Braşov - Teiuş (electrified double-track line), when the train no.33901 left the <b>railway station Valea Lungă</b> , (train got by the railway freight undertaking SNTFM „CFR Marfă” SA), on the track I, a fire broke out into the locomotive EA no.698, being a dead one in the composition of train.	i	05.05.2020
22	13.05.2019	In the railway county Bucuresti, in the <b>railway station Chitila</b> , in the running of the freight train no.80964 (got by the railway undertaking SC TEHNOTRANS FERROVIAR SRL) the second bogie of the 14th wagon derailed in the train running direction.	i	12.05.2020
23	26.05.2019	In the <b>railway county Timișoara</b> , in <b>Milova railway station</b> , in the running of the passenger train no.2046, got by the railway undertaking SNTFC „CFR Călători” SA, the last axle from the locomotive EC-117, hauling the train, derailed in the running direction	i	14.04.2020
24	01.06.2019	In the railway county Timișoara, track section Reșița Nord – Berzovia (non-interoperable track section ), non-electrified single-track line, managed by RC - CF TRANS SRL, between the <b>railway stations Reșița Nord and Vasiova</b> , km 53+900, the 3rd bogie of the multiple unit AMX 572-7, composing the passenger train no.16104 (got by the railway undertaking REGIO CĂLĂTORI SRL) derailed.	i	28.05.2020
25	07.06.2019	In the railway county București, track section București Nord - Videle (electrified double-track line), in the <b>railway station Bucureștii Noi</b> , km 0+270, in the running of freight train no.23052-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), two wagons of the train, the 7th and the 8th ones, derailed	i	27.05.2020
26	23.06.2019	In the railway county Timișoara, in the <b>railway station Iablanița</b> , line 1, in the running of the freight train no.46481B (got by the railway freight undertaking DEUTSCHE BAHN CARGO ROMÂNIA SRL), two wagons, the 19th and the 23rd ones, derailed.	i	17.06.2020
27	29.06.2019	In the railway county București, in the <b>railway station București Triaj, Post 17</b> , in the running of the freight train no.83216-1 (got by the railway undertaking SNTFM ”CFR Marfă” SA), the first	i	26.06.2020

		axle (no.6) of the locomotive ED-062 derailed in the running direction.		
28	29.06.2019	In the in the railway county Timișoara, in <b>the railway station Mehadia</b> , line 2, in the running of the freight train no.50826 (belonging to the railway freight undertaking EXPRESS FORWARDING SRL) the hauling locomotive EA 080-4, the dead locomotive DA 899-4 and the first wagon of the train derailed.	i	25.06.2020
29	30.06.2019	In the railway county Constanța, noninteroperable track section Palas–Năvodari (managed by SC Grup Feroviar Român SA) , <b>between Palas and Constanța Mărfuri railway stations</b> , non-electrified single-track line, km 1+175, in the running of the freight train no.89573 (got by the railway undertaking SC Grup Feroviar Român SA), the first bogie of the hauling locomotive DA 1513 derailed in the running direction.	i	29.06.2020
30	08.07.2019	In the railway county Craiova, track section Videle - Roșiori Nord (electrified double-track line), between <b>the railway stations Rădoiești and Atârnați</b> , km 76+400, the freight train no.20919-2 (got by the railway undertaking SC Cargo Trans Vagon SA) overtook and hit seriously, the freight train no.34393-2 (got by the railway undertaking SC Constantin Grup SRL), it being was stopped at the caution signal Pr Y of the entry signal of the railway station Olteni, it leading to the derailment of three wagons of the freight train no.20919-2.	i	30.06.2020
31	09.07.2019	In the railway county Craiova, track section Roșiori Nord – Videle, electrified double-track line, between <b>the railway stations Rădoiești și Olteni</b> , from km 76+650 to km 76+550, the electric multiple unit RES 003 exceeded the maximum speed established, this multiple unit composing the passenger train no.15931-2, got by the railway undertaking SC SOFTRANS SRL.	iii	07.07.2020
32	31.07.2019	In the railway county Craiova, track section Roșiori Nord – Alexandria, non-electrified single-track line, <b>between the railway stations Plosca and Alexandria</b> , km 217+250 (Stop Point Buzescu), in the running of the passenger train no.9371 (got by the railway undertaking SNTFC „CFR Călători” SA), a fire burst into the hauling locomotive DA 637.	i	30.07.2020
33	07.08.2019	In the railway county București, track section Ploiești Vest – Brașov (electrified double-track line) in <b>the railway station Buda</b> , in the running of passenger train no.1636 (got by the railway passenger undertaking SNTFC „CFR Călători” SA), a fire burst into the electric hauling locomotive, type EA no.008.	i	04.08.2020

34	14.08.2019	In the railway county Braşov, track section Braşov–Sighişoara, in <b>the railway station Bod</b> , when the freight train no.90920 (got by the railway freight undertaking SC Rail Force SRL Braşov) was parked on the deflecting section 4, the axle no. 6 of the electric locomotive EA 1093, first axle in the running direction, derailed.	i	13.08.2020
35	14.08.2019	In the railway county Constanţa, track section Constanţa Port Zona B – Palas (electrified double-track line), track I, km 2+000, in the running of the freight train no.50792 (got by the railway undertaking SC EXPRESS FORWARDING SRL) a fire burst into the hauling locomotive EA 047.	i	12.08.2020
36	19.08.2019	In the railway county Iaşi, in the shunting activity, on the metallic bridge from km 0+522 between the railway stations Dorneşti and Rădăuţi, the hauling locomotive and 4 wagons of a rake of 25 wagons (all loaded) derailed (one wagon reclined), that ran from the <b>economic operator EGGER România SRL to the railway station Dorneşti</b> .	i	18.08.2020
37	27.08.2019	In the railway county Constanţa, noninteroperable track section Palas–Năvodari (managed by SC Grup Feroviar Român SA), <b>between Palas and Constanţa Mărfuri railway stations</b> , non-electrified single-track line, km 1+175,5, in the running of the freight train no.89847 (got by the railway undertaking SC Tehnotrans Feroviar SRL), the first axle of the hauling locomotive DA 1647 derailed. The train consisted in two locomotives, coupled, DA 1647 hauling and DA1657 - dead engine.	i	18.08.2020
38	30.08.2019	In the railway county Timişoara, in <b>Iablanita railway station</b> , in the running of the freight train no.59426 (got by the railway undertaking UNICOM TRANZIT SA), the first axle of the hauling locomotive derailed in the running direction.	i	28.08.2020
39	08.09.2019	In the railway county Craiova, track section Roşiori Nord - Videle, <b>between the railway stations Rădoieşti and Atârnaţi</b> (electrified double-track line), at the level crossing equipped with automatic installations for road signalling with half-barriers - type BAT, from km90+640, in the running of the freight train no.20272-1, hauled with the locomotive ES 110, got by the railway undertaking SC Rail Cargo Carrier Romania SRL, parts of the level crossing were hit by the locomotive plough.	iii	06.08.2020
40	15.09.2019	In the railway county Braşov, track section Braşov-Sighişoara, in <b>Bod railway station</b> , in the running of the freight train no.50418, got by the railway undertaking SC Unicom Tranzit SA, the first bogie of the locomotive EA no.91 53 0 400386-5 derailed	i	14.09.2020

		in the running direction, at its passing over the switch no.14.		
41	17.09.2019	In the railway county București, between <b>București Vest and Vârteju railway stations</b> (non-electrified double-track line), in the running of the freight train no.93618-1, got by the railway undertaking SNTFM „CFR Marfă” SA a fire burst into the locomotive DA 1108, hauling the train.	<b>i</b>	06.08.2020
42	22.09.2019	In the railway county Constanța, noninteroperable track section Palas–Năvodari (managed by SC Grup Feroviar Român SA), between <b>Palas and Constanța Mărfuri railway stations</b> , nonelectrified single-track line, km 1+180, in the running of the freight train no.89972 (got by the railway undertaking SC Tehnotrans Feroviar SRL), all axles of the wagon no. 33877852158-7, the 7th one from the rear of the train, loaded, derailed.	<b>i</b>	16.09.2020
43	25.09.2019	In the railway county Cluj, track section Războieni – Cluj Napoca, in <b>the railway station Călărași Turda</b> , some elements of the railway installations were hit by a part of the locomotive EA 904, hauling the passenger train no.1838-1.	<b>iii</b>	24.08.2020
44	27.09.2019	In the railway county Cluj, <b>between the railway stations Oradea and Oșorhei</b> , some elements of the railway installations were hit by a part detached from the locomotive DA 926, hauling the freight train no.83256C.	<b>iii</b>	24.08.2020
45	30.09.2019	In the railway county Craiova, on the running line between <b>Drobeta Turnu Severin Mărfuri and Valea Albă railway stations</b> , in the running of the freight train no.33321-2, got by the railway freight undertaking SNTFM „CFR MARFĂ” SA, 3 wagons of the train derailed (one of them reclined).	<b>i</b>	29.09.2020
46	07.10.2019	In the railway county Brașov, track section Brașov-Coșlariu (electrified double-track line), in <b>Sighișoara railway station</b> , in the running of the freight train no.50436-1, got by the railway undertaking SC Unicom Tranzit SA, the first axle of the electric locomotive, having the matriculation number 91-53-0-480- <b>024</b> -5, being a dead one in the composition of the train, derailed in the running direction.	<b>i</b>	06.10.2020
47	15.10.2019	In the railway county Craiova, between <b>the railway stations Roșiori Nord and Măldăieni</b> , track II, km 101+845, in the running of the freight train no.23052-1 (got by the railway freight undertaking SNTFM „CFR Marfă” SA), a bogie of a wagon derailed.	<b>i</b>	05.10.2020
48	17.10.2019	In the railway county Cluj, track section Cluj Napoca – Oradea, <b>between Cluj-Napoca and Baciu railway stations</b> , km 503+070 (electrified double-track line), track I, in the running of the	<b>i</b>	13.10.2020

		passenger train no.144-1, got by the railway undertaking SNTFC „CFR Călători” SA, a fire burst into the hauling locomotive DHE 561.		
49	27.10.2019	In the railway county Craiova, track section Craiova – Filiași (electrified double-track line), <b>in Ișalnița railway station</b> , line no. 5, in the running of the freight train no.50402 (got by the railway undertaking SC Unicom Tranzit SA), a fire burst into the hauling locomotive EA 010.	i	20.10.2020
50	05.11.2019	In the railway county Craiova, track section Strehaia – Drobeta Turnu Severin, on the running line <b>between the railway stations Balota and Valea Albă</b> (electrified single-track line) in the running of the freight train no.80352-1, got by the railway undertaking SC Grup Feroviar Român SA, the 24th wagon of the train (being the last but one) derailed.	i	04.11.2020
51	09.11.2019	In the railway county Craiova, track section Caracal – Piatra Olt, non-electrified single-track line, in <b>the railway station Caracal</b> , in the shunting of the diesel electric locomotive DA 913, the short control bar, inside control bar and the draw bar of the switch no.24, were hit by the lower part of the casing of the gear box from the axle no. 2 of the locomotive.	iii	05.11.2020
52	19.11.2019	In the railway county Timișoara, <b>in Bârzava railway station</b> , in the running of passenger train no.74-1 (got by the railway undertaking SNTFC „CFR Călători” SA), the first axle of the hauling locomotive derailed in the running direction of the train.	i	17.11.2020
53	26.11.2019	In the railway county Craiova, track section Roșiori Nord - Caracal (electrified double-track line), <b>between the railway stations Măldăeni and Mihăești</b> , track I, km 109+200, in the running of the passenger train IR no.1825 (got by the railway undertaking SNTFC „CFR Călători” SA), a fire burst into two cars (the 4th and the 5th ones).	i	10.11.2020
54	18.12.2019	In the railway county București, in <b>Ploiești Triaj railway station</b> , switches no. 62-76/84, in the running of the freight train no. 30558-1 (got by the railway undertaking SC Deutsche Bahn Cargo România SRL) and of the passenger train no.5008 (got by the SNTFC „CFR Călători” SA), there was a collision between the hauling locomotives of the trains	i	07.12.2020
55	20.12.2019	In the railway county Craiova, track section Drăgotеști – Borăscu - Turceni, electrified single-track line, <b>in Drăgotеști railway station</b> , in the running of the freight train no.23644, got by the railway undertaking SNTFM „CFR Marfă” SA, three wagons derailed	i	18.12.2020

56	20.12.2019	In the railway county Craiova, track section Craiova-Drobeta Turnu Severin, electrified single-track line, <b>between Drobeta Turnu Severin Mărfuri and Valea Albă railway stations</b> , km 352+513, in the running of freight train no.93818 (got by the railway undertaking SNTFM „CFR Marfă” SA) the both axles of the second bogie from the 9th wagon of the train derailed.	i	10.12.2020
57	22.12.2019	In the railway county Braşov, track section Coşlariu – Simeria (electrified double-track line), in <b>the railway station Vinţu de Jos</b> , a group of 5 wagons loaded (being got by the railway undertaking SC CER-Fersped SA) ran away from the line no.9 and forced the switches no.12 and 14.	iii	03.12.2020
58	06.02.2020	In the railway county Bucureşti, in <b>the railway station Săruleşti</b> , in the running of freight train no.30578, got by the railway freight undertaking SC Deutsche Bahn Cargo Romania SRL, the point motor of the movable frog from the switch no.10, was hit by the folding roof detached from the 9th wagon of the train.	iii	24.02.2020
59	21.02.2020	In the railway county Constanţa, <b>between the railway stations Palas - Constanţa Port Zona B</b> , the freight train no.83124Z-1, got by the railway undertaking SNTFM „CFR Marfă” SA, was routed to the railway station Constanţa Port Zona B instead the railway station Constanţa Port Terminal Ferry-Boat.	iii	25.11.2020
60	03.03.2020	In the railway county Craiova, track section Piatra Olt–Piteşti (non-electrified single-track line), <b>in Piteşti railway station</b> , the entry route for the passenger train IR no.1892 was made wrong on the line no.2 instead the line no.1, the line no.2 being occupied by the train no. 1781 (both trains being got by the railway passenger undertaking SNTFC „CFR Călători” SA).	iii	09.06.2020
61	05.03.2020	In the railway county Braşov, <b>in the railway station Teiuş</b> , in the running of passenger train IR no.1818 (got by the railway undertaking SNTFC „CFR Călători” SA) the entry route for the train was made wrong, on the line 5 occupied.	iii	02.12.2020
62	06.03.2020	In the railway county Timişoara, track section Timişoara– Arad (electrified single-track line), <b>in Arad railway station</b> , the exit centralized route from the line 1P for the passenger train no.1766 (got by the railway passenger undertaking SNTFC „CFR Călători” SA) was made to the railway station Aradu Nou instead to the railway station Glogovăţ.	iii	04.12.2020
63	05.04.2020	In the railway station Braşov, <b>between the railway stations Lunca Bradului and Răstoliţa</b> , in the running of the passenger train IR no.1645 (got by SNTFC „CFR Călători” SA), hauled with the	iii	23.09.2020

		electric locomotive EA no.112, parts of the subassemblies from the hauling locomotive hit the traffic safety installations.		
64	10.04.2020	In the railway county Braşov, <b>between the railway stations Topliţa and Gheorgheni</b> , the inductor afferent to the exit signal Y III of the railway station Topliţa and other 7 inductors being between the railway stations Topliţa and Gheorgheni were hit by parts from the subassemblies of the locomotive EA no.185, hauling the freight train no.80324 got by the railway undertaking SC Grup Feroviar Român SA.	iii	08.12.2020
65	26.04.2020	In the activity of SC TMB „METROREX” SA Bucureşti, <b>track section Berceni - Pipera (M2)</b> , a part detached from the train TEM 1320-2320 hit infrastructure elements.	iii	20.05.2020
66	16.09.2020	In the railway county Bucureşti, in <b>the railway station Bucureşti Sud</b> , the entry semaphore F1/2 was passed on stop position by the train L 59503 (light locomotive DHC 873, got by the railway undertaking SC Express – Forwarding SRL).	iii	08.12.2020
67	24.09.2020	In the railway county Bucureşti, in <b>the railway station Chitila</b> , the passenger train IR no.1795, got by the railway undertaking SNTFC „CFR Călători” SA, was routed to the railway station Buftea instead the railway station Săbăreni.	iii	08.12.2020

- (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 open in 2020 that are going to be completed in 2021

No	Date of occurrence	Presentation	Legal basis of the investigation (1)	Date of completion
1	24.01.2020	In the railway county Bucureşti, in <b>Bucureşti Triaj railway station</b> , in the running of the freight train no.30744 (got by the railway undertaking DB Cargo România SRL), the first axle in the train running direction of the locomotive LE-MA 014, derailed.	i	07.01.2021
2	25.01.2020	In the railway county Timişoara, track section Simeria – Livezeni (electrified double-track line), <b>between Merişor and Băniţa railway stations</b> , track II, km.66+000, in the running of the freight train no. 80460 (got by the railway undertaking SC Grup Feroviar Român SA) a fire burst into the electric hauling locomotive EA-1012.	i	22.01.2021
3	29.01.2020	In the railway county Craiova, in <b>railway station Goleşti</b> , in the running of the freight train no.83212 (got by the railway undertaking SNTFM ”CFR Marfă” SA), the 27 <sup>th</sup> wagon derailed.	i	28.01.2021

4	29.01.2020	In the railway county Craiova, track section Băbeni – Alunu, between <b>Berbești and Popești Vâlcea railway stations</b> , km 25+610, non-electrified single-track line, in the running of the freight train no.23690 (got by the railway undertaking SNTFM „CFR Marfă” SA) the 21 <sup>st</sup> wagon of the train derailed.	i	11.01.2021
5	02.02.2020	In the railway county București, in <b>București Triaj railway station</b> , in the running of the freight train no.30616-1 (got by the railway undertaking DB Cargo Romania SRL), the first bogie of the locomotive LE-MA 014, derailed in the train running direction.	i	27.01.2021
6	08.02.2020	In the railway county Brașov, track section Sibiu - Vințu de Jos, non-electrified single-track line, between <b>Săliște and Apoldu de Sus railway stations</b> , km 33+237, in the running of the passenger train IR no.74-1, got by the railway undertaking SNTFC „CFR Călători” SA, the first axle of the locomotive EGM 92530640925-9, derailed.	i	03.02.2021
7	12.02.2020	In the railway county Craiova, track section Roșiori Nord-Caracal, in <b>Mihăești railway station</b> , in the running of the freight train no.20270-1 (got by the railway undertaking Rail Cargo Carrier România SRL) 3 wagons derailed.	i	09.02.2021
8	17.02.2020	In the railway county Craiova, track section Roșiori Nord-Caracal (electrified double-track line), track II, between <b>Fărcașele and Drăgănești Olt railway stations</b> , 13 wagons of the train no.34372, got by the railway undertaking SC Constantin Grup SRL, derailed.	i	15.02.2021
9	17.02.2020	In the railway county Timișoara, noninteroperable track section Mintia - Păuliș Lunca Grupa Tehnică (non-electrified single-track line, managed by RC-CF TRANS SRL Brașov), in <b>the railway station Mintia</b> , km0+150, in the running of the freight train no.30648 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL), the axles no. 1 and 4 of the hauling locomotive DA 1680 derailed.	i	08.02.2021
10	25.02.2020	In the railway county Craiova, track section Filiași - Drobeta Turnu Severin (electrified double-track line), in <b>the railway station Balota</b> , the freight train no.60274 (got by the railway undertaking SC Logistic Transport Europa Rail România SRL) was side collided by two locomotives coupled, got by the railway undertaking SC Grup Feroviar Român SA, (locomotives EA 640 and EA 691). Following the side collision, four axles of the first wagon, from the freight train no.60274, derailed and the	i	23.02.2021



		wagon reclined at 45°, and the first axle of the second wagon derailed in the running direction.		
11	27.02.2020	In the railway county Craiova, track section Piatra Olt – Craiova, non-electrified single-track line, in <b>the railway station Plaiu Vulcănești</b> , the freight train no.80510-1 started to run and its locomotive an a wagon passed by the shunting limit signal of line no.3, then the train entered the passing line from end Y of the railway station, stopping without consequences.	iii	05.02.2021
12	27.02.2020	In the railway county Cluj, track section Cluj Napoca – Oradea, <b>between the railway stations Aghireș and Stana</b> , km 534+175, the locomotive DA 1072, hauling the freight train no.41121A, got by the railway undertaking SNTFM „CFR Marfă” SA, burst into flames.	i	16.02.2021
13	23.03.2020	In the railway county Timișoara, track section Arad – Oradea (non-electrified double-track line), <b>between the railway stations Utvinișu Nou and Sântana</b> , on the track I, km 17+600, in the running of passenger train no.3111 (got by the railway undertaking SNTFC „CFR Călători” SA), consisting in the multiple units 1019/1017 and 1008/1009, in the multiple unit 1017, the second one in the composition of the train, burst into flames.	i	22.03.2021
14	29.03.2019	In the railway county Brașov, track section Brașov - Sighișoara (electrified double-track line), <b>between the railway stations Augustin and Racoș</b> , the wagon no.50532049202-6 burst into flames, then the fire extended to the wagon no.50531954009-0, wagons composing the train. After fire extinguishing, in the wagon no.50532049202-6 (first burst into flames), a male victim was found carbonized.	i	01.04.2020
15	17.04.2020	In the railway county Iași, in <b>the railway station Vatra Dornei</b> , when the freight train no.L80489, consisting in the light locomotive EA 426 (got by the railway undertaking SC Grup Feroviar Român SA) was dispatched, the first axle of the locomotive derailed, in the running direction.	i	15.04.2021
16	29.04.2020	In the railway county Cluj, in <b>the railway station Șintereag</b> , in the running of passenger train no.15836, consisting in the multiple unit DW 525 (got by the railway undertaking SC InterRegional Călători SRL), the second bogie of the multiple unit, being the last one in the train running direction, derailed.	i	27.04.2021
17	04.06.2020	In the railway county Constanța, non-interoperable track section Capu Midia – Dorobanțu (managed by SC Grup Feroviar Român SA), km 0+500, between the track sections PC2 and PC1 of the <b>railway station Capu Midia</b> , in	i	17.05.2021

		the running of the freight train no.89158 (got by the railway undertaking Grup Feroviar Român SA), 4 wagons derailed (the 5th one, the 11th one, the 12th one and the 14th one).		
18	11.06.2020	In the railway county Timișoara, track section Simeria - Petroșani, <b>between the railway stations Baru Mare and Crivadia</b> , track I, km 54+370, in the running of freight train no.30536 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL), the second axle of the wagon no.21802475015-8, the 15th one in the train composition, derailed.	i	08.06.2021
19	26.06.2020	In the railway county Craiova, track section Strehaia - Orșova (electrified single-track line), in <b>the railway station Balota</b> , line 5, km 344+059, in the running of freight train no.30548 (got by the railway undertaking SC Deutsche Bahn Cargo Romania), the both axles of the wagon no. 24874363779-0, the 9th in the train composition, derailed, this wagon reclining.	i	23.06.2021
20	26.06.2020	In the railway county Iași, track section Adjud–Roman (electrified double-track line), in <b>the railway station Valea Seacă</b> , the freight train no.80657 (got by the railway undertaking SC Grup Feroviar Român SA) passed the entry signal XII in stop position.	iii	03.06.2021
21	10.07.2020	In the railway county București, track section Pantelimon - Ciulnița (electrified double-track line), <b>between the railway stations Fundulea and Sărulești</b> , track II, km 47+737, in the running freight train no.30688-1 (got by the railway undertaking SC Deutsche Bahn Cargo Romania), the first bogie of the locomotive DA 010, a dead one and being the second in the train composition, derailed.	i	Investigation in process
22	05.08.2020	In the railway county Craiova, track section Băbeni – Alunu (non-electrified single-track line), <b>between the railway stations Popești Vâlcea and Berbești</b> , km 24+570, in the running of freight train no.23689 (got by the railway undertaking SNTFM „CFR Marfă” SA), both bogies, of the 11th wagon of the train, derailed.	i	Investigation in process
23	24.08.2020	In the railway county Brașov, track section Brașov – Ploiești Vest (electrified double-track line), <b>between the railway stations Timișu de Sus and Predeal</b> , track II, km 144+763, in the running of freight train no.50492 (got by the railway undertaking SC Unicom Tranzit SA), the banking locomotive EA 089 burst into flames.	i	Investigation in process
24	13.09.2020	In the railway county București, track section București – Ciulnița, <b>between București Obor and Pantelimon the railway stations</b> , km 15+400, in the running of passenger train no.8023	i	Investigation in process

		(got by the railway undertaking SNTFC „CFR Călători” SA), the first bogie, of the first wagon of the train, derailed in the running direction.		
25	13.09.2020	In the railway county Timișoara, track section Reșița – Caransebeș (electrified single-track line), <b>between the railway stations Brebu and Cornuțel Banat</b> , km 11+200, in the running of freight train no.60520 (got by the railway undertaking SC Tim Rail Cargo SRL), the first 12 wagons of the train derailed (from which one overturned).	i	Investigation in process
26	22.09.2020	In the railway county București, track section Chiajna – Videle (electrified double-track line), <b>between the railway stations Grădinari and Vadu Lat</b> , km 34+700, in the running of freight train no.34304-1 (got by the railway undertaking SC Constantin Grup SRL), the hauling locomotive DHC 746 burst into flames.	i	Investigation in process
27	23.09.2020	In the railway county Craiova, in <b>the railway station Gura Motrului</b> , the freight train no.20914 (hailed with the locomotive EA 678 got by the railway undertaking SC Cargo Trans Vagon SRL) passed the branch line signal Y <sub>RT</sub> in stop position.	iii	Investigation in process
28	08.10.2020	In the railway county Timișoara, track section Simeria – Livezeni (electrified double-track line), direct line III of the <b>railway station Bănița</b> , in the running of freight train no.90478 (got by the railway undertaking SC Vest Trans Rail SA), the hauling locomotive EA 647 burst into flames .	i	Investigation in process
29	10.10.2020	In the railway county Timișoara, in <b>the railway station Ilia</b> , the freight train no.71701 (hailed with the locomotive ED 019, got by the railway undertaking SNTFM „CFR Marfă” SA), passed the exit signal X2 in stop position.	iii	14.05.2021
30	16.10.2020	In the railway county Craiova, track section Băbeni - Alunu (non-electrified single-track line), in <b>the railway station Berbești</b> , in the running of freight train no.23680, got by the railway undertaking SNTFM „CFR Marfă” SA, the both axles of the first bogie from the 10th wagon of the train derailed in the running direction.	i	Investigation in process
31	17.10.2020	In the railway county Craiova, track section Roșiori Nord - Videle, in <b>the railway station Atârnați</b> , in the running of freight train no.21153, got by the railway undertaking SNTFM „CFR Marfă” SA, the both axles of the first bogie from the 32nd wagon of the train, derailed in the running direction	i	Investigation in process
32	22.10.2020	In the railway county Iași, track section Suceava-Ilva Mica (non-electrified single-track section), <b>between the railway stations Ciprian Porumbescu and Câmpulung Moldovenesc</b> , 11 track magnets were hit by an element for the load ensuring, that hung on the side of the wagon	iii	Investigation in process

		no.31434556014-3, being in the composition of freight train no.50476, (got by SC Unicom Tranzit SA).		
33	25.10.2020	In the railway county București, track section București – Ciulnița (electrified double-track line), <b>between the railway stations Brănești and Fundulea</b> , track II, km 35+200, in the running of freight train no.80522 (got by the railway undertaking SC Grup Feroviar Român SA), the hauling locomotive DA 1523 burst into flames.	i	Investigation in process
34	22.10.2020	In the railway county Craiova, track section Strehaia - Drobeta Turnu Severin (electrified single-track line), in <b>the railway station Gârnița</b> , the train no. 98473, consisting in the tower wagon DP 977 (got by Centrul de Electrificare Craiova – District LC Drobeta Turnu Severin) passed the exit signal in stop position, then the both axles derailed.	iii	Investigation in process
35	27.11.2020	In the railway county Cluj, track section Baia Mare – Satu Mare (non-electrified single-track line), in <b>the railway station Seini</b> , the freight train no.71709, (got by the railway undertaking SNTFM „CFR Marfă” SA), passed the exit common signal in stop position.	iii	Investigation in process
36	28.12.2020	In the railway county Constanța, <b>noninteroperable track section Dorobanțu - Romcim</b> (PC 2 Medgidia), (managed by SC Grup Feroviar Român SA), non-electrified single-track line, km 4+870, in the runing of freight train no.89170 (got by the railway undertaking SC Grup Feroviar Român SA), two wagons, the 16th and 17th ones derailed by one bogie.	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 2020

#### Surveys ordered in 2019 and completed in 2020

Order date	Study name (classification type, localization)	Legal basis of the investigation <sup>(1)</sup>	Complementary data
30.07.2019	Technical expertise of the rail found broken at the site of the accident happened on the 23 <sup>rd</sup> March 2019, in the railway county Brașov, track section Brașov–Sighișoara, line 300 (electrified double-track one), between the railway stations Bod and Feldioara, on the track I, km 188+190, in the running of the freight train no.20258, got by the railway freight undertaking Rail Cargo Carrier – România SRL, the second bogie of the wagon series Ha, no.31812743581-2, derailed in the running direction.	i	Completed 07.02.2020

(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 2020 and completed in 2020

Order date	Study name (classification type, localization)	Legal basis of the investigation <sup>(1)</sup>	Complementary data
21.05.2020	Report on the causes that led to the breakage of the rail in case of the accident happened on the 17 <sup>th</sup> February 2020, in the railway county Craiova, track section Roşiori Nord-Caracal (electrified double-track line), track II, between Fărcaşele and Drăgăneşti Olt railway stations, when 13 wagons of the train no. 34372, got by the railway undertaking SC Constantin Grup SRL, derailed.	i	27.07.2020

#### Surveys ordered in 2020 rested in working process

Order date	Study name (classification type, localization)	Legal basis of the investigation <sup>(1)</sup>	Complementary data
20.07.2020	Testing report no.3011-4, worked out following the chemical and metallographic analysis of the tin samples taken from the roof of the car no.50532049202-6. The expertise performed within the investigation of the railway accident happened in the running of passenger train Regio no.3535, got by railway passenger undertaking SNTFC „CFR Călători” SA. The accident happened on 5th April 2020, in the railway county Braşov, track section Braşov – Sighişoara (electrified double-track line), between the railway stations Augustin and Racoş, consisting in a fire burst into the wagon no.50532049202-6 then, the fire extension to the wagon no.50531954009-0, these wagons composing the train.	i	Completed 18.01.2021

(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 2020

Within 2020 there was completed and closed a number of **66** investigations, from which 57 open in 2019, the rest of 9 being open in 2020.

Forwards, it is presented the synthetical situation of 66 investigation reports completed and closed in 2020.

**3.4.1.** The railway accident happened on the 19<sup>th</sup> January 2019, in the railway county Cluj, **between Jibou and Mirșid railway stations**, non-electrified single-track line, consisted in the derailment of the multiple unit ADH no.1420, being in the composition of the passenger train no.4456.

The investigation report was completed on 16<sup>th</sup> January 2020.

**Direct cause and contributing factors:**

**The direct cause** of the accident was the climbing of gauge face of the curve exterior rail by the right wheel of the first axle, from the third bogie (in the train running direction), of the DMU ADH 1420, following the increase of the ratio between the guiding force and the load acting on this wheel, so exceeding the derailment stability limit.

The increase of the ratio between the guiding force and the load acting on this wheel happened following the serious load transfer of the right wheel from the first axle from the bogie no.3 (in the running direction) and the increase of the lateral force (guiding one) on this wheel.

**Contributing factors:**

- load transfer of the right wheel of the axle, that happened following the height of the air cushions, over the accepted quotas and of the mechanical clearances with values over the accepted limits;
- unsuitable technical condition of the track generated by the failures at the cross level.

**Underlying causes:**

- violation of the art.30 from the Guide of driver for the operation of the diesel multiple unit ADH11, regarding the checking of the control of the height of the air cushions between the accepted limits and their adjustment;
- violation of the art.50 from the Guide of driver for the operation of the diesel multiple unit ADH11, regarding the running with the secondary suspension with air cushions damaged, being impossible the adjustment in the nominal quotas of the air cushions;
- violation of the provisions of point 3.1. from the Railway Norm NF 67-006:2011, approved by Order of Ministry of Transports and Infrastructure 315/2011, updated, regarding the withdrawal of the diesel multiple unit from service for its submission to planned repairs, it leading to the non-identification of the mechanical clearances with values over the accepted limits and of the air cushions with height over the accepted nominal quotas;
- violation of the provisions of art.7.A.1. from „Instruction of norms and tolerances for the construction and maintenance of the track for lines with standard gauge no.314/1989”, regarding the values of tolerances of the prescribed cross level of a rail against the another one;
- violation of the provisions of art.7.A.4. regarding the keeping between the tolerances of the track twist gradient;
- violation of the provisions of point 4.1. from Chapter 4 „Norms of manpower and material consumption”, of „Instruction for the lines maintenance no.300/1982” regarding the provision with the norm of manpower for the manual current maintenance;
- non-application of all provisions of the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and relevant requirements for whole life time of the lines in maintenance process”, part of the safety management system of CNCF „CFR” SA, regarding the sizing of the staff from the line district, in relation to the total works.

**Root causes:**

- non-compliance with the requirement L.1 from the Regulations 1158/2010 that stipulates that, with reference to the relevant safety requirements for the type and amplitude of the operation, it should be procedures within the SMS of the railway undertaking for:
  - (a) identifying these requirements and updating relevant procedures to reflect changes made to them (change control management);
  - (b) implementing them;
  - (c) monitoring compliance with them;
  - (d) taking actions when non-compliance is identified.

in order to guarantee the identification, collection and quick listing of the relevant requirements included in the technical norms for each type of rolling stock and safety equipment, for the updating of the safety procedures and processes.

- non-meeting completely with the requirement L.2 from the Regulations 1158/2010 that stipulates that some procedures for the guarantee of the use of proper specific documents for the stipulated purposes should be in the SMS of the railway undertaking;
- non-meeting with the requirement P1 from the Regulations 1158/2010 that stipulates that some procedures, for the guarantee that all the pertinent information are accurate, complete and coherent, easy to understand, updated properly and documented suitably, should be within the SMS of the railway undertaking;
- lack, from the schedule of works of inspections Rz and R7 at the diesel multiple unit ADH11, of the checking and adjustment of the quotas regarding the air cushions;
- lack, from the schedule of works of inspection at the diesel multiple unit ADH11, of the weighing and adjustment of the wheels loads;
- lack, from the schedule of works of inspection at the diesel multiple unit ADH11, of the checking and adjustment of the mechanical clearances that can influence the load transfers between the wheels;
- lack, from the technical specification for accidental repair, of the provisions regarding the performance after the accidental repairs with the lifting of the multiple unit ADH11, of the weighing and adjustment of the mechanical clearances;
- non-identification of the danger and non-keeping under control of the risks resulted from the non-meeting with the tolerances accepted in operation for the track level crossing.

#### **Safety recommendations:**

The derailment of the diesel multiple unit ADH 1420, composing the passenger train no.4456, happened following the unsuitable maintenance both of the diesel multiple unit and of the railway infrastructure.

This derailment happened following the existence of some failures at the air cushions on a overcant gradient of 1:96.

One, also, found out that, the operation staff had no complete, coherent and easy to understand information about the lines on which the checking of the height of the air cushions is accepted, regarding the running way when the air cushions are adjusted over the accepted nominal quotas and regarding the tasks of adjustment/setting of the air cushion height.

The investigation commission found the lack of some clear provisions in the procedures of the SMS of the railway undertaking, that assign the responsibilities for its own staff regarding the relevant safety requirements:

- (a) identifying these requirements and updating relevant procedures to reflect changes made to them (change control management);
- (b) implementing them;
- (c) monitoring compliance with them;
- (d) taking actions when non-compliance is identified.

The investigation commission also found the lack of some clear provisions in the procedures of the SMS of the railway undertaking, regarding the establishment of the responsibilities for its own staff, in order to guarantee the use of the specific documents suitable for the operation of the diesel multiple unit ADH11, the requirement *L.2 from the Regulations 1158/2010 not being completely met with*. So, there is no guarantee of the indication of the lines on which the checking and the adjustment of the air cushions are accepted, mentioning of the periodicity of checking and adjustment of the height of the air cushions, indicating the technical endowment and the documents in order to ensure the operation tracking.

The investigation commission found the lack of some clear provisions in the SMS procedures for the establishment of the responsibilities for its own staff, in order to guarantee that the pertinent information are accurate, complete, coherent, easy to understand, updated properly and documented suitably, so not being met completely the requirement P.1 from the Regulations 1158/2010. So, one did not guarantee the updating of the *Guide of driver for the operation of the multiple unit type ADH 11 and its supplement with* accurate, coherent and easy understand information, regarding the situation where

the height of the air cushions is over the nominal quotas and the possibility of running in this case, regarding the situation where the checking of the height of the air cushions is made on a line meeting with the conditions for the slope and overcant and regarding the staff that has to perform the adjustment of the air cushions;

The investigation commission found failures in the *Technical Specification ST 28/2011*, concerning the checking/adjustment of the mechanical clearances from the air cushion height and the wheel loads, because these operations are performed either very seldom, or not at all. So, the technical parameters, that influence the load transfers between the diesel multiple unit wheels, are not properly kept under control, that could lead to the exceeding of the derailment stability limit.

We underline that the unsuitable working of the air cushion was the cause for the similar derailment of the diesel multiple unit ADH 1421, happened on the 28<sup>th</sup> February 2017, between Halmeu and Porumbesti railway stations, in the running of the passenger train no.4408. This type of diesel multiple unit was involved in the railway accident happened on the 16<sup>th</sup> May 2015, between Loamneş and Oca Sibiului railway stations, in the running of the passenger train no.2568.

Considering these above mentioned, in order to reduce the risks of some similar accidents, the investigation commission recommends Romanian Railway Safety Authority – ASFR:

**Safety recommendation no.1**

To request the railway undertaking the revision of the SMS procedures that have to meet with the requirement L1 from the *Regulations 1158/2010*, adding clear provisions that establish the responsibilities for its own staff, in order to guarantee the performance of the activities for the quick identification, collection, listing, implementation and monitoring of the relevant safety requirements for each type of rolling stock;

**Safety recommendation no.2**

To request the railway undertaking the revision of the SMS procedures that have to meet with the requirement L.2 from the *Regulations 1158/2010*, adding clear provisions that establish the responsibilities for its own staff, in order to guarantee the performance of the activities for the identification/drafting and use of the suitable specific documents for each type of rolling stock;

**Safety recommendation no.3**

To request the railway undertaking the revision of the SMS procedures that have to meet with the requirement P1 from the *Regulations 1158/2010*, adding provisions that establish the responsibilities for its own staff, in order to guarantee the updating of the safety provisions for each type of rolling stock and safety equipment, and the information from the provisions be *accurate, complete, coherent and easy to understand*;

**Safety recommendation no.4**

To request the railway undertaking and the economic operator that perform maintenance, *the* revision of the technical specification which cover planned inspections/accidental repairs by lifting, introducing some additional operations of checking/ adjustment of the height of the air cushions, of the mechanical clearances and loads on wheels, for keeping under control the load transfers between the wheels of the diesel multiple unit;

**3.4.2.**The railway incident happened on the 26<sup>th</sup> January 2019, in the activity of SC TMB „METROREX” SA Bucureşti, **during the shunting of the rake of vehicles**, consisting in the electric train TEM no.1322-2322 (being in active state) and its hauling locomotive LDH no.92 53 0 86-0100-7, from the overground depot Berceni to the underground one, consisted in the uncontrolled increase of the speed of the rake of vehicles, it leading to hard hit of the stop buffer from the line no.8, by the unit of the electric metro half train no.1322, followed by its derailment and the injury of a REM driver.

The investigation report was completed on 23<sup>rd</sup> January 2020.

**Direct cause and contributing factors:**

**The direct cause** of the incident was the un-controlled increase of the speed of TEM no.1322-2322, generated by the application of an electric traction effort on the train electromotors, it generating the impossibility to adapt the speed of the rake of vehicles at the distance line for shunting.



**The contributing factors** was the improper processing in the software logic of the next information:

- use like reference only of the sense imposed by the active driving cabin R2 of TEM. The software logic according which the reference of the active driving cab was priority for the reading sense from the bogie sensors led to the wrong interpretation of the real moving sense of TEM;
- wrong working of the device dead man in hauling condition, missing a sound warning before an emergency brake application, it being not in accordance with the digram of operation in the Driver Manual at chapter 4.4.6 Operation of the Driver Surveillance Device;
- keeping in operation of the electric brake, when the service brake being off from the panel TCMS. With the isolation from TCMS of the service brake (consisting in the electric brake and the pneumatic one), made by the human operator, the electric brake was not isolated.

**Underlying causes:** none.

**Root cause** was the lack in the Driver Manual of some proper regulations regarding the working in hauling conditions of a rake of vehicles type BM3-CAF with a shunting locomotive.

**Additional remarks:**

Remark no.1: The investigation commission found out that although the metro transport is a railway activity, there is no national reference document that stipulates the design, construction and performance requirements, as well as the standards for testing the equipment from the composition of the metro infrastructure and vehicles running on it, of railway type (Regulations for the Technical Operation). For new projects or for their maintenance, the authority responsible should have a list of the national applicable instruments, that regulate the basic issues of safety and security for vehicles, infrastructure and passenger travelling, like *safety management, means of intervention and saving passengers, traffic safety, radiocommunications, fires fights, electromagnetic compatibility*, etc., that should be updated with regularity and that be reference for all local administrations that wish to promote investments in the underground passenger transport. The main objective of this document has to be that of specifying the conformity standards for the construction, endowment and operation of the metro transport in a compatible way with their safety, where the passenger security prevail.

Remark no.2: For automatic safety critical systems that run complex tasks in the operation activity and are based on processes controlled by the software (vehicles, installations of command and control, etc.), they have to meet the safety and security requirements for the dissemination of the confidence within the passengers and users of the metro and railway transport. The command and control both of some technical systems and of the railway product made upon the microprocessor technology are programmable systems through a software, that imposes the need to meet with the safety field standards, in order to ensure that the system or the product is safe and viable. In practice, all the equipment, of different sizes, that comply with certain specific task are associated, consisting so called machine. The programme for the command and control of the machine (software) connects a set distributed by technical systems (controllers) and sensors in order to run repeatedly a certain task, according to requirement of human operator intervention. This software is used like an engine for decision making in the automatic complete processes and consists in a series of algorithms that have effect on a certain type of control on the machine, being a specific condition. In most part of the applications of command and control of the machine, the data are sent to it by sensors system, and the machine uses these data, combines them with the operator action, determines a certain condition and runs an algorithm predefined for condition.

In the railway and metro transport the single requirement of conformity for the use of the software at the railway critical products is [NR.5], that stipulates that the railway product is any „*software for the rolling stock, running track, railway signalling, power supply, control and command of the railway traffic (...)*” (according art.8 from the annex no.2), and has to be homologated. No matter how elaborated a software for command and control of a railway vehicle can be, in order to increase the confidence in this, the manufacturer has to meet with all the safety field standards, so ensuring that it is safe and reliable, and in order to introduce it on the market, the field authority has to use the practice from the quality management system: certification in accordance with the standards.

Remark no.3: The requirement to use the automatic safety critical systems for running tasks more and more complex increased continuously in the railway field, but, at the same time, the manufacturers have to be concerned also about the technical limits and constraints in the independence these systems can or have to run their tasks. In the current railway industry, the products and processes based on software are designed routinely, based on the technical acknowledge got in other fields. To work with elements known is a simple activity where the behaviour of the technical system can be anticipated, but it is fully justified to state that the software became a constituent of the critical safety systems, the human factors being, it itself, like an important component in their creation and use (functioning). The possibilities to integrate the human factor in a certain critical safety system based on software, these depend on its capacity to decide on the share for the processing of the information resulted from the respective system.

The human factor complies with the functions from the technical context in real time, the quality and the speed of answer in time (that is its performances), depending on the precision of estimation the time available for the running of the respective operations, especially in the situations with high risks. In these cases, the term „*operation*” includes: processing of the information received from stimulus, finding/awareness of the risk situation, making the decision and carrying out of the necessary actions on the critical safety system in order to eliminate the risk situation. For the human being to make a mistake is something natural, being one of the important components of the learning process based on the experience getting from mistakes, the human factor learning more from errors and less from successes. Generally, after a vehicle answer, non-anticipated by the driver, this has anxiety feelings, like a negative attitude against the critical safety system, this attitude inhibiting the learning process and the performance, increasing in a such way the error rate and cascade intensification of the anxiety, reaching the stress condition. In this situation, the stress factors become decisive in the allocation of the resources and driver attention payment, and it is important that he be prepared for the critical situations anticipated on a simulator, in order to decrease the stress. Upon it, the idea is that, it is very important to use the training of the human operator, in order to integrate into the technical context, the simulation through the involvement in the virtual realities, being appropriate the training using a simulator. The investigation commission found that the drivers of the metro trains are not trained for the critical situations, that the engineers simulate on equipment similar to the vehicle interface on which they work, in order to see their response and maybe to rectify the inconsistent actions. This type of training for the user of a modern vehicle becomes very necessary as a critical safety system has an elaborated software and as the uncertainty degree of its answer is not properly controlled by the manufacturer.

#### **Measures taken:**

After the incident, on the 16<sup>th</sup> April 2019, in order to avoid some similar events, the management of the TEM Operation Depot issued an Order no.M.06.605.02/3866/16.04.2019 disposing that the hauling of the trains type BM3-CAF with shunting locomotive type LDH be made only with the train accumulators disconnected.

#### **Safety Recommendations:**

Considering the findings following the investigation, the commission recommends that for reducing the risk of occurrence and preventing some similar incidents, that in slightly different conditions can lead to serious accidents, Romanian Railway Safety Authority-ASFR ask:

- METROREX take care that the manufacturer TEM BM3-CAF shall re-assess the vehicle software, so it ensures a proper safety level, including in case of its operation by hauling;
- METROREX takes care that the manufacturer TEM BM3-CAF shall added in the Driver Manual with the operations needed to be performed during the operation in hauling condition, if the rake of vehicles type BM3-CAF is coupled at a shunting locomotive.

**3.4.3.** The railway incident happened on the 31<sup>st</sup> January 2019, in the railway county Cluj, on the running line Salva - Sighetu Marmăției (non-electrified single-track line), **between Valea Vișeuului and Leordina railway stations**, km 10+342, in the running of the passenger train no.4111-2, consisted in the collision between the vehicles of the train and a piece of stone detached from a slope, leading to the

damage of the hauling locomotive DA 1228 and the dead one DA 881, also the damage and derailment of the first two cars.

The investigation report was completed on the 22<sup>nd</sup> January 2020.

**Direct cause, contributing factors:**

**The direct cause** of the railway event was the impact between a piece of rock detached from the rocky slope at km 10+100 ÷ 10+475, on the right side of the running line, between Valea Vișeuului and Leordina railway stations, which rolling towards the line, entered the structure clearance and hit, at about km 10+342, the hauling locomotive, the inactive locomotive and first two wagons of the passenger train no.4111-2.

After the impact, the locomotives were damaged, also first two wagons were damaged and derailed.

**Contributing factor:**

- lack of works of removing the pieces of rocks and stones from the space delimited by the rocky slope and the protection berm.

**Underlying cause:**

- violation of the provisions of the art.9 of the Instructions for prevention and fighting of floods and protection against the frost action no.312/2001, regarding the establishment by the commission within the Railway County Cluj of the maintenance works that can be performed to improve the existing local situation at the dangerous point, category II, which was located on the right side of the current line between the railway stations Valea Vișeuului and Leordina, km 10 + 100 ÷ 10 + 475.

**Root cause:**

- non-application, completely, by the public railway infrastructure manager, of the requirement F.2 of Regulations (EU) no. 1169/2010, regarding a common safety method for assessing the compliance with the requirements for obtaining the railway safety authorization, through which the infrastructure administrator must guarantee that the staff entrusted with responsibilities within the organization also have the adequate resources for carrying out the tasks.

**Safety recommendations:**

With reference to the incident happened on the 31<sup>st</sup> January 2019, in the running of the passenger train no. 4111-2, on the running line between the railway stations Valea Vișeuului and Leordina, at the dangerous point category II, km 10+100 ÷ 10+475, the main cause was the penetration of a piece of rock detached from a rocky slope into the structure clearance, which led to its collision with the vehicles from the train's consist. After the impact between the piece of rock and the train vehicles, the two locomotives were damaged, also the first cars damaged, derailed.

Penetration into the structure clearance of the piece of rock was possible following the reducing of the height of the protection berm, by the cumulation into the space between the rocky slope and side berm, the pieces of rock and the stones detached from the slope over the years. Thus, a layer consisting in pieces of rock and stones appeared, on the 31<sup>st</sup> January 2019 it favoured rolling over the berm of pieces of rocks and stones detached from the slope, one of them reaching the structure clearance of the line.

The cumulation of pieces of rock and stones in the space between the rocky slope and berm and the maintaining of the layer formed for a longer period of time occurred due to the fact that the organizational structure of the public railway infrastructure manager, responsible for maintaining this dangerous point does not have the resources necessary to remove them. The emptying of this space was made after the event and it was possible due to the involvement of the local administration, where the line and the dangerous point are.

The fact that, the reduction of the berm was not noticed during the checking of this dangerous point, represents a weakness of the staff who carried out the checking of this dangerous point of category II on the right side of the running line, between the railway stations Valea Vișeuului and Leordina, km 10+100 ÷ 10+475.

The investigating commission considers that this is an omission of the staff who carried out the checking, it being generated, one the one hand, because the aspects to be tracked when checking the

dangerous points are not detailed, and, on the other hand, because of the reduced attention paid by the staff responsible for the activity of checking the dangerous points.

Considering the non-conformities regarding: the technical condition of the railway infrastructure where the event happened, but also those presented in point A of the cap. C.5.2. “*The safety management system of the public railway infrastructure manager*”, as well as the weaknesses, identified in the safety management system, Romanian Railway Investigation Agency-AGIFER addresses Railway Safety Authority-ASFR, the following:

**Safety recommendations:**

1. The analysis, by means of monitoring, of the way in which CNCF „CFR” SA, like administrator of the public railway infrastructure, ensures the conditions so the safety measures established for keeping under control the dangers and associated risks, in connection with the performance of the public railway infrastructure maintenance, to be applicable.
2. The analysis, by means of monitoring, of the way in which CNCF „CFR” SA, like administrator of the public railway infrastructure, ensures the fulfilment of the requirements that were necessary to obtain the safety authorizations.

At the same time, Romanian Railway Investigation Agency - AGIFER warns the public infrastructure administrator, regarding the fact that the dangerous point of category II on the right side of the running line between the railway stations Valea Vişeuului and the Leordina, km 10+100 ÷ 10+475, it must carry out a reassessment of the risks regarding the danger represented by the fall of rocks and make the necessary steps to carry out the works established for making safety this dangerous point.

Failure in considering this warning could lead both to the increase of the number of accidents and to serious accidents on the railway network.

**3.4.4.** The railway incident happened on the 1<sup>st</sup> February 2019, in the railway county Iaşi, in the running of the passenger train Regio no.5421, **between Mirceşti and Muncel railway stations**, consisted in the hit of the impedance bond at the signal BL17, by the inductor of the locomotive DA 1272, being hauled as a dead one in the train composition.

The investigation report was completed on the 29<sup>th</sup> January 2020.

**Direct cause, contributing factors:**

The direct cause of the incident is the entry of the locomotive inductor into the structure clearance.

**Contributing factors** were represented by the keeping in operation of the locomotive DA1272 over the limit of norm of time for the performance of the planned repairs, it leading to:

- appearance of some cracks, that developed during the time under the fatigue action (some of them old and of about 25% in the breakage section), in the body of the guiding fork, at the curved point between the horizontal side and one of the vertical arms;
- breakage (section) of both arms of the guiding fork from the bogie II, left side, sagging of the swan-neck bearer on the inductor, leading to the its breakage and ejection outside the rolling stock structure clearance.

**Underlying causes:**

Inobservance of the cycle of compulsory repairs at the locomotive, according to the provisions of the Railway norm NF 67-006:2011 „Railway vehicles. Types of planned inspections and repairs. Norms of time/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, as follows:

- subpoint 3.1, that is the locomotive DA1272 was not withdrawn from running when it reached the norm of time stipulated for the performance of the planned repairs;
- table 3.1 letter A, position no.3, that is the cycle of planned repairs at the locomotive DA1272 was not met.

**Root causes:** none.

**Safety recommendations:**

Considering the list of works at the mechanic part, during the planned inspections, into the Sections for repairs at the locomotives belonging to SC RL Braşov SA, at the guiding forks, one cannot identify the failures (tendency of cracks, distortions, etc.) that impose their replacement. It can be done just during the repairs type RR or RG, when the parts of the mechanic and suspension part are dismantled for their degreasing, for their visual checking. Through the list of works, the guiding fork is visually checked, and if it has cracks at the cemented bushing and/or at the supporting area or cracks at the joining points, it is replaced.

Considering that the locomotive DA1272 had the last repair type RR on the 19<sup>th</sup> July 2007, having the deadline for the performance of repair type RG exceeded with 7 years, 4 months and 12 days. Lack of the repair type RG, made in time, and keeping in operation the locomotive, led, under the action of the material fatigue, to the appearance during the time of cracks in the body of the guiding fork, untraceable within the inspection cycles types RT, R1 or R2, favouring its breakage under the action of the dynamic forces.

Considering these above mentioned, the investigation commission considers that is not timely to issue safety recommendations.

**3.4.5.** The railway accident happened on the 5<sup>th</sup> February 2019, at about 19:05 o'clock, in the in the Railway County Timișoara, track section Orșova – Caransebeș (electrified single-track line), **in Topleț railway station**, line 3, km 398+710, in the running of freight train no.80676-1 (belonging to the freight railway undertaking GFR SA), consisted in the derailment of the second bogie from the wagon no. 31537912336-9, the 7<sup>th</sup> in the train composition, in the running direction.

The investigation report was completed on the 4<sup>th</sup> February 2020.

**Direct cause, contributing factors:**

**The direct cause** of this railway accident consists of the leaving of the running surface of the inner rail of the curve from the track 3 by the first right wheel from the second bogie of the 7<sup>th</sup> wagon and its fall inside the track. This occurred because the unsuitable technical condition of the wooden sleepers at the accident site, allowing the increase of the track gauge over the maximum accepted value, under the action of the forces transmitted by rolling stock in movement.

**Contributing factor:**

- the existence of 6 unsuitable wooden sleepers, one after another, in the derailment area, which no longer ensured the fastening of the metallic plates outside the curve, allowing their movement in the direction of the track gauge increase.

**Underlying cause:**

- violation of the provisions of art.25, points 2 and 4, from the Instruction of norms and tolerances for construction and maintenance lines with standard gauge - no.314 / 1989, regarding the failures which impose the replacement of the wooden sleepers, respectively the non-keeping within the track of some inappropriate sleepers, under certain conditions.

**Root cause:**

- non-application of all the provisions of the operational procedure code PO SMS 0-4.07 "Compliance with the relevant technical specifications, standards and requirements throughout the life time of the lines in the maintenance process", part of the safety management system of the public railway infrastructure administrator CNCF "CFR" SA, regarding the execution of the maintenance and periodic repairs of the lines.

**Measures taken:**

- there were performed works for the replacement of the wooden sleepers and metallic track fastenings on the track no.3 in the railway station Topleț, affected by the derailment.

**Safety recommendations:**

During the investigation, the commission found that the administrator management of the infrastructure worked out the system procedure PS SMCM - SMS 0-6.1 "*Risk management*", having the

date of entry into force the 17<sup>th</sup> October 2017, it replacing the PO SMS 0- 4.12 "*Railway safety risk management*". In this procedure it is established that the administrator, through its organizational structures, must identify the risks "*which may affect the activity carried out and the objectives set*", the newly identified risks being registered in the "risk alert" form, enclosed to the procedure. Also, a new "*Danger Register*" is established according to the new procedure.

The commission has found out that this procedure is not implemented by the Railway County Timișoara, so at this level the "*Danger Register*" is also set following the old procedure, and the "*risk alert*" form is not known by the personnel involved.

The derailment of the wagon no. 31537912336-9 occurred due to the inadequate maintenance of the curve on track 3 of the railway station Topleş (on the transition curve).

The investigation commission found out that the infrastructure administrator has identified, but did not manage the risks generated by the failure of the line maintenance, in order to be able to have viable solutions and measures for keeping the danger of derailment under control.

Thus, if the own procedures of the safety management system, in their integrity, as well as the provisions of the codes of practice, part of the SMS, had been applied, the infrastructure administrator could have maintained the technical parameters of the track geometry between the tolerances imposed by the railway safety.

As these aspects have been found out and presented also within the investigation of other similar railway accidents (ex. the accident occurred on the 30<sup>th</sup> June 2018 in the railway station Roșiori Nord, the accident occurred on 23<sup>rd</sup> June 2018 in the railway station Turceni, the accident occurred on 15<sup>th</sup> March 2018 in the railway station Dealu Ștefăniței or the accident that happened on 28<sup>th</sup> March 2017 in the railway station Ciolpani), after which safety recommendations were issued, it was considered that no further identical recommendation were needed.

**3.4.6.** The railway accident happened on the 10<sup>th</sup> February 2019, in the Railway County Cluj, track section Sărățel - Deda (electrified single-track line), **between the railway stations Sărățel and Mărișelu**, km 5+709, in the running of passenger train Regio no.13642, got by the railway undertaking SNTFC „CFR Călători” SA, consisted in the derailment of two axles (5<sup>th</sup> and 6<sup>th</sup> ones in the running direction) of the multiple unit ADH no.1421.

The investigation report was completed on the 6<sup>th</sup> February 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident was the climbing of the gauge face of the curve exterior rail by the right wheel of the second axle from the third bogie (in the running direction of the train), from the diesel multiple unit ADH 1421, following the increase of the ratio between the guiding force and the load acting on this wheel, so exceeding the derailment stability limit.

The increase of the ratio between the guiding force and the load acting on this wheel happened following the serious load transfer of the right wheel, from the second axle (axle no.6) of the bogie no.3 (in the running direction) and following the increase of the lateral force (guiding one) on this wheel.

**Contributing factors:**

- unsuitable technical condition of the track generated by the failures at the cross level, whose values exceed the accepted tolerances;
- height of the air cushions under the accepted quotas;
- mechanical clearances with values over the limits accepted at the axle no.6.

**Underlying causes:**

- violation of the provisions of art.7.A.1. from „Instruction of norms and tolerances for the track construction and maintenance for lines with standard gauge no.314/1989”, regarding the values of the tolerances of the cross level prescribed for a rail against the another one;
- violation of the provisions of art.7.A.4. regarding the keeping between the tolerances of the track twist gradient;

- violation of the provisions from „Instruction 305 regarding the setting of deadlines and order for the track inspection performance” edition 1997, sheet no.2, art.2; sheet no.3, art.2; sheet no.4, art.3; regarding the deadlines for the performance of the track inspection;
- violation of Art.30 from the Driver guide for the operation of the multiple unit ADH11, regarding the checking of the air cushion height fall between the limits accepted and their adjustment;
- violation of the provisions of pct.3.1 from the Railway Norm NF 67-006:2011, approved by Order of Ministry of Transports and Infrastructure 315/2011 updated, regarding the withdrawal of the diesel multiple unit from service for the performance of the planned repairs, it leading to the failure of identification of the mechanical clearances with values over the limits accepted and of the air cushions with height out the nominal quotas accepted.

**Root causes:**

- the railway undertaking did not meet with the criterium code F.2 from the Regulations (UE) no.1158/2010, because it does not get procedures to guarantee that the staff, appointed with responsibilities within the organization, has the adequate resources for complying with the tasks;
- non-identification of the risks and of the possible consequences resulted from the failure of keeping under control the danger resulted from the not meeting with the tolerances accepted in operation for the track cross level;
- non-identification of the danger resulted from the non-settlement of the failures of the track geometry, level 3 and 4, recorded following the checking with the track geometry car;
- non-identification of the danger resulted from the improper maintenance of the dangerous points;
- not meeting with the criterium code L.1 from the Regulation 1158/2010 that stipulates that it ought to be procedures within the SMS of the railway undertaking, regarding the safety requirements relevant, resulted from the prescriptive conditions for:
  - (a) identification of the safety requirements relevant and updating relevant procedures to reflect changes made to them (change control management);
  - (b) implementation of the safety requirements relevant;
  - (c) monitoring of the compliance with the safety requirements relevant;
  - (d) taking actions when non-compliance of the safety requirements relevant is identified.
 in order to guarantee the identification, collection and quick listing of the relevant requirements, included in the technical norms for each type of rolling stock and safety equipment, for the updating the safety procedures and processes;
- partial meeting with the criterium code L.2 from the Regulations 1158/2010 that stipulates that it ought to be within the SMS of the railway undertaking procedures to guarantee that one use specific documents adequate, for the aims stipulated;
- not meeting with the criterium code P1 from Regulations 1158/2010 that stipulates that it should to be, within SMS of the railway undertaking, procedures to guarantee that all information are pertinent, complete, coherent and easy to understand, updated properly and documented suitably;
- lack in the work schedule of the inspections Rz and R7 at the diesel multiple unit ADH11, of the operation for the checking and adjustment of the air cushion quotas;
- lack in the inspection schedule at the multiple unit ADH11, of the operation of weighing and adjusting of the loads on wheels;
- lack in the inspection work schedule at the multiple unit ADH11, of the operation of checking and adjusting of the mechanical clearances that can influence the load transfer between the wheels;
- lack in the technical specification for accidental repair of provisions for the performance of accidental repairs by lifting of the multiple unit ADH11, of the operation of weighing and adjusting of the mechanical clearances.

**Safety recommendations:**

The derailment of the multiple unit ADH 1421, composing the train no. G13642, happened following the unsuitable maintenance both of the railway infrastructure and of the diesel multiple unit.

This derailment happened following the existence of some failures at the air cushions of the diesel multiple unit, that ran on a track section having the values of the track overcant gradient higher than the maximum accepted gradient value of Romanian railway network, respectively 1:166.

The railway event happened on the 10<sup>th</sup> February 2019, in the running of the train no.G13642, on the running line between the railway stations Sărățel and Mărișelu, at the dangerous point category II, km 4+400 ÷ 5+800, where it consists in distortions of the track, due to the track bed with ballast pockets, it led to the overclimbing of the gauge face of the curve exterior rail by the right wheel of the axle 6, following the running of the rolling stock on a track section with failures at the cross level, whose values were over the accepted tolerances.

Following the accident investigation, one found that, at its occurrence contributed the fact that the infrastructure administrator did not identify the danger and did not assess the risks associated for the *unsuitable maintenance of the dangerous points*.

We specify that the non-performance of the works necessary and not-taking by the staff responsible with the infrastructure maintenance of measures intended, on track sections that were registered (or are now registered) in the record of the dangerous points, were causes of two other railway accidents, registered in the railway county Cluj:

- in case of the railway accident happened on the 26th December 2018, on the track section Sărățel – Deda, between the railway stations Râpa de Jos and Monor Gledin, km 36+727, leading to the derailment of the first axle of the locomotive EA 563, in the running direction, it hauling the freight train no. 44505, one of the contributing factors was the unsuitable condition of the track generated by the failures at the cross level over the accepted limits, on a track section, with the settled bed, registered in the dangerous point recording;
- in case of the accident happened on the 31st January 2019, on the track section Salva - Sighetu Marmăției, between the railway stations Valea Vișeuului and Leordina, km 10+342, in the running of the passenger train no.4111-2, the hauling locomotive (DA 1228) and the power supplied locomotive (DA 881) were damaged, and the first two cars of the train derailed, following the impact between a piece of stone detached from the rocky slope, that rolled into the structure clearance and hit the rolling stock, one of the contributing factors was the non-performance of the works for the removal of the big and small stones from the area delimited by the rocky slope and the protection berm, on a track section registered in the dangerous point recording.

Considering the non-conformities: the technical condition of the railway infrastructure at the event site, and those presented in the chapter C.5.2. „Safety management system of the public railway infrastructure administrator”, the investigation commission addresses to Romanian Railway Safety Authority-ASFR the next safety recommendations:

#### **Safety recommendations no.1**

To request the infrastructure administrator the revision of the danger evidence and the performance of a risk analysis, for the dangers generated by the unsuitable maintenance of the dangerous points.

The investigation commission found that the operation staff has not complete, coherent, easy to understand information for the lines on which the checking of the height of the air cushions is allowed, regarding the running way when the air cushions are adjusted outside the nominal quotas and regarding the duties of regulation/adjustment of air cushion height.

The investigation commission found the lack of some provisions clear in the procedures of railway undertaking SMS, that establish the responsibilities for its own staff regarding the relevant safety requirements for:

- (a) identification of the safety requirements relevant and updating of the relevant procedures to reflect the changes to which they are submitted (risk control management);
- (b) implementation of the safety requirements relevant;
- (c) monitoring of the compliance with the safety requirements relevant;
- (d) measures taking if it is observed the violation of the safety requirements relevant.

Therewith, the investigation commission found the lack of some clear provisions in the procedure of the railway undertaking SMS, regarding the appointment of the responsibilities for its own staff, to guarantee the use of the specific documents adequate for the operation of the diesel multiple unit ADH11, so the criterium code L.2 of the *Regulations 1158/2010* not being met. So, one does not guarantee the appointment of the lines on which the checking and the adjustment of the air cushion is allowed, indication of the periodicity of the air cushion checking and adjustment, indication of the technical endowments and of the documents for ensuring the operation tracking.



We stipulate that the lack of some clear provisions in the SMS procedures, regarding the appointment of the responsibilities for its own staff, to guarantee that the pertinent information are clear, complete, coherent, easy to understand, updated properly and documented suitably, so the criterium code P.1 from the Regulations 1158/2010 being not completely met. So, the updating of the *Driver guide for the operation of the diesel multiple unit type ADH11* and its supplement with information clear, complete, coherent, easy to understand, regarding the situation where the height of the air cushion is out of the nominal quotas and regarding the way of running in this case, regarding the situation where the checking of the air cushion height is made on a line that does not meet with the conditions of regarding the grade and overcant and regarding the staff that has to perform the adjustment of the air cushion height;

The investigation commission found failures in the *Technical Specification ST 28/2011*, regarding the checking/adjustment of the mechanical clearances, of the air cushion heights and of the loads on wheels, because the operations above mentioned are performed either rarely or never. In this respect, the technical parameters that influence load transfers between the wheels of diesel multiple unit, which may have exceeded the stability limit at derailment, are not adequately controlled.

The deficiencies above mentioned were causes for the accident happened on 19<sup>th</sup> January 2019, between the railway stations Jibou and Mirșid, consisting in the derailment of the multiple unit ADH no.1420, composing the passenger train no.4456.

For the prevention of some railway accidents generated by these deficiencies, AGIFER issued 4 safety recommendations, in case of the investigation of the accident happened on the 19<sup>th</sup> January 2019, between the railway stations Jibou and Mirșid, consisting in the derailment of the multiple unit ADH no.1420, composing the passenger train no.4456.

So, the investigation commission considers that it is enough the implementation of the safety recommendation issued at the investigation of the accident happened on the 19<sup>th</sup> January 2019.

During the investigation, one found that the rolling stock derailed had exceeded the time norm for the performance of the planned repair type RR. In this regard, the SMS procedures do not consider the provisions according which the staff of SRTFC Cluj, responsible for the provision with the necessary multiple units that compose the trains in running, be ensured that has the authority and the resources adequate for the tasks performing.

Considering the issues above mentioned, in order to decrease the risks of other similar accident occurrence, the investigation commission recommends Romanian Railway Safety Authority – ASFR:

#### **Safety recommendation no.2**

To request the railway undertaking the revision of the SMS procedures that have to meet with the criterium code F.2 from the Regulations 1158/2010, for working out a procedure in order to guarantee that the staff appointed with the responsibilities for the provision with the necessary rolling stock, composing the trains in running, gets also the authority and the adequate resources for the performance of these activities.

**3.4.7.**The railway accident happened on 2<sup>nd</sup> March 2019, in the railway county Brașov, track section Brașov – Sighișoara, line 300, track I , electrified double-track line, **between the railway stations Augustin and Racoș**, km 228+463, in the running of the passenger train R 3501, got by the railway passenger undertaking SNTFC „CFR Călători” SA, consisted in the derailment of all three axles of bogie no.2 of the electric locomotive EA 014, it being the first bogie in the running direction.

The investigation report was completed on the 2<sup>nd</sup> March 2020.

#### **Direct cause, contributing factors:**

**The direct cause** of the accident was the fall of the left wheel from the axle no.6 of the locomotive, inside the track, following the increase of the gauge over the maximum accepted value.

#### **Contributing factor:**

- unsuitable condition of the wooden sleepers that did not ensure the fastening rail-sleeper.

#### **Underlying causes:**

- art.25, paragraphs (2) and (4) from Instruction of norms and tolerances for the construction and maintenance of the track for lines with standard gauge no.314/1989, regarding the failures that impose the replacement of the wooden sleepers and non-acceptance within the track of unsuitable sleepers;
- art.1, point 14.2, from Instruction of norms and tolerances for the construction and maintenance of the track for lines with standard gauge no.314/1989, regarding the tolerances accepted for the gauge and its variation;

**Root cause:** none.

**Additional remarks:**

During the investigation, there were found the next findings on some deficiencies and gaps, without relevance for the conclusions on the accident causes:

- the railway undertaking did not comply with the provisions of the Railway Norm approved through the Order of Minister of Transports and Infrastructure no.1359/2012, for the withdrawal of the locomotive EA nr.014 from service, for the performance of the planned repair due at the reaching of the time norm, respectively 6 years from the last planned repair;
- at the renewal of the safety certificate part B, got by the railway passenger undertaking, the provisions of the Minister of Transports' Order no. 535/2007, with further amendments, respectively art.19(3), art.15(4), point 2 from the Annex – Norms for the granting of the safety certificates, were not completely met, because the locomotive involved in the accident was written down in the certificate, without getting a technical assessment report;
- by the contract of works concluded between the purchaser and the performer, based on the technical specification, one performed repairs for the removal of the speed restrictions („Replacement of normal wooden sleepers on the line 300 I, between the railway stations Augustin and Racoş, km 224+400 – 228+640, Lot 2”). One did not analyse and observe carefully the condition of the sleepers bought, because when they were fitted up the yard responsible could see if, during the perforation of the sleepers, the resulted material was not impregnated, considering also the limited warranty period;
- there are no hierarchical information about the non-conformities found during the performance of the works with third part within CNCF „CFR” SA, for the monitoring, prevention and removal of the similar situations.
- Through the contract of works, the material provision was in charge of the performer (including the wooden sleepers). The normal wooden sleepers were supplied and fitted up in November 2014. The documents proving the product conformity at the supply moment were:
  1. the technical homologation certificate for end manufacture, Series OT no.170/2011, valid from the 7<sup>th</sup> July 2011 to the 6<sup>th</sup> July 2016, of the *railway wooden sleepers non-impregnated*, classified in the risk class 1A, produced by PAMIRCO SRL;
  2. railway technical agreement, Series AT, no.1199/2013 for: *impregnation of the railway wooden sleepers with oil antiseptics, by vacuum method – pressure*, risk class 2A, supplied by PAMIRCO SRL, valid from the 30<sup>th</sup> December 2013 to the 6<sup>th</sup> July 2016.  
*Remarks: The impregnation of the wooden sleepers classified in the risk class 2A was not monitored by AFER by the technical inspection department, their quality being guarantee only by the manufacturer;*
  3. railway supplier authorization series AF, no.4538 valid from the 8<sup>th</sup> March 2010 to the 7<sup>th</sup> March 2015, attesting the railway supplier ship for PAMIRCO SRL;
  4. minutes of reception of the wooden sleepers impregnated no.218/21.11.2014, for 1008 pieces of normal wooden sleepers, concluded between the supplier and CNCF „CFR” SA, railway county, Technical Division, according to the contract of works no. 757/11.11.2014 and to the technical specifications of CNCF „CFR” SA, CS no.22/1999 – white wooden sleepers non-impregnated, respectively CS - 2007- impregnated sleepers;
  5. conformity statement no. 9/2014 (having no date of working out) of the manufacturer, with visa from the Technical Inspection Department – ONFR, AFER, for 460 mc wooden sleepers impregnated;
  6. the reception minutes at the end of works no. 202/366/10.12.2014, concluded by the commission at the railway county Braşov, Section L.2 Sighişoara, Line District L.1 Racoş confirming the work

performance (ended completely) according to the technical specification and to the contract of works, between km 224+400–228+640;

7. minutes for the final reception no. 202/D1/50/16.02.2018, concluded by the commission at the railway county Braşov, Section L.2 Sighişoara, Line District L.1 Racoş, confirming the proper behaviour of the building within the warranty period of time of three years.

When the railway accident happened, the warranty period given by the manufacturer of the normal wooden sleepers was exceeded. Their condition was improper.

#### **Safety recommendations:**

The derailment of the locomotive EA 014, hauling the passenger train R 3501, was generated by the improper maintenance of the track infrastructure.

During the investigation, one found that the maintenance of the track superstructure was not made in accordance with the provisions of the practice codes (reference/associated documents of the procedures of CNCF „CFR” SA safety management system).

Considering the factors contributing at the accident occurrence, the factors based on underlying causes, that are deviations from the practice codes, as well as the fact that the surveillance of the economic operators from the railway transport system is in charge of Romanian Railway Safety Authority – ASFR, the investigation commission does not consider necessary to issue safety recommendations.

**3.4.8.** The railway accident happened on 2<sup>nd</sup> March 2019, in the railway county Timişoara, track section Radna - Iliia (electrified double-track line), in **the railway station Săvârşin**, when the passenger train IR no.74-1 (got by the railway undertaking SNTFC „CFR Călători” SA) was dispatched from the deflecting section 1 to Vărădia, on the track I, consisted in the derailment of the first axle from the first bogie of the locomotive EA 689, in the running direction, and lifting of the wheels from the axles 2 and 3 of the same bogie on the profile of the check-rail of the switch no.18 from the end Y of the railway station.

The investigation report was completed on the 28<sup>th</sup> February 2020.

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

**The direct cause** of the accident is the climbing of the gauge face of exterior closure rail from the curve of the switch no. 18 from the railway station Săvârşin after dispatching the train 74-1, following the exceeding of the derailment stability limit  $Y/Q$  simultaneously the increase of the attack angle at the right wheels from the first bogie in the running direction of the locomotive EA689 at the heel of switch no. 18 from the railway station Săvârşin after dispatching the train 74-1.

The exceeding of the value of the stability limit at derailment  $Y/Q$  occurred under the conditions of exceeding the maximum permissible value of the level in cross section for the railway turnouts for the receiving-dispatch lines, which led to the partial load discharging of the wheels on the right side of the first bogie in the direction of running, favouring the climbing of the wheels flange on the gauge face of the rail on the right side.

The increase of the attack angle at the right wheels of the first bogie in the running direction of the locomotive EA689 occurred as a result of the non-conforming variation of the track gauge over the maximum accepted limit.

#### **Contributing factors:**

- the load transfer of the right wheels from first two axles under the permissible limit, as a result of exceeding the maximum permissible value of the cross level of the railway turnouts for the reception-dispatching lines;
- the non-conforming variation of the track gauge on the switch no.18 from the railway station Săvârşin, which resulted in an increase of the attack angle of the leading wheel from the locomotive EA689.

#### **Underlying cause:**

- violation of the provisions of art.1, point 14.1 from the Instruction no.314 / 1989 regarding the variation of the deviations from the nominal prescribed gauge.

#### **Root cause:**

Non-application of the provisions from the operational procedure code PO SMS 0-4.07 "Compliance with the technical specifications, standards and requirements relevant for the whole life cycle of the railway tracks in the maintenance process", part of the safety management system of the public railway infrastructure manager CNCF „CFR” SA, relating to:

- performance of the maintenance and repairs of the railway tracks;
- sizing of the staff from the District of Lines no.6 Săvârșin, in relation to the volume of works required to be performed within the current maintenance of the railway infrastructure.

**Additional remarks:**

During the investigation, there were found some deficiencies and gaps, without relevance for the accident causes:

- values, outside the limits for the locomotives in operation, found at the measurements made at the locomotives:
  - o vertical mechanical clearances between the axle boxes and the guard connections outside the limits prescribed for the axles no. 4, 5 and 6 left side;
  - o load on axle is exceeded at the axle no.4;
  - o load measured on the left wheel of the axle no.4 exceeds the maximum accepted value;
- one did not meet with the cycle of planned repairs imposed by the Railway Norm NF 67-006:2011 "Railway vehicles. Types of planned inspections and repairs. Norms of time or norms of 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, that is the locomotive EA689 has the planned repair type RK (overhaul), made on the 16<sup>th</sup> August 2010 by SC Softronic Craiova SA, and from that moment and until the accident occurrence, the locomotive ran 1.299.198 km, the locomotive being due for repair type RR.

**Safety recommendations:**

With reference to the railway accident happened on the 2<sup>nd</sup> of March 2019, in the running of the train IR no.74-1 one found that the derailment was influenced by the inadequate technical condition both of the railway infrastructure and of the rolling stock involved.

At the locomotive EA689, hauling the train no. 74-1, one found that the distribution of the load on wheels outside the limits accepted for the locomotives in operation ( $\pm 2\%$  of the average load on wheels) at 5 from those 6 axles. The last weighing of the load on the axles was performed on the 12<sup>th</sup> December 2018, following the turning of the locomotive wheels. From this time until the date of the accident, due to the change in time of the elastic characteristics of the rubber suspension elements, there were changes in the distribution of the load on the locomotive axles, changes whose values exceeded the limits allowed for the operation of the locomotives.

For the prevention of accidents similar to those presented in this report, AGIFER issues, for the Romanian Railway Safety Authority - ASFR, the following safety recommendations:

1. Romanian Railway Safety Authority - ASFR shall analyse together with the railway transport undertaking that get locomotives type 060-EA or 040-EC, the opportunity to introduce into the safety management system some regulations (procedures) that provide measures for periodic inspection, during the planned inspections type RT or R1, the transfer of the loads on the axle and mechanical clearances, in order to keep under control the risks induced by the changes in time of the characteristics of the rubber suspension elements.
2. Romanian Railway Safety Authority - ASFR together with the public railway infrastructure administrator CNCF „CFR” SA shall carry out a risk analysis to find the opportunity to introduce the danger of "exceeding the admitted track tolerances" like *unacceptable nonconformity*.
3. Romanian Railway Safety Authority - ASFR together with the public railway infrastructure administrator CNCF „CFR” SA shall carry out a risk analysis to find the opportunity to introduce the danger of under-sizing the staff from Lines Districts like *unacceptable nonconformity*.

**3.4.9.** The railway incident happened on the 1<sup>st</sup> March 2019, in the railway county Iași, track section Dărmănești – Cacica (electrified single-track line), in **the railway station Cacica**, consisted in the hit of the inductor from the permanent indicator for the track section of the lines with centralized

management of the train running, km 20+170 and the hit of the protection cover from the lock of the switch no.1, km 20+623, by the inductor of the locomotive EA 156, hauling the passenger train Regio no.5739 (got by the railway undertaking SNTFC „CFR Călători” SA).

The investigation report was completed on the 20<sup>th</sup> February 2020.

**Direct cause, contributing factors:**

**The direct cause** of the incident is the entrance of a part from the locomotive (inductor) into the railway infrastructure gauge.

**Contributing factors:**

- failure in the conformity of the inductor gauge quota (height against the head of rail), by the non-identification of it at the last periodical inspection.

**Underlying cause:**

Inobservance of the cycle of compulsory repairs at the locomotive, according to the provisions of the Railway norm NF 67-006:2011 "Railway vehicles. Types of planned inspections and repairs. Norms of time/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, as follows:

- subpoint 3.1, that is for the locomotive EA1156 the maximal norms of time and km run, stipulated for the performance of planned repairs, were not met;
- table 3.1 letter A, position no.1, that is the cycle of planned repairs at the locomotive EA 1156 was not met.

**Root causes:** none.

**Safety recommendations:**

The locomotive EA1156 was submitted to the last repair – type RR, on the 18th April 2012, at SCRL Brasov SA, starting with that moment and until 1<sup>st</sup> March 2019 (when the incident happened), it ran 1.254.142 km, it was due for repair type RG from the 17<sup>th</sup> April 2017. So, the lack of replacing possibilities for ensuring the necessary of active engine stock, that led to the situation of exceeding the deadlines of time with 1 year, 10 months and 18 days and of km run with 654.142, it having like result the wear of the tyres to the low limit.

The responsibility of keeping in operation, over the limits stipulated in the norms in force (time and/or km run) is, especially in charge of the engine stock owner.

Considering these above mentioned, the investigation commission considers that it is not timely to issue safety recommendations.

**3.4.10.** The railway incident happened on the 23<sup>rd</sup> February 2019, in the railway county Cluj, **between Valea Vişeuului and Leordina**, from km 2+980 to km 4+250, in the running of the passenger train no.4650 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in the exceeding of the maximum accepted speed (speed restriction of 20 km/h).

The investigation report was completed on the 19<sup>th</sup> February 2020.

**Direct cause, contributing factors:**

**The direct cause** of the railway incident is a human mistake that is the train crew did not pay attention to, it leading to the exceeding of the maximum speed over the speed restriction of 20 km/h, included in the Sheet for the Notification of the Restrictions (BAR).

**Contributing factors:** none.

**Underlying cause:**

Inobservance of the provisions from Instructions for the activity of the locomotive crew no. 201, art. 125, paragraphs (3) and (4) regarding the compliance with the dispositions written down in B.A.R. and the adjustment of the train speed so it be under that ordered.

**Root causes:** none.

**Safety recommendations:** none.

**3.4.11.** The railway accident happened on 8<sup>th</sup> March 2019, in the railway county Cluj, between **Telciu and Coşbuc railway stations**, km 10+718, in the running of the passenger train no.4136, got by the railway undertaking SNTFC"CFR Călători" SA, consisted in the derailment of first axle from the second bogie of the car no.50537131042- 4, being the 5<sup>th</sup> one in the train composition.

The investigation report was completed on the 5<sup>th</sup> March 2020.

**Direct cause and contributing factors:**

**The direct cause** of the accident is the fall of the right wheel (the 6<sup>th</sup> one), from the car no.50537131042- 4 (the 5<sup>th</sup> one in the passenger train no.4136 consist), between the rails, within a curve with right deviation in the train running direction (this wheel running on the interior rail of the curve). It happened following the improper condition of the track superstructure, allowing the radial displacement of the assemble rail-metallic plate on the wooden sleepers, leading to the increase of the track gauge over the limits of the tolerances accepted in operation.

**Contributing factors:**

- keeping in operation, at the derailment site (km 10+718), of some normal wooden sleepers whose technical condition was imposing their replacement;
- non-removal of the track geometry failures, registered on the line Telciu-Coşbuc during the measurements performed with the multiple unit "Track recording car for track and contact wire surveying - type EM130 - nr.146";
- use, for the sleepers replacement, of some impregnated wooden sleepers, made in accordance with other requirements than the *safety requirements* resulted from the standard for sleepers *SR EN 13145+A1:2012*, it favouring the appearance of some failures inside the sleepers, that did not allow their use in operation;
- use, for the replacement of the sleepers, of some impregnated wooden sleepers made by manufacturers that did not get *EC Conformity Statement* and *EC Conformity Certificate* granted by the *Notified Certification Body*.

**Underlying causes:**

- violation of the provisions of art.25, paragraphs (1), (2) and (4) from „*Instruction of norms and tolerances for the construction and maintenance of the track for lines with standard gauge*” - no.314/1989, regarding the replacement of the wooden sleepers whose failures impose it;
- violation of the provisions of art.14 from „*Instruction of norms and tolerances for the construction and maintenance of the track for lines with standard gauge*” - no.314/1989, regarding the tolerances accepted for the prescribed track gauge;
- violation of the provisions from *Instruction for the use of testing and recording cars no.329/1995* regarding the art.6.7 – the schedule for the removal of the failures recorded by the track recording car TMC and compliance with the deadlines for the failure removal;
- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 „*Compliance with the technical specifications, standards and requirements relevant for the whole useful life of the lines in maintenance process*”, part of the safety management system of the public railway infrastructure administrator CNCF „CFR” SA, regarding the performance of the maintenance and periodical repairs at the lines;
- violation of the provisions from Annex I of the procedure *PO SMS 0-4.11*, regarding the certification of the conformity of the *product wooden sleepers*, through the *conformity certificates* granted by the *certification bodies*, according to the *technical regulations applicable*;
- violation of the provisions of point 5 from *Disposal 102/2008 of CNCFR General Manager*, regarding the conformity certification of the *product wooden sleepers*, by the *conformity certificates* granted by *certification bodies*, in accordance with the *technical regulations*;
- violation of the provisions of art.4 from the *Regulations* approved by the *Order of Minister of Transports, Constructions and Tourism OMTCT no.1558/2004*, because the manufacturing of the wooden sleepers did not meet with the obligation according which, the conformity with the technical

- specification had to be certified through a procedure where, a certification body is involved in the assessment and the monitoring of the control of the production or of the product;
- violation of the obligation to define the *technical specifications* for sleepers, by reference to the standard in force *SR EN 13145+A1:2012*, according to the provisions of art. 35 paragraph (6) letter a) from the *Emergency Government Decision - OUG 34/2006*;
  - violation of the obligations resulting from point 2 letter c from the Annex III of the *Directive 49/2004 (transposed by the Law 55/2006)* corroborated with the points L and L1 from the *Annex II from Regulations 1169/2010*, to identify and to implement *the safety requirements* established by the technical standards in force, because one used wooden sleepers that did not comply with *the safety requirements* included in the technical standard *SR EN 13145+A1:2012*;
  - violation of the provisions from the Annex III of the *Decision 97/176/CE*, because one used wooden sleepers, whose manufacturing did not comply with the obligation according which, *the wooden sleeper for railways* is subject of the *system for the conformity certification 2+* ;
  - violation of the provisions of art.3(3) of the *Regulations (EU) no. 1169/2010* according which the suppliers have to be certified in accordance with the *certification systems upon European Union legislation*, because the sleepers were manufactured by suppliers that were not met the certification conditions above mentioned;
  - violation of the provisions of art. 12 (1<sup>1</sup>) from *the Government Decision 622/2004*, according which the *wooden sleeper for railways* have been subjected to a procedure of *conformity certification by bodies for the certification of the product conformity with the national standard applicable*, because the procedure for the certification above mentioned was missing, within the process for the sleeper manufacturing;
  - violation of art. 42 (1) from *the Government Decision 622/2004* according which the *wooden sleepers* could be put on the market or used without other legal limitations, only if they met with the provisions from the *Government Decision 622/2004*;
  - violation of the provisions of art. 22(1) and art.22(1), letter c) from *the Government Decision 622/2004*, regarding the working out, for the wooden sleepers, of *EC Conformity Certification* upon an *EC Conformity Certificate* granted by a notified *certification body*;
  - violation of the procedures *PO SMS 0-4.40*, because the identification, implementation and monitoring of the relevant *safety requirements*, included in the standard *SR EN 13145+A1:2012* were not performed.

#### **Root causes:**

- failure appeared within the *Safety Management System of CNCF „CFR” SA*, to control the risk linked to the use/purchase of products that do not meet with the *safety requirements* and that can endanger the railway safety;
- non-identification of the danger resulted from the use within the repairs at the railway infrastructure, of the railway products (wooden sleepers), whose manufacturing does not meet with the safety requirements relevant, existing in the technical standards;
- non-identification of the danger resulted from the use within the repairs of the railway infrastructure, of the railway products (wooden sleepers), whose manufacturing does not comply with the conditions regarding the certification of the *conformity with the technical specifications*.

#### **Safety recommendations:**

The derailment of the car no. 50537131042- 4, being in the composition of the passenger train no.4136, is part of a series of similar accidents, the derailments being caused by the wooden sleepers that had internal failures, after maximum 5 years from their manufacturing. The wooden sleepers were in warranty period or soon after the expiration of the warranty period and had inside quick degradations of the wood, that led to the derailments. The eventual consequences and the repeatability character of this type of accident, determined the investigation commission to check extensively the consistency of the regulation framework that covers the wooden sleepers, not only the compliance of the actors from the market with the specific regulations in force.

Following the investigation, it was found that for the products *wooden sleepers*, the legal provisions of the Minister of Transport's Order *OMT no.290/2000* were changed, implicit, by further

upper level legal papers – *Order of Minister of Transports, Constructions and Tourism OMTCT 1558/2000, Decision 97/176/CE, Government Decision 622/2004 and Regulations (UE) no. 1169/2010*. One also found that the legal provisions of the *Minister of Transports' Order no.290/2000* that were changed, were not express and clearly cancelled, becoming apparently contradictory to the upper level further legal papers. Following this appearance contradictory, the staff in charge with the application of the legislation for the purchase of the wooden sleepers made in 2013, applied the provisions of the *Minister of Transports' Order 290/2000* instead to apply those of the further legal papers. So, the purchase of the wooden sleepers was done from suppliers getting the *Supplier Authorization*, granted by AFER - ONFR, instead be purchased from suppliers getting *EC Conformity Certificates* granted by *Bodies notified for the conformity certification*. According to the legal norms in force, *the Railway Supplier Authorization granted by AFER* cannot be considered a valid proof for the assessment of the conformity with the safety requirements in case of *wooden sleepers*, intended for the respective line. In this regard, *EC conformity certificates* granted to the suppliers in accordance with EU legislation, are considered like a valid proof for the assessment of the conformity with the safety requirements for the *wooden sleepers*, intended for the respective line. We underline that for all lines it is accepted the use of sleepers submitted to the procedure of *conformity assessment for the interoperability constitutive element – wooden sleeper*, procedure for which AFER – ONFR is notified.

The Ministry of Transports removed in 2015 through the *Government Decision 606/2015*, the railway supplier authorizations for the conventional railway system, from the activity field of AFER-ONFR. Anyway, during the investigation resulted that the staff in charge with the purchase of *the wooden sleepers*, continue to make purchases from suppliers getting AFER authorizations, for lines of the conventional system, being misled by the provisions of the *Minister of Transports' Order no.290/2000*, that became contradictory to the further legal norms.

AGIFER still treated the lack of clarity of the legal norms for the products with impact on the railway safety, within the *Investigation Report* regarding the railway accident happened on the 24<sup>th</sup> of September 2017, in the railway station Dej Călători, in the running of the passenger train no.1765, consisting in the derailment of the locomotive EA 546 and of those 6 cars. One of the conclusions from that *Investigation Report* was ” *The provisions currently applicable, regarding the maintenance of the interoperable lines, have not the role to establish unequivocally the cases that impose the existence of EC conformity certificates and of the cases where the acceptance of the railway products is possible only by the application of the provisions of the Minister of Transports' Order no.290/2000*”. The conclusion above mentioned was approached by AGIFER in the respective *Investigation Report*, by issuing the *Safety Recommendation no.1*, wishing a clarification and guiding of the actors from the railway market for ”... *application way of the national and European regulations for marketing into Romania of the railway critical products and of the interoperability constituents*”.

AGIFER actual findings lead to the conclusion that the *Safety recommendation nr.1*, before mentioned, had not the desired result, because ASFR did not succeed the promotion of the necessary clarifications, regarding the ways to market *all the* products with impact on the railway safety. In order to solve such type of problem, upon the findings, the investigation commission considers that currently it is necessary the express and clear change of the regulation framework for the unitary understanding and application, by all railway actors, of the legislation for the products and services with impact on the railway safety.

We mention that the improper maintenance of the railway infrastructure of the running line between the railway stations Telciu and Coşbuc, was the cause of another railway accident happened on the 22<sup>nd</sup> of June 2016, km 12 + 840, consisting in the derailment of two wagons of the freight train no.42564. The direct cause of the accident was the loss of the stability of the rail-sleepers system, in the conditions of the non-instructional making of the non-welded track, respectively of the non-instructional sizes of the expansion joints and of some non-conformities regarding the shape of the broken stone bed.

Considering the issues presented, in order to reduce the risks of similar accidents, the investigation commission recommends Romanian Railway Safety Authority – ASFR:

#### **Safety recommendation no.1**



To take steps for the express and clear cancellation of the provisions of *OMT no.290/2000*, that are contradictory to the further upper level legal papers, that have like object the products and services with impact on the railway safety, for the prevention of some situation of their contradictory application.

#### **Safety recommendation no.2**

To ask the infrastructure manager a risk analysis for the dangers generated by the *wooden sleepers* already fitted in the track, that were purchased upon other requirements than those from the *technical standard in force*, or they did not meet with the condition regarding the *conformity certification upon the technical specifications*.

Regarding the *safety requirements* for products, one found that, both when the sleepers were bought and when the accident happened, the railway county Cluj did not identify the danger resulted from the use of the railway products (wooden sleepers), that did not comply with the relevant *safety requirements* from the technical standards. One did not identify the danger resulted from the use of the railway products (wooden sleepers), that do not meet with the conditions for the *conformity certification upon the technical specifications*

During the investigation, it was found that in the SMS procedures of the infrastructure manager, there are missing provisions for the appointment of the responsibilities to its own staff, *regarding the checking of the supplier competence during the selection*, so the criterium code C1 from the Annex II of the *Regulations 1158/2010* not being completely met.

From the investigation findings, it was found that in the SMS procedures of the infrastructure manager there are not provisions for the appointment of the responsibilities to its own staff, regarding the identification of the norms for the performance of the maintenance and provision of the material, that have to be known and applicable in the purchase level. So, there were missing the provisions for the identification of the norms, that the railway infrastructure *has to impose to the suppliers for meeting, in the initial level of purchase*, the criterium code V.3 from the Annex II of the *Regulations 1158/2010* not being completely met.

The railway county Cluj used the *Process procedure PP 0-7.4.1*. regarding the purchases, in order to establish the technical conditions for sleeper purchase. It was found that, there were missing in the Procedure *PP 0-7.4.1*. mentions that indicate the fact that the suppliers of the products have to be *certified in accordance with the certification systems* established upon EU legislation, and *the products have to meet with the safety requirements* .

Considering these above mentioned, in order to reduce the risks of similar accidents, the investigation commission recommends Romanian Railway Safety Authority – ASFR:

#### **Safety recommendation no.3**

To ask the infrastructure manager the revision of the SMS procedures, that have to meet with the criterium C.1 from the Annex II of the *Regulations 1158/2010*, adding clear provisions for the appointment of the responsibilities to its own staff, *regarding the checking and control of the contractors competence, performances and results in the railway safety field, at the selection moment*.

#### **Safety recommendation no.4**

To ask the infrastructure manager the revision of SMS procedures that have to meet with the criterium code V.3 from the Annex II of the *Regulations 1158/2010*, adding clear provisions for the appointment of the responsibilities to its own staff, *regarding the identification of the norms for the supply of maintenance and materials* for the initial selection level of the suppliers and product purchase.

#### **Safety recommendation no.5**

To ask the infrastructure manager the revision of the *internal procedures for purchases*, being necessary the harmonization of these procedures with the legal provisions regarding the *conformity certification of the products with the technical specifications*.

#### **Safety recommendation no.6**

To ask the infrastructure manager the revision of the *danger evidence*, being necessary a risk analysis for the dangers generated both by the violation of the *safety requirements* for the products and non-meeting with the conditions for the *certification of the conformity with the technical specifications* for the purchased products.

**3.4.12.** The railway accident happened on the 14<sup>th</sup> March 2019, in the railway county Timișoara, track section Arad - Simeria (electrified double-track line), in **the railway station Zam**, on the switch no.5, operated on “deflecting section” and passed trailing, in the running of freight train no.30684 (got by the railway undertaking SC DEUTSCHE BAHN CARGO ROMÂNIA SRL), consisted in the derailment of the first axle from five wagons type Hbbills (loaded with paper rolls).

The investigation report was completed on the 5<sup>th</sup> March 2020.

**Direct cause, contributing factors:**

**Direct cause** of the accident was the fall between the rails of the left wheel (inner rail of the curve – curved stock rail of the switch no.5) of the leading axle from the wagon no.21802475003-4, being the 10<sup>th</sup> one in the composition of the freight train no.30684. It happened following the increase of the gauge value under the load, over the maximum accepted value, given the lateral displacement of the curved stock rail from the exterior rail of the curve (direction „diverging track” of the switch) under the action of the dynamic forces transmitted to the track by the rolling stock in running.

**Contributing factor:**

- unsuitable technical condition of the wooden sleepers in the point „0”(point of derailment), that did not allow the fastening of the coach screws for the fastening of the metallic plates (slide base plate), so the value of the gauge increased over the maximum accepted value of 1470 mm under the action of the dynamic forces transmitted by the wheels of the rolling stock.

**Underlying causes:**

- violation of the provisions of art.25, paragraphs (2) and (4) from „*Instruction of norms and tolerances for the track construction and maintenance, for tracks with standard gauge no.314/1989*”, regarding the failures that impose the replacement of the wooden sleepers and non-acceptance of the improper sleepers within the switches;
- violation of the provisions 43 (2) from Chapter 4 „Norms of manpower and material consumption”, of „*Instruction for the tracks maintenance no.300-edition in force*” regarding the provision with the norm of manpower for the current manual work maintenance.

**Root cause:**

The root cause of the accident is the non-application of the provisions from the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and requirements relevant for the whole useful life of the tracks in the maintenance process”, part of the safety management system of CNCF „CFR” SA, regarding the sizing of the staff from Line District no.5 Zam, in relation to the total works.

**Safety recommendations:**

The derailment of those five wagons of the freight train no.30684 happened following the improper maintenance of the railway infrastructure.

During the investigation, one found that the maintenance of the track superstructure was not made in accordance with the provisions of the practice codes (reference/associated documents of the procedures from the safety management system of CNCF „CFR” SA).

Considering the non-application of the provisions PO SMS 0-4.07 „Compliance with the technical specifications, standards and requirements relevant for whole useful life of the tracks in maintenance process”, part of the safety management system of CNCF „CFR” SA , was found like root cause of this accident, for the prevention of some accidents that could occur in conditions similar to those presented in this report, AGIFER issue the next **safety recommendation**:

- Romanian Railway Safety Authority – ASFR shall analyse through own actions of supervision how the safety management system of the public railway infrastructure administrator is applied and, if case, shall ask CNCF „CFR”SA, to rectify or to re-assess the measures for keeping under control the own risks.

**3.4.13.** The railway accident happened on the 23<sup>rd</sup> March 2019, in the railway county Brașov, track section Brașov – Sighișoara, line 300 (electrified double-track line), **between the railway stations Bod and Feldioara**, track I, km 188+190, in the running of freight train no.20258, got by the railway

freight undertaking Rail Cargo Carrier România SRL, hauled with the locomotive EA 520, owned by the railway freight undertaking SC Constantin Grup SRL, consisted in the derailment of the second bogie of the wagon series Ha, no.31812743581-2, in the train running direction.

The investigation report was completed on the 16<sup>th</sup> March 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident is the multiple and complete breakage of the rail, happened crossly through the rail head, web and foot, from the right rail in the train running direction.

**Contributing factors:**

- existence of failures generated by the advanced rolling contact fatigue of the rail.

**Underlying causes:**

The underlying cause of the accident was the violation of some provisions from the instructions and regulations, in force, for the track maintenance:

- art.3, a) from „Instruction for the overhauls at the lines – no.303/2003”, regarding the schedule and performance of the overhauls when: „the number of the components - rails, sleepers, fastenings, track bed – with wears, defective or deteriorated following the traffic from their put into the line, it exceeds the capacity of intervention in points within the maintenance works”;
- Annex 4 from „Instruction for the line maintenance no.300/1982”, regarding the cycle of periodical repair and current maintenance with or without packing of sleepers and intermediary lateral displacement;
- art. 3.9, paragraph 6 from „Instruction for the line maintenance no.300/1982”, regarding: within the periodical repair the next works are performed: ..... ” – repair or replacement of the rails out of service (loading with welding of the rail damaged by wheel slip, of the butt-end rails, cutting and grinding of the rail, chamfering of holes for fishplates, etc)”.

**Root causes:** none.

**Safety recommendations:**

During the investigation, the commission found that the identification and management of the risks generated by the lack of maintenance at lines is the responsibility of the infrastructure administrator management, central and county levels, in order to be able to dispose consequently solutions and measures viable for keeping under control the danger of accidents on Romanian public railway infrastructure.

The superstructure maintenance was not performed in accordance with the provisions from the practice codes (reference/associated documents of the procedures from the safety management system of CNCF „CFR” SA).

If the own procedures of the safety management system had been completely applied, as well as the provisions of the practice codes, part of SMS, the infrastructure administrator could have been able to keep the technical parameters of the track between the limits imposed by the railway safety, so preventing the accident occurrence.

The derailment of the wagon series Ha, no. 31812743581-2, in running, happened following the improper maintenance of the railway superstructure.

Considering the factor contributing to the accident occurrence, it being based on underlying causes that are deviations from the practice codes, as well as that, the supervision of the economic operators from the railway field is the responsibility of Romanian Railway Safety Authority – ASFR, the investigation commission does not consider necessary to issue some safety recommendations.

**3.4.14.** The railway accident happened on the 29<sup>th</sup> March 2019, in the railway county Braşov, track section Braşov – Ploieşti Vest (electrified double-track line), in **the railway station Dârste**, in the running of the passenger train no.12392, got by the railway passenger undertaking SNTFC „CFR Călători” SA, consisted in the derailment of first bogie in the running direction of the electric hauling locomotive no. 91 53 0477 268-3.

The investigation report was completed on the 23<sup>rd</sup> March 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident was the climbing of the gauge face of the rail by the leading wheel of the hauling vehicle, following a cumulation of contributing factors.

**Contributing factors:**

- the level difference between the direct lines of the cross over 4-8;
- the difference between the values of the ordinate of the curve of the switch no.4 in comparison with the values of the theoretical ordinates;
- non meeting with the minimum accepted distance between the centres of the direct lines II and III, at the end Y of the railway station Dârste;
- improper length (shorter) of the track panel between switches no.4 and no.8;
- variations of the gauge values within the switches no.4 and no.8 and of the track panel between them, over the accepted value;
- improper technical condition of some sleepers within the switches no.4 and no.8 and of the track panel between them (from which 4 consecutive sleepers within the common crossing of the switch no.4), in the area of the metallic plate fastening, affecting the condition of the fastening of the metallic plates on the sleepers;
- lack of lubrication on the contact surface between the wheel and the rail, following the not-working of the equipment for the lubrication of the wheel flange of the locomotive, corroborated with the lack of the lubrication equipment for rail that lead to the increase of the friction rate between those two contact surfaces and implicitly the increase of the guiding force;
- improper working of the hydraulic damper of the locomotive EA no.268, it leading to the increase of the undamped oscillations generated by the track irregularities.

**Underlying causes:**

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

- Instruction of norms and tolerances for the track construction and maintenance - tracks with standard gauge - no.314/1989, art.15, point 18, regarding the general technical conditions for the switches, art.15.4.d regarding the lay out of the turnouts, art.19.2, regarding the sizes and tolerances of the turnouts and art.20 (g), regarding the failures that impose the taking out of service of the turnouts;
- Regulations for the Railway Technical Operation - RET - no.002-2001 art. 29-(3), regarding the distance between the centre lines of the close tracks in the railway stations.
- Catalogue „Turnouts APCAROM, edition I – 1983 regarding the values established for the ordinates of the closure rail of the diverging track curve of the turnout no.47.
- Technical Specification code ST 31-2016, part B, point 14, regarding the checking of the working of the equipment for the wheel flange lubrication from the locomotive EA no.268;
- Technical Norm 67-006:2011 "Railway vehicles. Types of planned inspections and repairs. Norms of time or norm of km ran for the performance of the planned inspections and repairs", approved by the Order of the Minister of Transports and Infrastructure no.315/2011, amended by the Order of Minister of Transports and Infrastructure no.1359/2012, chapter 3, regarding:
  - o withdrawal from service of the locomotive EA no.268 when it reaches the norm of time stipulated for the performance of the planned repairs;
  - o compliance with the cycle of planned repairs for the locomotive EA nr.268.
- Operational procedure code PO-0-7.1-14 got by SNTFC „CFR Călători” SA, point 4.7.5 and Annex no.4, regarding the periodicity for the performance of the planned repairs.

**Root causes:**

- lack of some provisions regarding the checking of the position of the nozzles/grease spray nozzles/oil of the equipment for lubricating the flange of wheel and the need of working of this equipment after the reprofiling;
- improperly working out of the operational procedure code PO-0-7.1-14, that is, it does not contain concrete provisions regarding the measures that have to be taken in case the rolling stock reaches the norm of time/km for the performance of the planned repairs;

- lack of action for the assessment of the risks for the reprofiling of the running surfaces of the wheelset by the owner of the underground lathe;
- non-identification by the administrator of the public railway infrastructure of the existence danger of a high rate of friction between the rail and the running surfaces reprofiled in the underground lathe of the traction unit existing in that area;
- violation of the provisions of the Order of Minister of Transports no.535/2007 (with further amendments) regarding the approval of the norms for granting the safety certificates for the performance of railway transports in Romania, Annex – Norms for granting the safety certificates Art.19(3), Art.15(4), pct.12 – regarding the supporting documents necessary for the renewal of the safety certificates.

**Additional remarks:**

During the investigation, there were next findings on some deficiencies and gaps, without relevance for the conclusions on the accident causes:

- during the modernization of the underground lathe, the executant found some nonconformities at the mechanical part and at the equipment for the optical measurement of the lathe, like: wear at the driving roller and of the guiding rollers, mechanical clearances in the centres, worn pistons and wear at rollers of measurement. According to the final reception minute, the removal of these nonconformities is the responsibility of the owner of the lathe, respectively SNTFC „CFR Călători” SA, and until the date of the working out of this report, these were not removed;
- not all the quotas and conditions from the technical specification code ST 01-2017 are in accordance with the provisions from the reference documents mentioned in the specification. Also, there is not stipulated the compulsoriness to perform the checking the contour of the profile newly got, with the pattern.
- the regulation framework for the repair of the wheelset, respectively the reprofiling of the running surfaces used in Romania (Instruction no.931/1986, respectively STAS 112/3- 90), is not in accordance with European standards harmonized, regarding the interoperability of the railway system under the incidence of the Directive RAIL 2008/57/EC from the 28<sup>th</sup> August 2018 (to see chapter C.6.6).
- the railway County Braşov uses for the maintenance and repair of the railway infrastructure, respectively for the performance of the measurements at the track geometrical elements, equipments for the track measuring (gauge measures) that are metrological certified, but for which it did not present Certifications granted by AFER.
- the depot Braşov performed the reprofiling of the running surfaces at the locomotive involved in the accident from the 28<sup>th</sup> March 2019, without meeting with the provisions of the Minister of Transports’ Order OMT no.290/2000.
- after re-railing the derailed wheels, the locomotive EA no.268 was routed in active condition, like main locomotive of the specialized breakdown train to the locomotive depot Braşov. During the running of this train, on the line 314 C between Dârste and Braşov - Transit Group railway stations, the first axle of the locomotive derailed in the running direction. During the investigation, the commission found that some provisions were missing in in the instructions and internal regulations of the railway undertaking for the position of a motorised railway vehicle, involved in a derailment, within a train for its running to a traction unit.

**Measures taken:**

During the investigation, the commission asked the structures that belong to the economic operators involved, directly involved in the accident, answers about the measures taken, after the accident, in order to prevent the occurrence of similar accidents. Until getting the final investigation report, the next answers were received:

1. SRTFC Braşov informed that the next measures were taken for the prevention of some similar accidents:
  - assuring the proper working of the equipments for the lubricating of the wheel flanges from the locomotive;
  - the locomotive crew meets strictly with the speeds, both in the running and in the shunting;

- input and permanent checking of the entry data in the memory of the underground lathe, so the size quota resulted following the reprofiling be between the accepted instruction limits;
  - beginning of the identification of the risks associated to the railway operations for the reprofiling of the running surfaces of the wheelsets, and at the end, supplying the copies of the results got to the interested factors.
2. SRL „CFR SCRL Braşov” SA informed about the next measures taken for the prevention of some similar accidents:
- after the wheel turning, the turners shall check visually and with the pattern the surfaces resulted and shall write down these in the work register of the lathe;
  - the working order shall be submitted to the workshop of the repair section, for the performance of the adjustments after the turning, in accordance with the rolling stock;
  - after the arrival of the rolling stock in the owner depot, there are compulsory the complete measurements at the tyres, especially of the quota value  $q_r$ ;
  - the turners shall make the greasing of the end axles of the locomotive, especially at electric locomotives, in the connection between the wheel flanges and the running surface.
3. The railway county Braşov did not inform if or which measures took for the prevention of similar accidents in the future.

**Safety recommendations:**

According to the provisions of art.26(2) from the Government Emergency Ordinance no.73/2019 for the railway safety and to the Directive (CE) no.49/2004, the safety recommendations are addressed to Romanian Railway Safety Authority - ASFR, that shall ask and monitor their implementation by the identified part in the recommendation.

**Safety recommendations associated to the accident occurrence:**

In Dârste railway station, end Y, one found that the distance between the centrelines of the direct tracks II and III was not met with, also the cross level between them.

**Recommendation no.1**

CNCF „CFR” SA shall analyse the possibility to assure the distance between the centrelines of the direct tracks II and III and of the cross level between the tracks, as well as the relocation of the turnouts no.4 and 8, meeting with the length of the connecting crossover between them.

After the reprofiling of the running surfaces at the wheelset for the railway vehicles, on the underground lathe type HEGENSCHIEDT – 106 CNC, there is no provision for the performance of works for the repositioning of the nozzles/pulverisers of the equipment for the greasing of the tyre and the need of its working following that operation.

**Recommendation no.2**

SNTFC „CFR Călători” SA shall regulate the compulsoriness to perform the works for the repositioning of the nozzles/ grease spray nozzles of the equipment for the lubrication of the flange of wheel and for the working of this equipment after the reprofiling of the running surfaces at the wheelset, in order to assure that the locomotive running is made in full traffic safety conditions.

For the reprofiling of the running surfaces at the wheelset for the railway vehicles, on the underground lathe type HEGENSCHIEDT – 106 CNC (new activity for the Depot Braşov), there was no action for the assessment of the risks, for keeping under control the risks generated by this activity, in accordance with the provisions of the Regulations (UE) no.402/2013, considering that it is about a change of the operation conditions.

**Recommendation no.3**

SNTFC „CFR Călători” SA shall perform an assessment of the risks for the reprofiling of the running surfaces of the wheelset for the railway vehicles, in accordance with the provisions of the Regulations (UE) no.402/2013, for keeping under control the risks generated by this new activity.

The railway county Braşov, during the identification and assessment of the risks associated to the railway operations, made in accordance with the provisions of the Regulations (UE) no.1169/2010, did not identify the danger of existence of a high friction rate generated by the lack of rail lubricating (in

case of a new profile of tyre), considering the fact that in the Depot Braşov there are carried out reprofiling of the running surfaces, getting a new running profile and there were not fitted automatic lubricating equipments for the rail on the directions of running from the depot to the other hauling section, before the switches highly passed over, on which it is possible to be traffic to the diverging tracks, respectively before the curves with radius under 300 m.

#### **Recommendation nos.4**

CNCF „CFR” SA shall perform the identification of the dangers and the assessment of the risks associated to the railway operations, in accordance with the provisions of the Regulations (UE) no.1169/2010, for the railway counties where there are locomotive depots where one performs reprofiling of the running surfaces and shall dispose the fitting of some automatic equipments for the rail lubricating on the directions of running from the depot, before the switches highly passed over, on which it is possible to be traffic to the diverging sections, and where it shall be considered necessary, for keeping under control the risk of derailment, having like cause a high rate of friction between the running surface of the wheelset and the rail.

#### **Safety recommendations associated to the additional remarks:**

During the modernization of the underground lathe, the executant found some nonconformities at the mechanical part and at the equipment for the optical measurement of the lathe presented in the chapter C.8 point 1. In some conditions, these nonconformities could lead to the getting of a running profile that do not comply with the provisions of STAS 112/3-90. The checking of the running profile newly got can be made only with the pattern existing at the lathe, but the investigation commission found that the compulsoriness for the performance of this operation is no stipulated in the Technical Specification. Considering this issue, it is possible that, from different reasons, the operator working with the lathe, overlook the performance of this checking.

#### **Recommendation no.5**

SNTFC „CFR Călători” SA shall take the measures for the performance of a complete inspection at the underground lathe and for the removal of the negative issues found during the modernization, and shall impose the compulsoriness of checking the new running profile, with the pattern, after each reprofiling.

The investigation commission found that in the technical specification code ST 01-2017 for the reprofiling of the running surfaces of the wheelsets for the railway vehicles on the underground lathe type HEGENSCHIEDT – 106 CNC, not all quotas and conditions for the performance of the reprofiling of the running surfaces, in accordance with the provisions from the reference documents mentioned in the specification.

#### **Recommendation no.6**

SNTFC „CFR Călători” SA shall revise the Technical Specification code ST 01-2017 for reprofiling the running surfaces of the wheelset for the railway vehicles on the underground lathe type HEGENSCHIEDT – 106 CNC, so it be in accordance with the provisions of the regulations in force.

The regulation framework for the repair of the wheelsets, respectively the reprofiling the running surfaces, used in Romania (Instruction no.931/1986, respectively STAS 112/3-90), that includes also the value of the flange angle got after the reprofiling, is not in accordance with European harmonized standards for the interoperability of the railway systems, under the incidence of the Directive RAIL 2008/57/EC, according to OJ C 282 from the 10<sup>th</sup> August 2018. We mention that according to the specialty literature, a low flange angle, like that used for the locomotives in Romania, is not favourable to the safety against the derailment.

#### **Recommendation no.7**

Romanian Railway Safety Authority – ASFR shall begin an action for the harmonization of the national regulation framework with European standards.

The instructions or the internal regulations of the railway undertaking do not contain clear provisions regarding the position of a railway vehicle, involved in a derailment, within the train for its running to a traction unit.

#### **Recommendation no.8**

Romanian Railway Safety Authority – ASFR shall take measures for the regulation of the position of a railway vehicle, involved in a derailment, within a train for the running to a traction unit.

**3.4.15.** The railway accident happened on the 6<sup>th</sup> April 2019, in the railway county Braşov, track section Luduş – Măgheruş Şieu (non-electrified, noninteroperable single-track section, managed by SC RC CF TRANS SRL Braşov), km.72+700, in **the railway station Sângiorgiu Nou**, in the running of passenger train no.16013, got by the railway passenger undertaking SC Regio Călători SRL Braşov, consisted in a fire burst into the motorised wagon no.95 53 9971 602-1 of the multiple unit type AMX, that was composing the train.

The investigation report was completed on the 3<sup>rd</sup> April 2020.

**Direct cause, contributing factors:**

**Direct cause** of the railway accident was the ignition of the filter material from the set of air filters of the of the turbo compressor circuit from the diesel engine.

**Contributing factor:**

- the extension, under the wind conditions, of the sparks resulting from the vegetation fire close to the rails.

**Underlying causes:** none.

**Root causes:** none

**Safety recommendations:**

According to the provisions of art.26(2) from the Emergency Government Ordinance no.73/2019 for the railway safety and of the Directive (CE) no.49/2004, the safety recommendations are addressed to Romanian Railway Safety Authority - ASFR, that shall ask and monitor their implementation by the part identified in the recommendation.

On the track section where the accident happened, respectively in the safety perimeter of the railway infrastructure, there were at that moment and not only, many vegetation fires caused by the land owners, these fires extended from the lands to the track.

In the practice codes *Instructions for the activity of the locomotive crew no.201/2007* art. 78 and *Regulations for the train running and shunting of the railway vehicles no.005/2005* art. 336 (3) there are provisions clear for the action way of the driver when „water is above the running surface of the rail”, respectively „train stop until the arrival of the staff in charge with the track maintenance that shall establish the running conditions”. In the above mentioned codes, there are no provisions for the cases where, close to the line, respectively to the safety perimeter of the railway infrastructure, the vegetation fires could be a danger of accident. This fact can induce to the driver a possible responsibility in the future in case of he stops or does not stop the train.

In the context of these above mentioned, the investigation commission issues the next recommendations:

1. SC RC-CF TRANS SRL, like manager of the noninteroperable railway infrastructure and SC Regio Călători SRL, like railway undertaking on these track sections, shall warn the passengers and the inhabitants of that area, through methods specific to the railway system or through the administrative units (city halls), that the danger represented by the vegetation fires in the safety perimeter of the railway infrastructure can generate a fire for the running railway vehicles, with effects for the health of passengers.
2. Romanian Railway Safety Authority – ASFR shall analyse the opportunity to add to the practice codes above mentioned or to add to the results of the actions for the identification of the risks associated to the railway operations, performed by the railway undertaking involved, provisions clear for the action in case of some vegetation fires in the safety perimeter of the railway infrastructure and concrete measures for the action in such situations, in order to ensure that the risk of fires at the railway vehicles, generated by the danger, given by the vegetation fires in the perimeter of railway infrastructure, is kept under control.



**3.4.16.** The railway incident happened on 15<sup>th</sup> April 2019, in the railway county Craiova, in **the railway station Pitești**, the passenger train no.1894, got by the railway undertaking SNTFC „CFR Călători” SA, was received into the railway station on the entry route made wrong on the line no.4, occupied, instead the entry route ordered by the movements inspector on the open line no.2.

The investigation report was completed on the 9<sup>th</sup> April 2020.

**Direct cause, contributing factors:**

**The direct cause** of the railway incident was a human mistake appeared in the process of making the reception route for the passenger train no.1894, the mistake consisted in the improper operation of ATM installation by the points inspector, in observing the procedures in force.

**Contributing factors:**

- the pointsman made wrong the reception route for the passenger train no.1894, after receiving the disposition from the points inspector;
- the points inspector did not check the keys for the switch locks, when he received them from the pointsman, after making the reception route;
- the points inspector did not take note about the position of the indicator of the switch position, after making the reception route;
- the points inspector did not check the reception route for the passenger train no.1894, after the pointsman made it.

**Underlying causes:**

- inobservance of the provisions from job description no.422/311/28.06.2018-Railway Station Pitești – Traffic Division for the job points inspector, point 6, paragraph 13, regarding the checking that had to be made by the points inspector, after receiving from the pointsman the keys from the switch locks;
- inobservance of the provisions from the Regulations regarding the work of SBW, ATM, BLA installations in the Pitești railway station – Section Ct3 Roșiori – Division Of Installations Craiova, Chapter III, subchapter I, point 1, paragraph 2, regarding the wrong making of the reception route by the pointsman and the checking that had to be done by the points inspector after receiving the keys of the switch locks from the pointsman;
- inobservance of the provisions from Regulations regarding the work of SBW, ATM, BLA installations in the Pitești railway station – Section Ct3 Roșiori – Division Of Installations Craiova, Chapter III, subchapter III, point 2, regarding the operation of the route buttons of the mechanical panel of keys that had to be done by the points inspector;
- inobservance of the provisions from the Signalling Regulation no.004/2006, art.133, paragraph (1), that is the points inspector did not take note about the indication of the indicator for the switch position;
- inobservance of the provisions from the Regulation for the train running and railway vehicle shunting no.005/2005, art.142, points a and b, regarding the checking by the points inspector of the switches keys brought by the pointsman and of the switch indicators, if they are in accordance with the route ordered.

**Root causes:** none.

**Additional remarks:**

During the investigation there were identified also other deficiencies without relevance for the incident causes, as follows:

1. the railway incident happened on 15<sup>th</sup> April 2019, at about 14.57' o'clock, in the railway station Pitești was not soon notified by the staff of the economic operators that carry out transports and of the railway infrastructure manager, the incident being notified on 16<sup>th</sup> April 2019, at 14.50' o'clock, in observing art.22 – (1) of Regulation for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety, approved by Government Decision no.117/2010:
2. the disposing station movements inspector of the railway station Pitești unlocked the reception route for the passenger train no.1894 before the points inspector from the Signal Box no.3 receive the

report on the stabling of the train on the line no.2 , in observing art. 126 – (2) from the Regulation for the train running and railway vehicle shunting, no.005/2005,

3. performance of shunting by forward running and reverse running of the passenger train no.1894 after its stop after the driver observed that the train had entry the route on the line no.4 occupied, the shunting was performed without handing over the running order to the driver, infringing the *Annex 10 – Cases of handing over the running order to the driver* from Instructions for the activity of locomotive crew no. 201/23.11.2006.

**Measures taken:**

The agents from the Signal Box no.1 cancelled the operation of the switch no.21, as well as the annulment of the locking of switch no.21 from the mechanic panel of keys from the Signal Box no.1. The operation of switch no.21 was passed to the agents of Signal Box no.3, as well as the locking of switch no.21 was introduced in the mechanic panel of keys from the Signal Box no.3, instead the locking of the switch 33/51.

**Safety recommendations:**

The investigation commission considers that the incident was generated by a punctual human mistake of the points inspector, that did not fully meet with the instruction regulations.

The railway undertaking made procedures for the movements staff, being also identified dangers that can generate the risk of wrong making of the route and the consequences that can appear in a such situation, but without a proper management of these risks.

In these conditions, the investigation commission considers that the issuing of safety recommendations is not needed.

**3.4.17.** The railway incident happened on the 16<sup>th</sup> April 2019, in the railway county Timisoara, in the running of freight train no.70940-1, got by the railway freight undertaking SC MMV Rail România SRL, that was going to park on the line no.III in **the railway station Milova**, passed the exit signal X III on stop position, it having the position „STOP without pass the signal in stop position! *Day and night*, a light unit of red colour to the train.”, the train continued to run after passing the signal in stop position, it entered the track II to Radna (track closed following the rehabilitation works of the corridor IV), then the first 5 axles of the locomotive derailed, in the running direction, following the lack of rails and sleepers.

The investigation report was completed on the 9<sup>th</sup> April 2020.

**Direct cause, contributing factors:**

**Direct cause** of the incident was the failure in meeting with the position “STOP without pass the signal in stop position! *Day and night* – a light unit of red colour to the train” given by the light exit signal X III of the railway station Milova and passing the signal in stop position without permission.

**Contributing factors:**

- not considering of the position of the light entry signal X;
- not tracking of the position of the light exit signal X III;
- noncompliance with the provisions how to operate de emergency brakings;
- the fatigue generated by the exceeding of the continuous maximum duty accepted for the locomotive;
- not taking of measures for the locomotive and train crew change, or sending it for rest in sleeping room, according to the specific regulations.

**Underlying causes:**

- inobservance of the provisions of Regulation for railway technical operation no.002/2001, art.59-(4), that prohibit the passing of a signal in stop position;
- inobservance of the provisions of Signalling Regulation no.004/2006, art.21, regarding the position of a light entry signal X;
- inobservance of the provisions of Signalling Regulation no.004/2006, art.23, regarding the position of a light exit signal X III;

- inobservance of the provisions of the Instructions for the activity of the locomotive crew no.201/2007, art.9, paragraph (1), letter o) regarding the performance of the operations stipulated by the specific instructions for the operation of the informatic and traffic safety systems put into the locomotives;
- inobservance of the provisions of Instructions for the activity of the locomotive crew no.201/2007, art.59, paragraph (1), letter a) regarding the stops unforeseen in the train diagram;
- inobservance of the provisions of Instructions for the activity of the locomotive crew no.201/2007, art.132, point a, regarding what the driver must not do in the train driving;
- inobservance of the provisions of the Order 17 DA/610/1987 – Instructions regarding the working, operation and maintenance of the safety and vigilance devices (DSV) and of the installations for the punctual control of the speed (INDUSI);
- inobservance of the provisions of Order no.256/2013 regarding the maximum continuous duty for the locomotive, art.3, letter b), and art.8, paragraphs (1) and (3) regarding the length of the maximum continuous duty accepted for the locomotive, respectively the rest of the locomotive crew;
- inobservance of the provisions of Working Instructions – Maximum continuous duty accepted for the locomotive Code:IL-PP-07-02 of SC MMV Rail România SRL, point 3, paragraph 5 and point 4 letters b), c) and d) regarding the length of the maximum continuous duty accepted for the locomotive, respectively the measures taken by the Traffic Control Department and the locomotive crew for compliance with the duty length;
- inobservance of the provisions of Working Instructions regarding the record, processing, filling up, checking and rectification of the journey reports and of the record of the activity for the jobs driver, train manager, shunter and examiner of SC MMV Rail România SRL, subpoint 4.4, paragraphs 1, 2, 3 și 4 regarding the length of the maximum continuous duty for the locomotive, respectively the measures taken by the Traffic Control Department and the locomotive crew for compliance with the duty length;
- inobservance of the provisions from Job Description – traffic controller/staff command, code 432201 of SC MMV Rail România SRL, point 5, subpoint 5.2, letter h, i and j, regarding staff command, recording in the register of dispositions, tracking and guidance of the shift team before the maximum continuous duty for the locomotive ends.

**Root causes:** none.

**Additional remarks:**

During the investigation, other deficiencies, without relevance for the causes, were identified, as follows:

- in the journey reports of the locomotive crew, in the box „sleeping room location for the rest outside the home”, there are not written down the data for the identification of the accommodation units, provided that in the respective buildings, there were no sleeping rooms specially arranged for this purpose, against the provisions of art.8(3) from the Norms for the maximum continuous duty accepted for the locomotive, for the locomotive crew in Romanian railway system, approved by Order of Minister of Transports no.256/2013;
- in the activity of the locomotive crew, not in all cases, the provisions of art. 8(1) of the Norm above mentioned, regarding the rest time outside the home, that is not half of the of the time of worked before are not met;
- the driver, in case of emergency braking generated by the installations for punctual control of locomotive speed (INDUSI), does not operate the braking level of the driver KD2 on train quick braking, but he operates the button “Re-filling” of the installation INDUSI (case of emergency braking, frequency 1000 Hz și 2000 Hz in the railway stations Pui and Milova) against the provisions of Order no.17DA/610/1987 – Instructions regarding the working, operation and maintenance of the safety and vigilance devices (DSV) and of the installations for the punctual control of the speed (INDUSI), point IV.

**Safety recommendations:**

During the investigation, the commission found that the incident was generated by a punctual human mistake of the driver, following the lack of attention and of the fatigue accumulated, that led to the complete infringement the instruction provisions.

The railway undertaking made procedures for the locomotive crew, being also identified dangers that can generate the risk of passing the exit signal in stop position, that order the train stop, exceeding the maximum continuous duty for the locomotive, the consequences that can appear in a such situation, but without a proper management of these risks.

In these conditions, the investigation commission considers that the issuing of safety recommendations is not needed.

**3.4.18.1.** The railway accident happened on the 20<sup>th</sup> April 2019, in the railway county Constanța, track section Palas – Capu Midia (non-interoperable track section, managed by SC GRUP FERROVIAR SA), non-electrified single-track line, **between the railway stations Năvodari and Constanța Mărfuri**, km 17+573, in the running of freight train no.89970, got by SC Tehnotrans Feroviar SRL, consisted in the derailment of 4<sup>th</sup> wagon from the composition of the train

The investigation report was completed on the 15<sup>th</sup> January 2020.

#### **Direct cause, contributing factors**

**The direct cause** of the accident was the fall of the left wheel of the second bogie, in the running direction, between the rails, from the inner rail of the curve, following the exceeding of the maximum accepted value of the gauge over the tolerance limit accepted in operation.

#### **Contributing factors**

Unsuitable technical condition of the track, generated by keeping in operation, at the derailment site, of some wooden sleepers, whose technical condition was imposing their replacement and the track bed was choked.

#### **Underlying causes**

- violation of the provisions of art.25, point 4 from *"Instruction of norms and tolerances for the track construction, lines with standard gauge no.314/1989"* that establishes the conditions for keeping the wooden sleepers in operation;
- violation of the provisions of art.1.13 from *"Instruction of norms and tolerances for the track construction, lines with standard gauge no.314/1989"*, with reference to *"The track gauge has not to be no way over 1470 mm or under 1432 mm;*
- violation of the provisions of Sheets no.3 and no.4 from the Instruction 305/1997 *"regarding the establishing of deadlines and order for the performance of the track inspections"* concerning the performance of the track inspection;
- the rules and the basic tasks included in ROF, chapter B.2, subchapter B.2.1, points a) 1,2,3 were not met with, because all the submitted documents are not properly filled in, in accordance with the instructions regulating them;
- the provisions of *"Instruction for the lineman, head of district in charge with the track maintenance"* no.323 from 1965 were not met with, that is the lack of drawing out or wrong filling of the primary documents, basis for all works that have to be scheduled, performed and surveyed by the lineman.

**Root causes:** none

#### **Measures taken:**

After the railway accident occurred, with the act no. 277 / 11.19.2019, SC TEF Logistică SRL informed us that the remediation work has been performed, as follows:

- 563 concrete sleepers TW49 have been replaced;
- 26 normal wooden sleepers;
- there were carried out works of intermediate packing of sleepers with BNRI - 3 such movements;
- 3 such movements were made with Plasser wagon for execution of intermediate packing of sleepers and trimming up to 20 cm;

- because in June, August and September 2019, at km 1 + 175, 3 other railway accidents happened and the curves sheet of the line 818 was not found, a team of topographers was hired in order to measure the line curves. At this moment, work is in progress.

### **Safety recommendations**

The investigation commission concluded that not provision of the material and human resources corresponding to the requirements determined by the technical conditions necessary for the performance of the railway infrastructure maintenance, the wrong filling and the lack of the primary documents for lines is a danger for the railway safety, it leading to the issuing of some recommendations.

There was found out that this accident was the 5<sup>th</sup> one in which AGIFER found and wrote down these issues.

Considering the factors contributing to the accident occurrence, which are based on the underlying causes, that are deviations from the practice codes, as well as the fact that the surveillance of the economic operators from the railway system is the responsibility of Romanian Railway Safety Authority – ASFR, for the railway accident happened on the 20th April 2019, at 4:40 o'clock, between the railway stations Palas and Capu Midia, km 15+573, in the running of the freight train no.89970, the investigation commission recommends ASFR shall analyze if the railway infrastructure manager SC Grup Feroviar Român SA is still complying with the conditions that were basis for the issuing of the safety authorizations types A and B.

**3.4.19.** The railway accident happened on the 21st April 2019, in the railway county Timișoara, on the non-interoperable running line, single-track and non-electrified one, managed by RC-CF Trans SRL, **between the railway stations Vasiova and Reșița Nord**, in the running of freight train no.69492-1 (got by the railway freight undertaking Tim Rail Cargo SRL), consisted in the derailment of 2 wagons of the train.

The investigation report was completed on the 13<sup>th</sup> April 2020.

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

**The direct cause** of the accident happened at km 57+230, on the running line Vasiova – Reșița Nord, was the guiding wheel R1, that is the left wheel of the first axle from the first bogie of the 14<sup>th</sup> wagon, after the locomotive, left the running surface of the head of the inner curve rail, and fall inside the track.

It happened following the improper technical condition of the wooden sleepers from the accident site, allowing the growth of the track gauge over the maximum accepted value, under the action of the dynamic forces transmitted by the wheels of the rolling stock in running.

### **Contributing factors:**

- keeping within the track of 7 improper wooden sleepers, consecutively, at the derailment site, that did not ensure the fastening of the screws at the metallic plates that were at the ends of the sleepers from exterior rail of the curve;
- exceeding of the maximum load accepted on the axle at the wagon no.33876735756-3 (loaded with raw cast iron), being the 14<sup>th</sup> after the locomotive of the freight train no.69492-1.

### **Underlying causes:**

- violation of the provisions of art.25, points 2 and 4 from the "Instruction of norms and tolerances for the construction and maintenance of the track for lines with standard gauge" - no.314/1989, regarding the failures that impose the replacement of the wooden sleepers, respectively the rejection of some improper sleepers from the track;
- violation of the provisions of art.3.1 and 3.2 from the "Regulations for the mutual use of the wagons in the international traffic RIV" – Annex II "Loading prescriptions", regarding the maximum load on the axle and loading limits.

### **Root causes:**

- partial application of the provisions of the system procedure code PS-61 "Management of risks", revision 0, part of the safety management system of the non-interoperable railway infrastructure manager SC RC - CF Trans SRL Brașov, regarding the identification of the track geometry failures;

- inefficient management of the risks generated by the danger represented by the exceeding of the maximum load accepted on the wagon axle (following the wagon overloading with goods by the deliverer) by the railway freight undertaking SC Tim Rail Cargo SRL Timișoara.

**Measures taken:**

Soon after the accident, within the track between km 57+000 and km 58+000, 200 normal wooden sleepers were replaced and there were performed works for the rectification of the track gauge and of the cross section.

**Safety recommendations:**

With reference to the railway accident investigated, one found that the derailment was generated by the improper condition of some parts of the railway infrastructure and by the exceeding of the maximum load accepted on the axle of the wagon no. 33876735756-3 (loaded with raw iron), being the 14<sup>th</sup> one after the locomotive of the freight train no.69492-1.

Considering the nonconformities found during the investigation of this accident, regarding the exceeding of the maximum load accepted on the axle of the wagons, respectively the technical condition of the railway infrastructure at the accident site, as well as that the continuous supervision of the railway superstructure and infrastructure is one of the main duties of the staff in charge with track maintenance, and the safety levels that have to be reached are expressed through the criteria for the risk acceptance and defined by the objectives of common safety, the investigation commission considers necessary to issue the next *safety recommendations*:

1. Romanian Railway Safety Authority – ASFR shall take care that the non-interoperable railway infrastructure manager SC RC – CF Trans SRL has the resources and also the capability to meet with the requirements for the maintenance of the railway infrastructure, that were basis for the granting of the safety authorization;
2. Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking SC Tim Rail Cargo SRL carried out a risk analysis for the danger represented by the consignor.

**3.4.20.** The railway incident happened on the 28<sup>th</sup> April 2019, in the railway county Craiova, track section Craiova – Filiași, electrified double-track line, in **the railway station Craiova**, the light electric locomotive EA 028, got by the railway undertaking SC Deutsche Bahn Cargo România SRL, stopped on the line no.9, started to run and passed the light exit signal X9 in stop position "a light red to the train – Stop without pass the signal in stop position!", it forced the switch no.62 from the end Y of the railway station, stopping on the cross-over no.54-56.

The investigation report was completed on the 22<sup>nd</sup> April 2020.

**Direct cause, contributing factors:**

**Direct cause** of the incident is the release of the stop brake after its applying, following the failure in the compliance with the operations for the application of this type of brake.

**Contributing factors:**

- nonoperation of the lever for the isolation of the main air reservoirs on „OFF” – closed;
- nonoperation of the lever for the isolation of the stop brake on „OFF” – closed.

**Underlying causes:**

- inobservance of paragraph 6, point 8.8 – "COMMANDS DURING THE LOCOMOTIVE STABLING" from "SPECIFICATION FOR THE USE of the locomotive LE-MA, Vol.3, GUIDE FOR DRIVING AND BREAKDOWN REPAIRS" and of paragraph 5, point "DURING THE LOCOMOTIVE STABLING" from "INSTRUCTIONS FOR THE OPERATION OF THE STOP BRAKE", regarding the closing of the lever for the isolation of the main air reservoirs during the locomotive stabling;
- inobservance of the paragraph 6, point "DURING THE LOCOMOTIVE STABLING" from "INSTRUCTIONS FOR THE OPERATION OF THE STOP BRAKE" regarding the closing of the lever for the isolation of the stop brake during the locomotive stabling.

**Root causes:** none.

**Additional remarks:**

During the investigation, there were identified some deficiencies without relevance on the causes of the incident, regarding the compliance with Minister of Transports' Order no.256/29.03.2013 for the approval of norms for the maximum continuous duty accepted for the locomotive, run by the locomotive crew in Romanian railway system.

The locomotive crew, according to the route reports series DM, no.0027 and no.0028 made his duty 20 hours, exceeding with 8 hours the maximum continuous duty accepted, infringing the art.2 of the order above mentioned.

The locomotive crew, according to the route reports series DM, no.0027 and no.0028 made his effective duty of 17 hours, exceeding with 8 hours the effective driving time for the locomotive, infringing the art.2, point b) of the order above mentioned.

**Safety recommendations:**

During the investigation, the commission found out that the incident was generated by a mistake of the driver, that did not meet completely the instructions for the locomotive stabling.

Training of the locomotive crew was made by the railway undertaking, on how it is done in case of stabling this type of locomotive.

In these conditions, the investigation commission considers that it is no need of issuing some safety recommendations.

**3.4.21.** The railway accident happened on the 7<sup>th</sup> May 2019, in the railway county Braşov, track section Braşov - Teiuş (electrified double-track line), when the freight train no.33901 left the **railway station Valea Lungă** (train got by the railway undertaking SNTFM „CFR Marfă” SA), track I, consisted in the burst into flames of the locomotive type EA no.698, running like a dead one in the train composition.

The investigation report was completed on the 5<sup>th</sup> May 2020.

**Direct cause, contributing factors:**

**Direct cause** of the accident is the overheating of the roller bearing from the engine of the compressor no.1, following the appearance of some high friction forces generated by the untightening between the roller bearing and the rotor shaft, respectively the engine end shield, that led to the ignition of the grease rests, of the paint and of the oil rests from the compressor, existing in the roller bearing box. The locomotive EA no.698, running as a dead on, it had the compressors in working condition.

**Contributing factors:**

- keeping in operation of the locomotive EA no.698, after it has reached the norm of time and km for the performance of the planned repairs;
- lack of the metallic cover for the protection of the electrical panel junction box situated behind the block of equipment S7.

**The underlying causes:**

- Railway norm 67-006:2011 "Railway vehicles. Types of planned inspections and repairs. Norms of time or km run for the performance of the planned inspections and repairs", approved through the Order of Ministry of Transports and Infrastructure no.315/2011, amended through the Order of Ministry of Transports and Infrastructure no.1359/2012, chapter 3, regarding:
  - withdrawal from traffic of the locomotives when they reach the norm of time/km stipulated for the performance of the planned repairs,
  - meeting with the cycle of planned repairs for locomotives
- Operational procedure "Maintenance and repairs at the traction rolling stock" code PO-74.3 got by SNTFM „CFR Marfă” SA, regarding the interval of time for the performance of the planned repairs.

**Root causes:**

- the operational procedure "Maintenance and repairs of the traction rolling stock" code: PO-74.3 does not have actual provisions regarding the measures that have to be taken in case the rolling stock reaches the norm of time/km for the performance of the planned repairs, withdrawal of the

locomotives from operation and their routing for the performance of the planned repairs being done keeping with the limit of the allocated budget;

- the locomotive involved in the accident was written down in the Safety certificate, without meeting with the provisions of the Minister of Transport provisions no.535/2007 (with further amendments) regarding the approval of the norms for the granting of the safety certificates for the performance of railway transports on Romanian railways, Annex – NORMS for the granting of the safety certificates 26 Art.19(3), Art.15 (4), point 12 – supporting documents necessary for the renewal of the safety certificates.

#### **Safety recommendations:**

With reference to the accident happened on the 7<sup>th</sup> May 2019 in the running of the freight train no.33901, one found out that the fire broken into the locomotive EA no.698 was due to its improper technical condition generated by:

- keeping in operation of the locomotive after exceeding the deadline for the performance of the planned repairs, contrary to the Railway norm "*Railway vehicles. Types of planned inspections and repairs. Norms of time or norms of km run for the performance of the planned inspections and repairs*", approved through the Order of Ministry of Transport and Infrastructure no.315/2011, with further amendments;
- lack of the protection parts (cover for the protection of the terminal connection plate S7).

One also found out that the locomotive was written down in the Safety certificate part B, Annex II, without meeting with the legal requirements, respectively without the performance of a technical inspection at that, it doing possible its use, by the railway undertaking with, having an improper technical condition that was not permitting it.

The spread of the fire broken out into the locomotive EA no.698 was generated also by the fact that, though the Emergency Department was notified at 23:41 o'clock and the military firemen arrived at the accident site at 23:54 o'clock, the intervention was possible at 00:59 o'clock, when the power supply from the contact line was cut off and it was connected at earth. The arrival of the gang car in the shortest time possible at the accident site should have limited the damages generated by the accident.

Considering these above mentioned, the investigation commission recommends Romanian Railway Safety Authority:

1. to revise the way of filling in the Safety Certificate part B, Annex II, in order to avoid the writing down of the locomotives that do not comply with the legal requirements.
2. to ask the railway freight undertaking SNTFM „CFR Marfă” SA the revision of the operational procedure ”Maintenance and repairs at the traction rolling stock” code: PO-74.3 for adding provisions regarding the way to manage the risks generated by the use of the locomotives, after reaching the norms of time/km for the performance of the planned repairs, in accordance with the regulations in force.
3. to ask the railway freight undertaking SNTFM „CFR Marfă” SA to make an inventory for adding, at the locomotives from its own stock, the protection parts (covers, doors), whose lack is a danger of fire or endanger the staff safety.
4. to ask the railway infrastructure manager CNCF „CFR” SA the disposal of measures so that the power supply cutting and the earth connection be made as soon as possible in order to permit the effective intervention in the area with electrified line, in emergency situation.

**3.4.22.** The railway accident happened on the 13<sup>th</sup> May 2019, in the railway county București, in **the railway station Chitila**, in the running of freight train no.80964 (got by the railway undertaking SC Tehnotrans Feroviar SRL), consisted in the derailment of the second bogie from the 14<sup>th</sup> wagon of the train, in the running direction.

The investigation report was completed on the 12<sup>th</sup> May 2020.

#### **Direct cause, contributing factors:**

**The direct cause** of the accident is the unfastening of the tyre from the wheel no.6, followed by its turning and cross movement on the wheel centre, it leading to the accidental change of the distance



between the inner faces of the wheel tyres (gauge) of the wheelset corresponding to the wheels 5÷6 from the wagon no.84539305630-2 and its derailment.

Unfastening of the tyre happened following the decrease in time of the fastening forces between the tyre and the wheel centre, following the thermic and mechanic stresses appeared in the operation of the wheelset.

**Contributing factors:**

- keeping in operation of the wagon no.84539305630-2, although it had the deadline for the performance of the intermediary inspections (RRu and RIF) exceeded starting with the 8<sup>th</sup> April 2019;
- lack of the paint marks situated at 90<sup>0</sup> to each other on the tyre of the wheel no.6, it making heavier the detection of its turning on the wheel centre during the technical inspections and brake tests.

**Underlying causes:**

- inobservance of the provisions of art.6, paragraph (2), letters c) and h), art.9, paragraph (2), letters c) and i) and art. 22, paragraph (5) corroborated with those from the point 20 of the Table 1 from the Instructions for the technical inspection and maintenance in operation no.250/2005, regarding the way to treat a wagon at which the paint marks made at 90<sup>0</sup> to each other on the tyres of the wheels are missing .
- inobservance of the provisions from pct.2.2.2 of the Railway Norm "Railway vehicles. Types of planned inspections and repairs. Norms of time or km run for the performance of the planned inspections and repairs", approved by Order of Minister of Transports and Infrastructure no.315/2011, regarding the obligation of the freight wagon owners to submit them to intermediary technical inspections (RRu, RIF, RIT) at half of the interval of time for periodical repair - RP.

**Root cause:**

- non-application by the entity in charge with the maintenance of the wagon involved of the provisions from its own procedure for the maintenance management code PSMI-18-THF "Management of the wagon maintenance" regarding the monitoring and withdrawal from operation, in time, of the wagons from own fleet, due for inspections and repairs.

**Measures taken:**

After the occurrence of the railway accident, the management of SC Tehnotrans Feroviar SRL, communicated that the next measures were taken:

- the staff specialized in wagons was informed, during the meetings for theoretical training, about the accident occurrence;
- one issued a decision of the general manager regarding the meeting with the provisions of the Procedure for the maintenance management code PSMI-18-THF "Wagon maintenance management".

**Safety recommendations:**

With reference to the accident from the 13<sup>th</sup> May 2019, in the running of the freight train no.80964, one found that it happened following the unfastening of the tyre from the wheel no.6, followed by its turning on the wheel centre, it leading to the accidental change of the distance between the inner faces of the wheel tyres (gauge) of the wheelset.

Identification of the tyre turning on the wheel centre was made heavier by the lack of the paint marks at 90<sup>0</sup> to each other on the tyre of the wheel no.6.

Also, the non-application by SC Tehnotrans Feroviar SRL of the provisions from its own procedure for the maintenance management code PSMI-18-THF "Management of the wagon maintenance" regarding the monitoring and withdrawal from operation, in good time, of the wagons from own fleet, due for inspections and repairs, it led to keeping in operation of the wagon no.84539305630-2, although it had the deadline for intermediary inspections (RRu and RIF) exceeded starting with 8th April 2019.

Taking into account the root cause, basis for the occurrence of this accident, AGIFER issues the next safety recommendations:

1. Romanian Railway Safety Authority – ASFR shall take care that SC Tehnotrans Feroviar SRL, like entity in charge with the maintenance can ensure, within the maintenance management system

established, the management of the withdrawal from operation of the wagons for their maintenance in case of failures.

2. Romanian Railway Safety Authority – ASFR shall take care that SC Tehnotrans Feroviar SRL, like railway freight undertaking, within the safety management system, shall re-assess the risks generated by the withdrawal from operation of the wagons for their maintenance.

**3.4.23.** The railway accident happened on the 26<sup>th</sup> May 2019, in the railway county Timișoara, in **the railway station Milova**, in the running of passenger train no.2046, got by the railway passenger undertaking SNTFC „CFR Călători” SA, consisted in the derailment of the last axle (in the running direction) of the hauling locomotive EC-117.

The investigation report was completed on the 14<sup>th</sup> April 2020.

**Direct cause, contributing factors:**

**Direct cause** of the accident was the operation of the switch no.6 during the passing of the train over it.

**Contributing factors:**

- the failure of the track circuit of the switch no.6 that imposed the train receiving upon the calling-on signal.
- the heavy workload in the railway station, generated by the planned track closures necessary for the modernizations performed on the corridor IV.

**Underlying causes:**

- violation of the provisions of the instruction for the operation of the equipment from the railway station Milova.

**Root causes:**

- non-performance of an analysis of the change in accordance with the EU Regulations no. 402/2013 regarding the change generated by the rehabilitations of the railway infrastructure between Radna – Milova – Conop;
- not working out, within 10 days, at least, before the beginning of the works, of the temporary regulations regarding the operation of the equipments, as well as the performing of the traffic and shunting of the railway vehicles;
- the activity monitoring did not identify the dangers and risks associated in its own activity, following the new running conditions.

**Measures taken:**

On the 22<sup>nd</sup> July 2019, the railway county Timișoara carried out an analysis of risks and assessment of risks for the works at the tracks and traffic equipments, on the track II, between the railway stations Milova and Radna.

On the 24<sup>th</sup> July 2019, the railway county Timișoara worked out a Plan of Measures for keeping under control the risks within the rehabilitations at the railway infrastructure performed between Radna – Milova – Conop, consisting in the closing of the traffic on the track II.

**Safety recommendations:**

Considering the root causes of the accident, the investigation commission recommends Romanian Railway Safety Authority shall take care that the public railway infrastructure administrator CNCF „CFR” SA shall do an **analysis of the change** in accordance with EU Regulations no. 402/2013 regarding the common safety method for the assessment and evaluation of the risks, at the rehabilitations of the railway infrastructure with impact on the performance of traffic and shunting, **before the works beginning**.

**3.4.24.** The railway accident happened 1<sup>st</sup> June 2019, in the railway county Timișoara, track section Reșița Nord – Berzovia (noninteroperable track section), non-electrified single-track section managed by RC - CF TRANS SRL, between **the railway stations Reșița Nord and Vasiova**, km

53+900, consisted in the derailment of 3<sup>rd</sup> bogie, of the multiple unit AMX 572-7, composing the passenger train no.16104 (got by the railway undertaking REGIO CĂLĂTORI SRL).

The investigation report was completed on the 28<sup>th</sup> May 2020.

**Direct cause and contributing factors:**

**The direct cause** of the accident was the leading wheel of the first axle from the bogie no.3 left the running surface of the inner rail of the curve, right deviation (running direction), km 53+900 of the running line Vasiova – Reșița Nord, and it fell inside the track.

It happened following the improper condition of the wooden sleepers at the accident site, allowing the increase of the track gauge over the maximum accepted value, under the action of the dynamic forces transmitted by wheels of the rolling stock in running.

**Contributing factors:**

- keeping within the track of 5 improper wooden sleepers, from which 3 ones in series, at the derailment site, that did not ensure the proper fastening of the metallic plates at the exterior of the curve, allowing their movement radially, in the sense of increasing the gauge, under the dynamic effect of the trains in running.

**Underlying causes:**

- infringement of the provisions of art.25, points 2 and 4 from *"Instruction of norms and tolerances for the construction and maintenance of track, for lines with standard gauge"* - no.314/1989, regarding the failures that impose the replacement of the wooden sleepers, respectively the non-acceptance to get within the track some improper sleepers.

**Root cause:**

- non-full application of the provisions of the system procedure code PS-61 *"Risks management"*, revision 0, part of the safety management system of the non-interoperable infrastructure manager RC - CF TRANS SRL regarding the identification of the track geometry failures.

**Safety recommendations:**

The railway accident happened following the keeping within the track of 5 improper wooden sleepers, 3 of them in series, so, under the action of the dynamic forces transmitted by the wheels of the rolling stock, the respective sleepers gave up, the track gauge reaches a value over the maximum accepted one in operation, generating the derailment of the wheels, by their fall between the rails.

Considering the improper technical condition of the railway infrastructure existing at the accident site, where, on the 21<sup>st</sup> April 2019 a derailment of a train in running happened and taking into account that the safety levels to be achieved are expressed through criteria for the risk acceptance and defined by the common safety objectives, the investigation commission considers necessary to issue the next safety recommendation:

- Romanian Railway Safety Authority – ASFR shall make sure that RC-CF TRANS SRL, as manager of noninteroperable infrastructure, makes an analysis of the risk associated to the danger generated by keeping in operation of the improper wooden sleepers. ASFR shall also monitor, through specific actions, the way the measures resulted following the analysis, for keeping under control the risk of a similar accident are implemented by the manager of the noninteroperable infrastructure RC-CF TRANS SRL.

**3.4.25.** The railway accident happened on the 7<sup>th</sup> June 2019, in the railway county București, track section București Nord - Videle (electrified double-track line), in **Bucureștii Noi railway station**, Governmental line, km 0+270, in the running of the freight train no.23052-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), consisted in the derailment of two wagons, the 7<sup>th</sup> and the 8<sup>th</sup> ones after the locomotive.

The investigation report was completed on the 27<sup>th</sup> May 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident is the fall of the of the left wheel of the first axle from the first bogie between the rails, in the running direction of the wagon no.815366523125 (the 8<sup>th</sup> one from the

locomotive). It happened following the increased of the gauge value over the maximum accepted value, given the lateral displacement of the exterior rail of the curve under the action of the dynamic forces transmitted to the track by the moving rolling stock.

**Contributing factors:**

- improper technical condition of the wooden sleepers from the area of the point of derailment, that did not allow the fastening of the coach screws for the fixing of the metallic plates, so under the action of the dynamic forces transmitted to the rails by the wheels of the rolling stock, the gauge value increased over the maximum accepted value of 1470 mm;
- keeping within the Governmental line of improper wooden sleepers, against the provisions of art.25, paragraphs (2) and (4) from *"Instruction of norms and tolerances for the construction and maintenance of the lines with standard gauge no.314/1989"*, following the insufficient quantities of wooden sleepers supplied to the Line District no.1 Bucureștii for the track maintenance and repair;
- under sizing of the worker staff existing in the Line District no.1 Bucureștii Noi, staff in charge with the maintenance of the railway infrastructure from the accident site.

**Underlying causes:**

- non-compliance with the provisions from art.25, paragraphs (2) and (4) from the *"Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no.314/1989"*, regarding the failures that impose the replacement of the wooden sleepers ad keeping within the track the unsuitable sleepers;
- non-compliance of the provisions from point 4.1., chapter 4 *"Norms of manpower and material consumption"*, from *"Instruction for the track maintenance no.300/1982"* regarding the provision of the norm of manpower to the current manual labour.

**Root cause:**

Non-application of the provisions from the operational procedure code PO SMS 0-4.07 *"Compliance with the technical specifications, standards and requirements relevant for whole life time of the tracks in the maintenance process"*, part of the safety management system of CNCF „CFR” SA, regarding:

- provision of the material basis necessary for the periodic maintenance and current repair, that is the provision of the sufficient quantities of sleepers, according to the provisions of point III.2 *"Provision of the material basis"* from the flow diagram of the maintenance process Annex no.1, it leading to the non-performance in time of the current works for the replacement of the unsuitable sleepers;
- sizing of the staff from the Line District no.1 Bucureștii Noi, for the total of works.

**Safety recommendations:**

The derailment of those two wagons of the freight train no.23052-1 happened following the improper track geometry, given the unsuitable maintenance of the railway infrastructure.

During the investigation one found that the maintenance of the track superstructure was not made in accordance with the provisions of the practice codes (reference/associated documents of the procedures from the safety management system of CNCF „CFR” SA).

Considering that the inobservance of the provisions PO SMS 0-4.07 *"Compliance with the technical specifications, standards and requirements relevant for the whole life time of the track in the maintenance process"*, part of the safety management system of CNCF „CFR” SA was found as root cause of this accident, in order to avoid the occurrence of accidents that could happen in similar conditions to those presented in this report, AGIFER issues for Romanian Railway Safety Authority - ASFR, the next safety recommendation:

- to analyse through own surveillances the way the safety management system of the public railway infrastructure administrator is applied and if case to ask CNCF„CFR”SA the rectification or the re-assessment of the measures for keeping under control the own risks.

**3.4.26.** The railway accident happened on the 23<sup>rd</sup> June 2019, in the railway county Timișoara, in **Iablanița railway station**, line 1, in the running of the freight train no.46481B (it being got by the

railway undertaking Deutsche Bahn Cargo România SRL), consisted in the derailment of two wagons, the 19<sup>th</sup> and the 23<sup>rd</sup> ones in the composition of the train.

The investigation report was completed on the 17th June 2020.

**Direct cause and contributing factors:**

**The direct cause** of the accident is leaving of the running surface of the inside rail of the curve by the right wheel of the first axle from the second bogie of the 19<sup>th</sup> wagon, in the running direction of the train, and its fall inside the track.

It happened following the improper condition of the wooden sleepers from the accident site, these allowing the increase of the track gauge over the maximum accepted value, under the action of the dynamic forces transmitted by the wheels of the rolling stock in movement.

**Contributing factor:**

Keeping within the track of five improper wooden sleepers, in row, at the derailment site, that did not ensure the fastening of the screws at:

- metallic plates from the outside rail of the curve;
- metallic plates from the inside rail of the curve.

**Underlying cause :**

- inobservance of the provisions of art.25, points 2 and 4 from the *"Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no.314/1989"*, regarding the failures that impose the replacement of the wooden sleepers, respectively not keeping within the track of some improper sleepers.

**Root cause:**

- non application of all provisions of the operational procedure code PO SMS 0-4.07 *"Compliance with the technical specification, standards and requirements relevant for whole life time of the lines in maintenance process"*, part of the safety management system of the public railway infrastructure administrator CNCF „CFR” SA, regarding the performance of the maintenances and periodical repairs at the lines.

**Safety recommendations:**

The derailment happened following the improper technical condition of the railway infrastructure. During the investigation, one found that the improper technical condition of the track is due to its maintenance, that was not carried in accordance with the provisions of the practice codes (reference/associated documents of the procedures from the safety management system of CNCF „CFR” SA).

The derailment of the wagons no.31535375239-9 and no.31535375474-2 (the 19<sup>th</sup> and 23<sup>rd</sup> ones of the train) happened following the improper maintenance of the track on the curve after the switch no.2 from the line 1 of the railway station Iablanita.

The investigation commission found that the infrastructure administrator identified but did not managed the risks generated by the lack of the line maintenance, in order to be able to dispose consequently viable solutions and measures for keeping under control the derailment danger.

So, if the own procedures of the safety management system had been applied totally, as well as the provisions of the practice codes, part of SMS, the infrastructure administrator could have been able to keep the technical parameters of the track geometry between the limits of the tolerances imposed for the railway safety.

Considering the lessons that can be learned from this accident, for the improvement of the railway safety and for the prevention of some similar events, the investigation commission considers appropriate to address Romanian Railway Safety Authority – ASFR the next safety recommendation:

- Romanian Railway Safety Authority – ASFR shall re-assess the way the public railway infrastructure administrator CNCF „CFR” SA ensures the safety measures, for keeping under control the dangers and risks associated to them, regarding the performance of the infrastructure maintenance and shall be sure that these measures can be totally applied.

**3.4.27.** The railway accident happened on the 29<sup>th</sup> June 2019, in the railway county București, in **București Triaj railway station**, Post 17, in the running of freight train no.83216-1 (got by the railway undertaking SNTFM "CFR Marfă" SA), consisted in the derailment of first axle (axle no.6) from the locomotive ED-062, in the running direction.

The investigation report was completed on the 26<sup>th</sup> June 2020.

**Causes and contributing factors:**

**Direct cause** of the accident is the right wheel flange of the axle no.6 (first in the running direction), belonging to the locomotive ED-062 climbed the gauge face of the curved blade of the switch no.23, following the exceeding of the derailment stability limit. It happened because the track gauge in the area where the second bogie of the locomotive was running (in the train running direction) had values out of the accepted field, and at the first bogie in the running direction the wheelset parallelism was not obtained.

**Contributing factors:**

- variations of the track gauge with values over the maximum accepted one, respectively of 2 mm/m, as well as the burrs existing on the left rail (in the running direction), close to the first joint of the switch no.23, of the line between the switches no.31 and no.23;
- exceeding of the tolerances accepted for the distances between the centres of the axles from the bogie no.2 of the hauling locomotive, measured on both sides of the locomotive.

The investigation commission underlines that the railway accident happened following the cumulation of the effect of the factors, the derailment should not happen if one of these factors was missing.

**Underlying causes:**

- inobservance of the provisions of art.19.2 from "*Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge - no.314/1989*", regarding the tolerances accepted against the gauge prescribed for the switches in operation;
- inobservance of the provisions of art.1.14.1.c from "*Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge - no.314/1989*", regarding the tolerances accepted against the gauge prescribed for the lines in operation in accordance with the maximum running speed and the fact that deviation from the gauge in operation has to spread uniformly with a variation at most 2 mm/m, excepting the curves after the switch from the diverging tracks, where a variation at most 3 mm/m is accepted.

**Root causes:**

- non application of all provisions of the operational procedure code PO SMS 0-4.07 „*Compliance with the technical specifications, standards and requirements relevant for whole life time of the lines in maintenance process*”, part of safety management system of the public railway infrastructure administrator CNCF „CFR” SA, regarding the performance of the maintenance and periodical repairs at railway tracks;
- lack in the Technical specification code ST-LE 5100 KW – Planned inspections type PTAE, RAC, RI, RT, R1 and R2 and accidental repairs type RIT, RIR, RAD, RA at the electric locomotives of 5100kW”, the checking of the alignment and parallelism of the wheelsets during the inspections type RT, R1 and R2, if the interval of time of 12 months from the last adjustment was exceeded, works stipulated in the reference document Railway Technical Norm no.67-003:2008.

**Safety recommendations:**

As reference to the accident happened on the 29<sup>th</sup> June 2019, in the running of the freight train no.83216-1, one found that the derailment was influenced by the improper technical potential, both of the railway infrastructure and of the rolling stock involved.

In order to keep the technical parameters of the track in accordance with the values imposed by the operation in normal conditions on the railway infrastructure, the public railway administrator CNCF „CFR” SA, after the identification of the dangers that can appear in the maintenance of the railway infrastructure and after the assessment of the risks associated to the dangers, established measures for

keeping under control the risks of accident occurrence, compliance with the provisions from the practice codes, that are part of the safety management system.

The identification by the commission of the deviations from the practice codes, for the track keeping between the technical operation parameters stipulated in those codes, it proves that the safety management system is not properly applied by CNCF „CFR” SA.

One also found at the bogie no.2 of the hauling locomotive (first in the running direction) that the distances between the centres of the axles. The last checking of the alignment and of the parallelism of the locomotive axles was carried on the 27<sup>th</sup> April 2018, during the performance of the modernization overhaul (RGM) into the Section IRLU Paşcani. From this date and until the date of accident, following the changes during the time of the elastic characteristics of the rubber suspensions, there changes of the axle parallelism, so the limits accepted by The Railway Technical Norm no.67-003:2008 „Railway vehicles. Electric locomotives of 5.100 KW and of 3.400 KW. Technical provisions for inspections and repairs” were exceeded.

The lack in the schedule of works from the Technical Specification code ST-LE 5100 KW – ”Planned inspections type PTAE, RAC, RI, RT, R1 and R2 and accidental repairs type RIT, RIR, RAD, RA at electric locomotives of 5100kW” of works for checking and eventually adjustment of the parallelism of the wheelsets during the inspections type RT, R1 and R2, if the interval of time of 12 months from the last adjustment was exceeded, work stipulated in the Railway Technical Norm no.67-003:2008, had contribution to the accident occurrence.

For the prevention of accidents occurrence in similar conditions to those presented in this report, AGIFER issues the next safety recommendations:

1. Romanian Railway Safety Authority – ASFR shall analyse through own actions of surveillance the way the safety management system of the public railway infrastructure administrator is applied;
2. Romanian Railway Safety Authority – ASFR shall take care that SC „CFR IRLU” SA, the economic operator to which SNTFM „CFR Marfa” SA, as entity in charge with the maintenance of its own locomotives, entrusted the functions of „maintenance development” and „maintenance performance”, shall harmonize the work schedule of the Technical Specification code ST-LE 5100 KW – „Planned inspections type PTAE, RAC, RI, RT, R1 and R2 and accidental repairs type RIT, RIR, RAD, RA at the electric locomotives of 5100kW” , with the provisions of the Railway Technical Norm no.67-003:2008, regarding the checking of the alignment and parallelism of the wheelset during the inspections type RT, R1 and R2, if the interval of time of 12 months from the last adjustment was exceeded.

**3.4.28.** The railway accident happened on the 29<sup>th</sup> June 2019, in the in the railway county Timișoara, in **the railway station Mehadia**, line 2, in the running of freight train no.50826 (belonging to the railway freight undertaking EXPRESS FORWARDING SRL), consisted in the derailment of the hauling locomotive EA 080-4, of the dead locomotive DA 899-4 and of the first wagon of the train.

The investigation report was completed on the 25<sup>th</sup> June 2020.

#### **Direct cause, contributing factors:**

**The direct cause** of the accident is the left wheel from the first axle of the first bogie from the hauling locomotive EA 080-4 left the running surface of the inner rail of the curve located on the diverging track 2 from the railway station Mehadia, and fell inside the track, followed by the derailment of the other wheels of the rolling stock, as it is presented in the Chapter C.6.3 " Analysis of the accident occurrence".

It happened following the improper technical condition of the track superstructure, its gauge being over the maximum accepted value and which increased under the action of dynamic forces transmitted by the rolling stock.

#### **Contributing factors:**

- keeping of six unsuitable consecutive sleepers, at the derailment site, which no longer ensured the proper fastening of the metallic plates, allowing them to move in the radial direction, in the direction of increasing the gauge, under the dynamic effect of trains in movement.

**Underlying causes:**

- inobservance of the provisions of art.25, points 2 and 4 of the “Instruction of norms and tolerances for construction and maintenance of the track for lines with standard gauge” - no.314 /1989”, regarding the failures that require the replacement of wooden sleepers, respectively not keeping of some inappropriate sleepers, within the switches.

**Root causes:**

- non-application of all the provisions of the operational procedure PO code SMS 0-4.07. "*Compliance with the relevant technical specifications, standards and requirements relevant for whole life cycle of the lines in the maintenance process*", part of the safety management system of the public railway infrastructure manager CNCF "CFR" SA, regarding the execution of the maintenance and periodic repairs at the railway tracks.

**Safety recommendations:**

The accident occurred due to the inadequate technical condition of the railway infrastructure.

During the investigation it was found that the improper technical condition of the track is due to improper maintenance, which was not performed in accordance with the provisions of the practice codes (reference/associated documents of the procedures within the safety management system of CNCF "CFR" SA).

The investigation commission found that the infrastructure administrator identified, but did not manage, the risks generated by the failure of maintenance at the lines, in order to be able to dispose consequently solutions and measures viable for keeping under control the danger of derailment.

By applying its own safety management system procedures, in their integrity, as well as the provisions of the practice codes, part of the safety management system, the infrastructure administrator could have maintained the technical parameters of the track geometry within the limits of tolerances imposed by the railway safety and could have avoided the accident.

Taking into account the railway events that took place within 2015-2019 on the track section Caransebeş – Orşova, managed by the Track Maintenance Section L1 Caransebeş, within the railway county Timișoara, prior to this investigated railway accident, presented in chapter C .5.6. and taking into account the lessons learned from this railway accident, in order to improve railway safety and to prevent similar events, the investigation commission considers appropriate to address the following safety recommendations to Romanian Railway Safety Authority - ASFR:

1. Romanian Railway Safety Authority - ASFR shall assess the way the public railway infrastructure manager CNCF „CFR” SA, identified and applied the measures that had to be taken for the implementation of safety recommendations issued within the investigation reports completed for railway accidents happened on the track section Orşova - Caransebeş, in the last two years, with similar causes and factors.
2. Romanian Railway Safety Authority - ASFR shall analyse together with the public railway infrastructure manager CNCF „CFR” SA, its activity for the management of the risk associated with the danger generated by the keeping in operation of inappropriate wooden sleepers that must be replaced in emergency I, when it shall lay down the measures and works necessary to improve railway safety;

**3.4.29.** The railway accident happened on 30<sup>th</sup> June 2019, in the railway county Constanța, noninteroperable line section Palas–Năvodari (managed by SC Grup Feroviar Român SA), between **Palas and Constanța Mărfuri railway stations**, non-electrified single-track line, km 1+175, in the running of the freight train no.89573 (got by the railway undertaking SC Grup Feroviar Român SA), consisted in the derailment of first bogie of the hauling locomotive DA 1513, in the running direction.

The investigation report was completed on the 29<sup>th</sup> June 2020.

**Direct cause, contributing factors:**

**Direct cause** of the accident is the right wheels of the first bogie of the locomotive climbed the gauge face of the exterior rail, in the running direction, following the exceeding of the derailment stability limit.



**Contributing factors:**

- improper technical condition of the track generated by the cross-level failures;
- keeping in operation of the locomotive without ensuring the proper lubrication of the support points of the locomotive body on the bogies.

**Underlying causes:**

Inobservance of the next provisions from the instructions:

- provisions of art.7.A.1. from *"Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no.314/1989"*, regarding the compliance with the tolerances for the cross level prescribed for a rail against the another one, both in a straight line and in curve;
- provisions of art.7.A.4. from *"Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no.314/1989"*, regarding the keeping between the tolerances of the track twist gradient;
- provisions of point 4.1. from Chapter 4 "Norms of manpower and material consumption", of *„Instruction for the line maintenance no.300/1982"* regarding the provision with the manpower norm for the current manual maintenance;
- provisions of the Sheets no.3 and no.4 of *"Instruction 305/1997 regarding the setting of the terms order for the performance track inspections"* regarding the way to perform the track inspections.

**Root causes:**

- SC TEF LOGISTICĂ FERROVIARĂ (hereinafter referred to as SC TEF SRL), as provider of railway transport services, regarding the performance of line maintenances, manual performance without rail welding, has no procedure that regulates these services for the noninteroperable lines;
- SC GFR SA, as manager of the noninteroperable railway infrastructure has no procedure for the inspection and control of the provider of railway critical services regarding the track maintenance.

**Safety recommendations:**

On the 30<sup>th</sup> June 2019, at 23:40 o'clock, in the railway county Constanța, noninteroperable track section Palas–Năvodari, between the railway stations Palas and Constanța Mărfuri, nonelectrified single-track line, km 1+175, in the running of the freight train no.89573, the fist bogie of the hauling locomotive DA 1513 derailed in the running direction.

During the investigation, one found that the improper technical condition of the track was generated by the improper maintenance, that was not made in accordance with the provisions of the practice codes.

The investigation commission found that the infrastructure manager did not properly manage the risks generated by the lack of maintenance at the noninteroperable lines, in order to be able to dispose consequently solutions and measures viable for keeping under control the derailment danger.

Also, during the investigation, the investigation commission found that the railway undertaking Marfă SC GFR SA kept in operation the locomotive DA 1513, without ensuring its proper maintenance regarding the lubrication of the support points of locomotive box on the bogies, it being a factor in the accident occurrence.

Considering those above mentioned the investigation commission considers timely to address ASFR the next safety recommendations:

1. Romanian Railway Safety Authority – ASFR shall analyse if SC GFR SA as manager of noninteroperable railway infrastructure still meets with the conditions that were basis for the issuing of the safety authorization;
2. Romanian Railway Safety Authority – ASFR shall analyse if SC TEF SRL still meets with the conditions that were basis for the issuing of the authorization of railway supplier for the railway critical service – "manual current maintenance of tracks, without rail welding";
3. Romanian Railway Safety Authority – ASFR shall ask the railway undertaking SC GFR SA to analyse the opportunity of revision the technical specification ST-G.4.1-II/2013, so by the operations carried **within the intermediary inspections** be ensured the drainage of the water from the spring boxes and the proper lubrication of the support points between the locomotive box and the bogies.

Considering also the railway events happened between 2014-2019 on the track section Palas-Capu Midia, managed by SC GFR SA, occurred and investigated before this accident, in order to improve the railway safety and to prevent some similar events, the investigation commission considers timely to address ASFR also the next safety recommendation:

4. Romanian Railway Safety Authority – ASFR shall assess the way the manager of the noninteroperable railway infrastructure SC GFR SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed for the accidents occurred on the track section Palas - Capu Midia, during the last five years, having similar causes and factors.

**3.4.30.** The railway accident happened on 8<sup>th</sup> July 2019, in the railway county Craiova, track section Videle – Roşiori Nord (electrified double-track line), between **the railway station Rădoişti and Olteni**, km 76+400, in the running of freight train no.20919-2 (got by the railway freight undertaking SC Cargo Trans Vagon SA), consisted in overtaking and seriously hit of the freight train no.34393-2 (got by the railway freight undertaking SC Constantin Grup SRL), stopped upon the position of the caution signal Pr Y of the entry signal Olteni, it leading to the derailment of three wagons of the freight train no.20919-2.

The investigation report was completed on the 30<sup>th</sup> June 2020.

**Direct cause and contributing factors:**

**Direct cause** of the accident was the non-adjustment of the running speed of the freight train no. 20919-2, by train driver, according to the conditions of running and visibility, after passing by the light signal of the automatic section block (BL22) having the position **”STOP without passing by the signal!”**- the first front block section is occupied” it leading to the impossibility to stop it immediately and the collision with the freight train no.34393-2, that was stopped before the distant signal Pr Y of the entry signal of Olteni railway station.

**Contributing factors:**

- the operation of the locomotive EC 121 hauling the freight train no.20919-2 by staff whose physical and mental condition was affected by the fatigue accumulated following the exceeding the maximum duty accepted for the locomotive, as well as following the long period of time since he has been continuously working;
- running of the traffic schedule without allowing the locomotive crew to comply with the maximum duty accepted for the locomotive.

**Underlying causes:**

- inobservance of the provisions of art.89 (2) and art.28 (9) from the Signalling Regulation no.004/2006, regarding the conditions of running after passing by a light passing signal of an automatic section block whose position is red, when the train driving has to be made with maximum speed of 20 km/h, paying a very important attention, monitoring continuously the line and the speed adjustment, so the train can be stopped soon if the line is occupied, it is found the gauge affected, it is noticed rear of the train signal, mobile and hand signals that order the stop of the train or another obstacle that does not allow to continue the running;
- inobservance of the provisions of art.2 from the Norms regarding the maximum continuous duty accepted for the locomotive, run by the locomotive crew into Romanian railway system, approved by Order of Minister of Transports - OMT no.256/2013, regarding the maximum continuous duty accepted for the locomotive when the locomotive has complete crew( driver and driver’s assistant);
- inobservance of the provisions of the Law 53/2003 – Labour Code with further amendments, Title III – Time of work and time of rest regarding the normal working time and daily rest.

**Root causes:**

- inobservance of the provisions of point 4.2 from the Operational Safety Procedure ”Maximum continuous duty accepted for the locomotive” code:POS-043, edition 0, revision 2, approved on the

- 14<sup>th</sup> February 2019, regarding the maximum continuous duty accepted for the locomotive in case of complete crew (driver and driver's assistant);
- inobservance of the provisions of point 4.5 paragraph 4 from the Operational Safety Procedure "Maximum continuous duty accepted for the locomotive" code:POS-043, edition 0, revision 2, approved on the 14<sup>th</sup> February 2019, regarding the fact that, three hours previously the end of the regulated maximum continuous duty, the driver has to notify by phone the Traffic Controller Department for the organization of the shift change or taking rest;
  - inobservance of the provisions of the point 4.5 paragraphs 8 and 10 of the from the Operational Safety Procedure "Maximum continuous duty accepted for the locomotive" code:POS-043, edition 0, revision 2, approved on the 14<sup>th</sup> February 2019, regarding the fact that, after stopping in the railway station and exceeding the time of 12 hours, it is forbidden to open a new journey report, if the locomotive crew has no rest outside the home;
  - inobservance of the provisions of point pct.4.6 from the Operational Safety Procedure "Maximum continuous duty accepted for the locomotive" code:POS-043, edition 0, revision 2, approved on the 14<sup>th</sup> February 2019, that is the driving time for the locomotive, the time of train stop and the rest period of time in sleeping rooms outside the home were not properly tracked;
  - the provisions of the point 4.10 from the Operational Safety Procedure "Maximum continuous duty accepted for the locomotive" code:POS-043, edition 0, revision 2, approved on the 14<sup>th</sup> February 2019, do not comply with the provisions of art.8 (3) from the Norms for the maximum continuous duty accepted for the locomotive, runs by the locomotive crew in Romanian railway system, approved by Order of Minister of Transports - OMT no.256/2013, according which the rest outside the home is possible only in accommodation units, stipulating their identification data and not at individuals as it is stipulated in the procedure code:POS-043;
  - inobservance of the provisions of point 5.6. from the Operational Procedure" Running of the traffic schedule" code:PO-02 Ed.0, revision 4, approved on the 30<sup>th</sup> July 2018, regarding the obligation of the traffic controllers to track the train running, to comply with the maximum continuous duty accepted for the locomotive, the allowed working time as well as to ensure the shift staff at their expiration and guiding to rest or to home;
  - inobservance of the provisions of point 5.7 from the Operational Procedure" Running of the traffic schedule" code:PO-02 Ed.0, revision 4, approved on the 30<sup>th</sup> July 2018, regarding the obligation to control the running of the traffic schedule;
  - inobservance of the provisions of point 6 from the Operational Procedure" Running of the traffic schedule" code: PO-02 Ed.0, Revision 4, approved on the 30<sup>th</sup> July 2018, regarding the provision with the staff and compliance with the maximum regulated duty accepted for the locomotive.

**Additional remarks:**

During the investigation, many nonconformities were identified, without relevance for the accident causes, as follows:

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- unjustified application of the stamp of the railway station Gălăteni code 10342 on the journey report series N no.7746 of the locomotive EC 091 hauling the train 20964 on the 5<sup>th</sup> July 2019, in the conditions the train did not stop in the railway station and the staff got by the railway undertaking SC Cargo Trans Vagon SA did not present for the control of the general condition.

Railway freight undertaking SC Cargo Trans Vagon SA

- the provisions of the Minister of Transports' Order no.256 from the 29<sup>th</sup> March 2013, regarding the maximum continuous duty accepted for the locomotive were not observed by the locomotive crew of the locomotive EC 121 on the 1<sup>st</sup> /2<sup>nd</sup> July 2019;
- the provisions of the Minister of Transports' Order no.256 from the 29<sup>th</sup> March 2013, regarding the maximum continuous duty for the locomotive were not observed by the locomotive crew of the locomotive EC 121 between 4<sup>th</sup>-6<sup>th</sup> July 2019, respectively the locomotive EC 091 on the 6<sup>th</sup> July 2019;

- the provisions of art.12-(1) letter d from the Instructions for the activity of the locomotive crew no.201/2007 were not observed, that is the crew of the locomotive EC 091 on the 4<sup>th</sup>/5<sup>th</sup> July 2019 took out of service unjustifiably the safety and vigilance equipment between the hours 19:45 – 04:30;
- inobservance of the provisions of art.19 – (1) letter d, Chapter III from the annex I of the Instructions for the activity of the locomotive crew no.201/2007 regarding the obligation of the locomotive crew to write down in the journey report all the stops as they were mentioned in the chapter C.4.4.1. Findings about the locomotives;
- the provisions of Art.72. – (15) letter a from the Regulation for hauling and braking no.006/2005 approved by Order of Minister of Transports, Construction and Tourism no.1815/2005, that is after the stop of the freight train no. 20919-2, (on the 8<sup>th</sup> July 2019), in front of the passing light signal BL22, it started to move before passing 4 minutes;
- in the journey reports of the locomotive EC 121, in the boxes for the presentation of the duty crew, exit of the duty crew, entry in depot of the locomotive through the control point, exit of the locomotive through the control point, previous handing or stabling of the locomotive, crew rest were filled in wrong, according to the mentions from chapter C.7. Previous similar events.
- on the 5<sup>th</sup> July 2019, at 10:11 o'clock, on the running line Chiajna – Grădinari the installation INDUSI braked the train, uncontrolled, after passing by the passing signal of the automatic block section having the position "yellow light – Attention the next signal orders stop!". The emergency braking came into service because the driver did not take measures to reduce the train speed under the control speed V1 (50 Km/h);
- inobservance of the provisions of art.46, paragraph (2), letter c) corroborated with the paragraph (5), letter o), from the Instructions for the activity of the locomotive crew no.201/2007, as meaning in the railway station Caracal, on the 6<sup>th</sup> July 2019, at the shift change, the technical condition of the safety and vigilance device was not checked by the drivers.

*The railway freight undertaking SC Constantin Grup SRL*

- inobservance of the provisions of art.7, from the Order no.1684/2012 for the operation of the direct freight trains with one driver, that is the freight train no.34393-1 was hauled on the 8<sup>th</sup> July 2019 with the locomotive EA 1085 whose safety and vigilance device (DSV) was insulated.

**Measures taken:**

Following AGIFER request no.1110/271/29.04.2020, sent with reference to the measures taken or disposed following the accident, the railway freight undertaking SC Cargo Trans Vagon SA communicated the next measures:

- the disposal no.612/10.04.2019, regarding the accommodation of the safety staff in camping spaces or private houses, was cancelled;
- one concluded additionally contracts with accommodation units for ensuring the possibility of rest for the locomotive crew outside the own home in the next places: Medgidia, Videle, Caracal, Craiova, Petroșani, Arad, Timișoara, Brașov and Ploiești;
- the accident was discussed within the analysis for traffic safety from the quarter III 2019.

On the 17<sup>th</sup> June 2020, by the address no.1110/346/2020 AGIFER submitted the draft of the investigation report, asking the railway freight undertaking SC Cargo Trans Vagon SA the point of view on this draft. Through the address no.SC 304/25.06.2020, SC Cargo Trans Vagon SA communicated the next measures:

- regarding the recommendations no.1 and 2, the next procedures were revised:
  - o POS-01 "Procedure for the identification of the risks associated to the railway operations, including those resulting directly from the professional activities, work organization or the work load and from the activities of other organizations and/or people" rev.3 from the 31<sup>st</sup> March 2020;
  - o POS-043 "Maximum continuous duty accepted for the locomotive" rev.3 from the 16<sup>th</sup> March 2020;
  - o PO-02 "Running of the traffic schedule" rev.5 from the 14<sup>th</sup> April 2020;
- regarding the recommendation no.3:
  - o the rest in other spaces, than those specially equipped or accommodation units was forbidden, (Disposal of the General Manager no.169/28.01.2020);

- assignment the locomotive crew for activity areas and the establishment of the rest places in order to prevent the violation of the provisions of Minister of Transports' Order 256/2013 (Disposal of the General Manager 182/29.01.2020).

### **Safety recommendations**

On the 8<sup>th</sup> July 2019, at 01:28 o'clock, in the railway county Craiova, track section Videle – Roşiori Nord (electrified double-track line), between the railway stations Rădoieşti and Olteni, track II, km 76+400, the freight train no.20919-2 hauled with the locomotive EC 121 (got by the railway freight undertaking SC Cargo Trans Vagon SA) overtaking and collide seriously the freight train.34393-2 (got by the railway freight undertaking SC Constantin Grup SRL), stopped at the distant signal Pr Y of the entry signal from the railway station Olteni, it leading to the derailment of three wagons of the freight train no.20919-2.

Following the investigation, one found that the accident happened as a result of the way the drivers of the locomotive EA 121 acted, following the cumulated physical and mental fatigue, following the exceeding of the maximum duty accepted for the locomotive, as well as following the period of time since he has been on duty uninterrupted. Keeping on duty of the locomotive crew about 90 hours is the result of the deficiencies existing both in the design and in the application of the safety management system and it is a cause of the accident occurrence.

Considering those presented in the chapters *C.2.2. Safety management system of the railway freight undertaking SC Cargo Trans Vagon SA* and *C.7. Previous similar events*, regarding:

- lack of measures necessary to reduce the risks, as well as the disparities existing between the procedures regulating the application of the measures for the control of the risks;
  - nonconformities found in the Operational Safety Procedure" Maximum continuous duty accepted for the locomotive" code: POS – 043, Ed.0, Rev.2;
  - exceeding repeatedly the maximum continuous duty for the locomotive,
- as well as the measures taken by the railway freight undertaking SC Cargo Trans Vagon SA after the occurrence of the accident investigated, 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 Ordinance no.73/2019 for the railway safety, the investigation commission issues the next recommendations:
1. Romanian Railway Safety Authority - ASFR shall ensure that the way in which railway undertaking SC Cargo Trans Vagon SA, revised its procedures regarding:
    - the identification of the risks associated to the railway operations and the working out of the measures for the control of the risks;
    - maximum continuous duty accepted for the locomotive, meet the scope aimed, so the changes made at these procedures lead to the keeping under control the risks generated by the fatigue of the locomotive crew.
  2. During the supervision that shall be performed at SC Cargo Trans Vagon SA, Romanian Railway Safety Authority - ASFR shall check if the railway undertaking performs the railway transports meeting with the maximum continuous duty accepted for the locomotive.

**3.4.31.** The railway incident happened on 9<sup>th</sup> July 2019, in the railway county Craiova, track section Roşiori Nord – Videle, electrified double-track line, **between the railway stations Rădoieşti and Olteni**, from km 76+650 to km 76+550, consisted in the exceeding of the maximum speed established for the multiple unit RES 003, composing the passenger train no.15931-2, got by the railway undertaking SC SOFTRANS SRL.

The investigation report was completed on the 7<sup>th</sup> July 2020.

### **Direct cause, contributing factors:**

**Direct cause** of the railway incident was a human mistake, that is the lack of attention of the locomotive/train crew, it leading to the late applying of brake, for meeting with the speed restriction written down in the running sheet.

**Contributing factors:** none.

**Underlying causes:**

- inobservance of the provisions of the Signalling Regulation no.004/2006, art.95 regarding the speeds imposed for the signalling of the speed restrictions;
- inobservance of the provisions of the Instructions for the activity of the locomotive crew no.201/2007, art.79, paragraph (2), letter a) and paragraph (4), regarding the taking note about the conditions for train running, written down in the running sheet;
- inobservance of the provisions from Instructions for the activity of the locomotive crew no.201/2007, art.125, paragraph (3), regarding the compliance with the dispositions from the running sheet, careful consideration and compliance with the position of the indicators along the route;
- inobservance of the provisions from Instructions for the activity of locomotive crew no.201/2007, art.125, paragraph (4), regarding the measures that have to be taken by the train driver when he observes positions that impose the decrease of the speed in a certain point or for a section of line.

**Root causes:** none.

**Safety recommendations:** none.

**3.4.32.**The railway accident happened on the 31<sup>st</sup> July 2019, in the railway county Craiova, track section Roşiori Nord – Alexandria, non-electrified single-track line, **between Plosca and Alexandria railway stations**, km 217+250, in Buzescu railway station, in the running of the passenger train no.9371 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in a fire burst into the hauling locomotive DA 637.

The investigation report was completed on the 30<sup>th</sup> July 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident is the ignition of the oil rests being on the locomotive suspension, brake riggings and force cables of the traction motors MT 4 and MT 5 and the thermic affecting, in the engines rooms, of the parts from the end of the diesel engine, driving cab no.II, following the locomotive running on a track section affected by vegetation fire.

**Contributing factor:**

Presence of oil rests in the channel of cables and on the connection dose of the cables for the power supply of the traction motor no.4, on the gangway of the ventilation channel of the traction motor no.4, on the brake rigging and on the suspension parts.

**Underlying cause:**

Inobservance of the Railway Norm N.F. 67-006:2011 "*Railway vehicles. Types of planned inspections and repairs. Norms of time or km run for the performance of planned inspections and repairs*", approved by Order of Minister of Transports and Infrastructure no.315/2011, amended by Orders of Minister of Transports and Infrastructure no.1359/2012, 1255/2014 and 1187/2018, regarding the introduction of the locomotive into serious repairs type RR and RG and keeping into service of the locomotive DA 637, after reaching and exceeding the norms of time/km for the performance of planned repairs, it leading to the loss along the time of the sealing qualities.

**Root cause:**

The technical specification *PLANNED INSPECTIONS TYPE Pth3, RT, R1, R2, 2R2, R3 AT DIESEL ELECTRIC LOCOMOTIVES*, code ST 6-2003, that is reference document for the maintenance performance, it does not contain provisions for the fixing of the oil and fuel losses and either provisions for the elimination of the oil product leaks.

**Measures taken:**

The locomotive DA 637 was submitted on 5<sup>th</sup> August 2019 to accidental repair into the Repair Section Piteşti, the locomotive being put into the operation starting with 12<sup>th</sup> September 2019.

**Safety recommendations:**

According to the provisions of Art.26(2) from the Emergency Government Decision no.73/2019 for the railway safety and of the Directive (CE) no.49/2004, the safety recommendations are addressed

to Romanian Railway Safety Authority - ASFR, that shall ask and track their implementation by the part identified in the recommendations.

Between Plosca railway station and Buzescu halt, where the accident happened, respectively in the safety perimeter of the railway infrastructure, there was a vegetation fire, caused by the land owners, this fire extending from the agricultural lands to the track.

In the *Instructions for the activity of the locomotive crew no.201/2007* and the *Regulation for the running of the trains and shunting of railway vehicles no.005/2005* there are no provisions for the cases when, close to the track, respectively in the safety perimeter of the railway infrastructure, the vegetation fires could be an accident danger. It can generate a possible future responsibility for the driver, if he stops the train or does not.

Considering that safety recommendations for the above mentioned problem were issued in similar cases of fires at railway vehicles, the investigation commission considers that there is no more necessary to issue new safety recommendations for this case.

Considering the root cause and the factor contributing to the accident occurrence, the investigation commission recommends Romanian Railway Safety Authority shall ask the railway passenger undertaking SNTFC „CFR Călători” SA to analyse the opportunity to revise the technical specification *PLANNED INSPECTIONS TYPE Pth3, RT, R1, R2, 2R2, R3 AT DIESEL ELECTRIC LOCOMOTIVES*, code ST 6-2003, so the maintenances scheduled at the fuel and greasing installations at Diesel motor ensure the checking and fixing of the oil leaks in all points where they happened, between two planned inspections.

**3.4.33.** The railway accident happened on the 7<sup>th</sup> August 2019, in the railway county București, track section Ploiești Vest - Brașov (electrified double-track line), in **the railway station Buda**, in the running of passenger train no.1636 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in a fire burst into the hauling electric locomotive, type EA no.91 53 0410 008-3 (hereinafter referred to as *EA no.008*)

The investigation report was completed on the 4<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident was the ignition of the oil rests mixed with dust, deposited on the lower part of the locomotive body EA nr.008 and on the bogie parts, at the air electric air compressor, following the sparks from the contact between the brake shoes and the tyres of the locomotive wheels, during the train braking.

**Contributing factors:**

- existence of oil rests resulted from the working of the electric air compressor, on the bogies and their parts, on areas with predisposition to ignition;
- keeping in operation of the locomotive EA no.008, after it reached the norm of time for the performance of the planned repairs.

**Underlying causes:**

Underlying causes of the accident was the inobservance of some provisions from the instructions and regulations in force, that is:

- Railway norm 67-006:2011 *"Railway vehicles. Types of planned inspections and repairs. Norms of time or of km run for the performance of the 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, chapter 3, regarding:
  - withdrawal from operation of the locomotive EA no.008 when it reaches the norm of time stipulated for the performance of planned repairs;
  - compliance with the cycle of planned repairs for the locomotive EA no.008.
- *Operational procedure code PO-0-7.1-14* got by SNTFC „CFR Călători” SA, point 4.7.5 and Annex no.4, regarding the periodicity of the planned repairs.

**Root causes:**

- lack in the Technical Specification code ST 31-2016, for the performance of the planned repairs, of some provisions for the performance of the works for keeping the cleaning in the engine room and at the bogie parts, following the oil leaks resulted from the locomotive operation;
- inobservance of the provisions of Order of Minister of Transports no.535/2007 (with further amendments) regarding the approval of the norms for granting the safety certificates necessary for the performance of transports on Romanian railways, Annex – Norms for granting the safety certificates Art.19(3), Art.15(4), point 12 – regarding the justifying documents necessary for the renewal of the safety certificates.

**Additional remarks:**

During the investigation, there were the next findings regarding some deficiencies and gaps, without relevance for the conclusions on the accident causes:

- within the locomotive maintenance, the provisions of the technical specification code ST 31-2016 for the replacement of the water-oil filter at the planned technical repairs performed before the accident, were not met.
- after the accident occurrence, at the accident site the representatives of the management of the railway undertaking SNTFC „CFR Călători” SA were not present for taking the measures for the removal of the consequences and resuming the traffic, against the provisions of Art.57 from the Investigation Regulation.

**Safety recommendations:**

With reference to the railway accident happened on the 7<sup>th</sup> August 2019, in the running of the passenger train Inter Regio nr.1636, one found that the fire burst into the locomotive EA no.008 was generated by its improper technical condition, following the oil leaks resulted from the working of the air electric air compressor, that along the time deposited on the locomotive parts, on areas with predisposition to ignition and that were not removed during the maintenances performed.

During the investigation, one found that the locomotive was kept in operation after reaching the norm of time for the performance of planned repairs, against the provisions of Order of Minister of Transports and Infrastructure no.1359/2012 for the amendments of the Railway Norm "Railway vehicles. Types of planned inspections and repairs. Norms of time or of km run for the performance of planned inspections and repairs", approved by Order of Minister of Transports and Infrastructure no.315/2011, that was a factor contributing to the accident occurrence.

One also found that the locomotive was recorded in the Safety Certificate part B, Annex II, without meeting with the legal requirements, that is without the performance of its technical inspection, it making possible its use by the railway undertaking also the technical condition of the locomotive did not allow it. According to the regulation in force at that moment, the lack of the technical inspection report was prohibiting the recording of the locomotive in the safety certificate, consequently, its running, the railway undertaking getting no authorization to run transport services with that locomotive.

Considering the fact that into the investigation reports, meant to reduce the risk of similar accidents, there were safety recommendations for the railway undertaking, for the lack into the technical specifications for the performance of the planned technical inspections of some provisions regarding the performance of some works for keeping cleaning, respectively keeping in operation of a locomotive after reaching the norm of time for carrying of the planned repairs, the commission considers that it is not necessary to issue other recommendations.

Regarding the other negative issues found, in accordance with the provisions Art.26(2) of the Government Emergency Ordinance no.73/2019 for the railway safety, the commission issues the next safety recommendations that are addressed to Romanian Railway Safety Authority-ASFR and that shall ask and track their implementation by the party identified in the recommendations.

**Safety recommendations associated to the additional remarks:**

During the planned technical inspections made, one did not meet with the provisions of the technical specification regarding the replacement of the water-oil filter. For the compliance with these provisions, the respective part had to be supplied by the railway undertaking to the entity in charge with the maintenance.



1. SNTFC „CFR Călători” SA takes the measures imposed to supply, within the process of planned technical inspection at the locomotives, the necessary spare parts, so the provisions of technical specifications be exactly met.

After the accident occurrence, at the accident site the representatives of the management of the railway undertaking SNTFC „CFR Călători” SA were not present for taking the measures for the removal of the consequences and resuming the traffic, against the provisions of Art.57 from the *Investigation Regulation*.

2. SNTFC „CFR Călători” SA takes the measures imposed for re-training of the staff in charge with the implementation of the provisions above mentioned, in each railway county.

**3.4.34.** The railway accident happened on the 14<sup>th</sup> August 2019, in the railway county Braşov, track section Braşov–Sighişoara, in the **railway station Bod**, when the freight train no.90920 (got by the railway freight undertaking SC Rail Force SRL Braşov) was parked on the deflecting section no.4, the axle no.6 of the electric locomotive EA no.1093, first axle in the running direction, derailed.

The investigation report was completed on the 13<sup>th</sup> August 2020.

**Direct cause and contributing factors:**

**The direct cause** of the accident is the climbing of the active shoulder of the curved point, within the planning area, at 4,50 m from the tip joint of the switch no.14 from the railway station Bod, negotiated on „deflecting section”, by the right wheel of the first axle (in the train running direction) of the locomotive EA no1093.

**Contributing factors:**

- exceeding of the values of the tolerances accepted for the cross level of the switch no.14 from the railway station Bod;
- exceeding of the values of the tolerances accepted for the level in case of counter-cant of the outer rail of the switch no.14 and of the track length between the switches no.10 and.14 of the railway station Bod;
- exceeding of the values of the tolerances accepted for the track twist, measured at 2,5 m on the switch no.14 from the railway station Bod;
- technical condition of the locomotive generated by the high difference between the diameters of the wheels from the same axle, at three axles, including the axle derailed and values inconsistent found following the checking of the alignment and parallelism of the pair of wheels.

**Underlying causes:**

The inobservance of some provisions of the next instructions and regulations in force:

- inobservance of the provisions of art.19, point 6 from the *Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge - no.314/1989*, regarding the values of the tolerances accepted for the cross level of the switches of the reception and dispatching lines;
- inobservance of the provisions of art.7.A, point 3 from *Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge - no.314/1989*, regarding the values of the tolerances accepted for the level in case of counter-cant of the outer rail on the lines with speed of 50 km/h or less;
- inobservance of the provisions of art.7.A, point 4 of *Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge - no.314/1989*, regarding the values of the tolerances accepted for the track twist measured at 2,5 m;
- inobservance of the provisions of point 4.1. of Chapter 4 „Norms of manpower and material consumption”, from the *Instruction for the line maintenance no.300 - edition in force*, regarding the provision with the norm of manpower for the current hand maintenance;
- inobservance of the provisions of Chapter B, art.1.2.a) of the *Guide for the use of the trolleys for the track measuring - no.329/1966*, regarding the quarterly measurement of the station lines with the trolleys for the track measuring;
- inobservance of the provisions of Sheet no.4, art.3 from the *Instruction for the setting of the deadlines and order for the performance of the track inspection - no.305/1997*, regarding the setting of deadlines

for the performance of track inspection at every 15 days by the district head together the gang foreman and the ganger.

**Root cause:**

Nonapplication of the provisions of the operational procedure code PO SMS 0-4.07 „*Compliance with the technical specifications, standards and requirements relevant for whole life time of lines in the maintenance process*”, part of safety management system of public railway infrastructure administrator CNCF „CFR” SA, regarding the working out of the fortnightly program for maintenance, for which the inspection had to be done at every 15 days by the district head together the gang foreman and the ganger.

**Additional remarks without relevance for the accident cause:**

On site the sleepers of the switch no.14 were marked starting with „T1” – tip joint up to „T56” – heel joint in the train running direction. The sleepers T5, T24 and T38 had longitudinal cracks on their central area, the sleepers T27 and T54 were rotten at their central area, all sleepers had the fastening active 100%. Considering these above mentioned, the condition of the sleepers did not influence the derailment occurrence.

**Safety recommendations:**

During the investigation, one found that the track diagnosis for the planning of the superstructure maintenance was not made in accordance with the provisions of the practice codes (reference/associated documents of the procedures of the safety management system of CNCF „CFR” SA).

The investigation commission found that the administrator of the public railway infrastructure has procedures to guarantee the fact that the staff, to which the responsibilities were appointed within the structures, in charge with the maintenance, gets the competences and resources suitable for the performance of his tasks, but in the Annex no.1 of the operational procedure PO SMS 0-4.07 „*Flow diagram of the maintenance process*”, for the identification of the maintenances and repairs at lines, among the practice codes mentioned there is not the *Guide for the use of the testing and recording cars and of the trolleys for the track measuring no.329 B from 1966*, regarding the quarterly measuring of the station lines with the trolley for the track measuring, it being necessary for the identification of the failures at the superstructure gauge and level. Also, the analysis of the resources got by the unit and basic subunit in charge with the maintenance of the railway infrastructure in the railway station Bod, put in evidence the fact that these structures carry out the activity with improper resources in relation to the necessary ones.

If its own procedures of the safety management system had been completely applied, as well as the provisions of the practice codes, part of SMS, the infrastructure administrator should have been able to keep the technical parameters of the track between the limits imposed by the railway safety, preventing in a such way the accident occurrence. The deviations from the practice codes identified by the investigation commission show that the safety management system was not properly applied by CNCF „CFR” SA.

The investigation commission found that the unit and basic subunit in charge with the maintenance of the railway infrastructure from the railway station Bod kept the level failures from the switch no.14, because when the accident happened it did not get data updated at the deadlines established in the practice codes. It favoured the lack of performance in good time of the measurements with the trolley and of the fortnightly inspections in accordance with the practice codes.

On the 10<sup>th</sup> September 2019, the railway county Braşov revised the *Register of risks*. For the activity „*Track diagnosis for the maintenance planning*” identified the risk „*Partial data regarding the track condition*”. For keeping under control the dangers that favoured the appearance of this risk there were established as measures: management of the documents, internal disposals, handing of laws, norms and procedures.

The investigation commission found that the management of the documents, internal disposals, handling of law, norms and procedures are not concrete measures for keeping under control the risk above mentioned.

The railway undertaking SC Rail Force SRL Braşov did not get complete data regarding the measurements of the pair of wheels after a planned repair at the locomotive, respectively the values of the running threads, and it did not stipulate enough practice codes for keeping under control the risk of

accident following their operation, eg. Instruction for the repair of the pair of wheels from the railway vehicles no.931/1986.

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

1. Railway Safety Authority – ASFR shall ask CNCF,,CFR”SA the reassessment of the procedures and measures for keeping under control the own risks generated by the geometry condition and the planning of the superstructure maintenance;
2. Railway Safety Authority – ASFR shall ask SC Rail Force SRL Braşov the reassessment of the procedures for keeping under control the risks associated to the railway transport, afferent to the repair of the pair of wheels.

**3.4.35.** The railway accident happened on the 14<sup>th</sup> August 2019, in the railway county Constanţa, **track section Constanţa Port Zona B – Palas** (electrified double-track line), track I, km 2+000, in the running of freight train no.50792 (got by the railway undertaking SC Express Forwarding SRL), consisted in a fire burst into the hauling locomotive EA 047.

The investigation report was completed on the 12<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident was the overheating of the cables from the power supply circuit of the traction motor no.4, following the increase of the amperage during the working of the locomotive in traction conditions, it leading to the ignition of their insulation, followed by the spreading of the fire to the other parts.

**Contributing factors:**

- improper contact between the brushes of the traction motor no.4 and its collector;
- increase of the contact resistance at the contacts –(tulip type contacts), between the high voltage cables of the traction motor no.4 and those of the block S4.

**Underlying causes:** none.

**Root cause:** none.

**Additional remarks:**

During the investigation, there were identified many nonconformities, without relevance for the accident causes, as follows:

*Railway freight undertakings SC EXFO SRL and SC THF SRL:*

- the documents issued, regarding the performance made and the running of the inspections and repairs by the entities in charge with the maintenance or with maintenance functions, are not submitted by SC EXFO SRL to SC THF SRL for recording;
- procedures provided by SC EXFO SRL and SC THF SRL, regarding the way to perform the locomotive maintenance, do not contain provisions that make clear the way to withdrawal from running of the locomotives for inspections.

*Railway freight undertaking SC THF SRL:*

After the accidental repairs, performed between 12<sup>th</sup> and 13<sup>th</sup> August 2019, that need interventions at the running gear and suspension of the locomotive, one did not check the load distribution on the wheels and axles (locomotive weighing), against the provisions of the Railway technical norm Railway vehicles. Electric locomotives of 5.100 kW and 3.400 kW. Technical provisions for planned inspections and repairs, approved by Order of Minister of Transports no.366/2008.

*Economic operator SC INJECTOR SRL:*

During the planned inspections within SC INJECTOR SRL, one did not made the checking of the insulation resistance, this work not being included in the Annex no.2 Schedule of works for planned inspections RT and R1 from the technical specification ST.REV.LE-INJ/2018, it violating the provisions of the Railway technical norm "Railway vehicles. Electric locomotives of 5.100 kW and 3.400 kW. Technical provisions for planned inspections and repairs" from the 18th March 2008, approved by Order of Minister of Transports no.366/2008 from the 18th March 2008, chapter5.2.1.1.2. letter j.

**Safety recommendations:**

On the 14<sup>th</sup> August 2019, at 19:48 o'clock, in the railway county Constanța, track section Constanța Port Zona B – Palas (electrified double-track line), km 2+000, in the running of the freight train no.50792, got by the railway undertaking SC EXFO SRL, a fire burst into the hauling locomotive EA 047.

Considering that one of the factors contributing to the accident occurrence is the improper contact between the brushes of the traction motor no.4 and its collector, failure that appeared within 52 days from the last planned inspection carried out (deadline being 60 days), as well as the fact that this failure could be identified and implicitly fixed during the planned inspections, the investigation commission issues the next recommendation:

1. Romanian Railway Safety Authority - ASFR shall take care that the railway undertakings SC EXFO SRL and SC THF SRL (as entity in charge with maintenance) analyse the possibility to reduce the time between two inspections, according to the wear level and technical condition of the locomotive.

Considering the mentions from chapter *D.4.Additional remarks* about the fact that SC INJECTOR SRL, during the planned inspections, did not check the insulation resistance, the investigation commission issues the next recommendation:

2. Romanian Railway Safety Authority - ASFR shall take care that SC INJECTOR SRL (entity with functions of maintenance of the locomotives or motor railcars) revises the technical specification ST.REV.LE-INJ/2018, so complies with the provisions of the Railway technical norm "Railway vehicles. Electric locomotives of 5.100 kW and 3.400 kW. Technical provisions for planned inspections and repairs" from the 18th March 2008, approved by Order of Minister of Transports no.366/2008 from the 18th March 2008.

**3.4.36.** The railway incident happened on the 19<sup>th</sup> August 2019, in the railway county Iași, in shunting activity, consisted in the derailment of the hauling locomotive and 4 wagons (one of them reclined) of a rake of wagons consisting in 24 wagons (all of them loaded), on the metallic bridge from km 0+522, between the railway stations Dornești and Rădăuți, this rake of wagon running from the **promises of the economic operator SC EGGER România SRL to the railway station Dornești.**

The investigation report was completed on the 18<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**Direct cause** of the incident is the exceeding of the maximum speed accepted on the metallic bridge from km 0+522, respectively 10 km/h, corroborated with the improper technical condition of the special wooden sleepers existing on the bridge.

The investigation commission mentions that the order of the presentation of those two elements constituents of the direct cause (exceeding of the speed and improper technical condition of the sleepers) does not prioritize their importance in the incident occurrence.

**Contributing factors:**

- use of special wooden sleepers for works performed on the bridge from km 0+522, in 2015, supplied by a railway supplier that did not get railway technical agreement, that allows their use for the railway infrastructure administrated by CNCF „CFR” SA;
- a higher aggressivity on the sleepers, fitted during the main (in 2015), generated by the running of wagons with broad gauge (CSI), axle load 24,5 t;
- poor resources allocated for the maintenance of the infrastructure of the bridge from km 0+522;
- lack of a technical project for the performance of the replacements of the special wooden sleepers on the bridge from km 0+522, carried out in 2015, it leading to the getting of a track geometry that did not comply with the initial route geometry, respectively:
  - improper connection of the constant circular curve with the adjoining alignment on the spiral curve  $L_{r2}$  within the curve from km 0+264-0+510;
  - existing, along the length of the metallic bridge from km 0+522, of a longitudinal profile of the track „in the top of the gradient”, when the gradient for all the bridge length had to correspond to the horizontal track profile.

**Underlying causes:**

- inobservance of the provisions of art.7, letter B, points 1, 2, 4 of the „*Instruction of norms and tolerances for the construction and maintenance of tracks – lines with standard gauge, no.314/1989*”, regarding the fitting of the versine’s values of the spiral curve between the tolerances accepted between adjoining versines.
- inobservance of the provisions of art.11, letter a), corroborated with art.179, paragraph (3) from the *Instructions for the locomotive crew no.201/2006* regarding the compliance with the specific regulations in force for the shunting of the railway vehicles and the maximum speed for the railway vehicle shunting.

**Root causes:**

- inobservance of the provisions of the operational procedure code PO SMS 0-4.07 „*Compliance with the technical specifications, standards and requirements relevant for whole life cycle of lines in maintenance process*”, part of Safety Management System CNCF „CFR” SA, regarding the application of the practice codes that regulate the provision with the resources necessary for the railway infrastructure maintenance;
- inobservance of the provisions of the system procedure code PS 0-6.1 „*Risk management*”, part of Safety Management System of CNCF „CFR” SA, regarding the risk analysis that has to be done in case of the danger generated by the lack of the technical project within the documentation worked for the performance of maintenances at the railway infrastructure.

**Additional remarks:**

During the investigation of this incident, there was identified a series of deficiencies and gaps without relevance in the establishing of the conclusions and causes, as follows:

*A. Regarding the railway infrastructure condition*

The technical condition of the wooden sleepers at the common crossing I/D1 and the abutment no.2 of the bridge from km 0+522, on the line Dornești –Rădăuți (mixed gauge) and the high number of improper concrete sleepers in the running line, mixed gauge track, Vicșani -Dornești, determined the investigation commission to make a random inspection of the condition of the concrete sleepers on this running line, this area being maintained by District no.4 Dornești.

By this action, the investigation commission did not aim to make an inventory of all the nonconformities existing in the running line Dornești-Vicșani, but to have an overview regarding:

- the way the railway infrastructure maintenance is performed;
- implication of the factors responsible for the maintenance of this public railway infrastructure.

In order to achieve this objective, members of the investigation commission, together the representatives of the structure responsible with the maintenance, performed a checking of the technical condition of the railway infrastructure at that moment. The checking was made at km 484+200 ÷ 484+700 (on about 500 m).

The action of the investigation commission met with the provisions of art.69, paragraph (1) from the *Regulation for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and metro safety*, approved by Government Decision no.117/2010, with further amendments, according which the extent of the investigation is established by AGIFER, considering the principles and objectives of the investigation.

Following this checking, there were found:

- on the walked distance, the superstructure of the mixed track consisted in rails type 49 fitted on the reinforced concrete sleepers type T19A, non-welded track;
- the head of District no.4 Dornești had made an inventory of the sleepers, the improper sleepers to be replaced of emergency I and II being marked properly on the common-crossing of the rail, right rails (in the direction of the track km) (photo no.18);



*photo no.18*

- concrete sleepers T19 A with transversal cracks close to the block (photo no.19);



*photo no.19*

- concrete sleepers T19 A within the track length with longitudinal cracks (photo no.20);



*photo no. 20*

- joints that do not meet with the instruction, without special sleepers for joints. Because of it, in some situations the metallic plates cannot be fitted, or if these can be fitted, then it is not possible the fastening of the rail bases using clips type K, following the position of the horizontal screws for the fastening of the joint fish plates. All of these generate the destruction of the sleepers from the joints (photos no.21, 22);

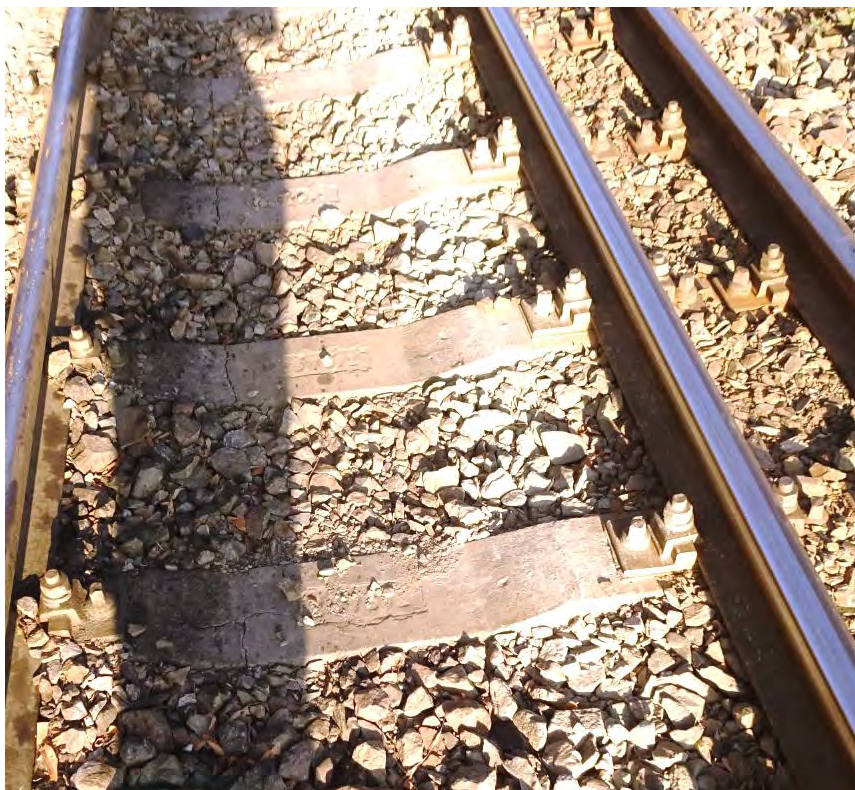


*photo no.21*



*photo no. 22*

- consecutive sleepers with cracks and ruptures (photo no.23).



*photo no. 23*

*B. Regarding the condition of the rolling stock*



The last planned repair type RG at the locomotive hauling the rake of wagons was on the 31<sup>st</sup> March 2011, and starting with that moment and up to the incident occurrence there was no planned repair at this locomotive.

So, the provisions of point 3.1, corroborated with those from the Table 3.1 of the Railway norm *"Railway vehicles. Types of planned inspections and repairs. Norms of time or km run for the performance of the planned inspections and repairs"*, approved by Order of Minister of Transports no.315/2011, regarding the norms of time/km run for the performance of planned inspections and repairs at the traction railway vehicles, were not met.

#### **Safety recommendations:**

On the 19<sup>th</sup> August 2019, at 14:10 o'clock, in the railway county Iași, in Dornești railway station, on the running line between the railway stations Dornești-Rădăuți, during the shunting running of a rake of wagons from the economic agent SC EGGER România SRL to Dornești railway station, on the metallic bridge km 0+522, a railway incident happened, consisting in the derailment of the first bogie of the locomotive, of both bogies of the first three wagons and of the first bogie of the fourth wagon, in the running direction of the rake of wagons.

Following the investigation, one found that the incident happened because the rake of wagons ran with a speed over the accepted one on the metallic bridge from km 0+522, and the technical condition of the special wooden sleepers was improper.

So, during the investigation one found that, for the replacement of the special wooden sleepers on the bridge from km 0+522, performed in 2015, the contractor used sleepers impregnated by a supplier, that had no right to provide that railway service for the railway infrastructure administrated by CNCF „CFR” SA.

Also, the replacement of the sleepers was made without by the beneficiary of the work (railway county Iași) shall submit to the contractor, together with the Technical Specification and the technical project of that work.

When the works for the sleeper replacement on the bridge were completed, the railway traffic and shunting on the broad track were resumed with the speed of 10 km/h, the same to the speed limit existing before the works.

Also the investigation commission established as root causes the inobservance of the procedures from the Safety Management System of CNCF „CFR” SA, regarding:

- application of the practice codes that regulate the provision with the resources necessary for the infrastructure maintenance;
- the risk analysis that has to be done for the danger generated by the lack of a technical project from the documentation worked out for the performance of the infrastructure maintenance.

Considering the root causes that were basis for the incident occurrence, for the prevention of some similar events, AGIFER issues the next safety recommendations:

1. Romanian Railway Safety Authority - ASFR shall analyse the cases where there are used impregnated sleepers by companies that do not get railway technical agreement and supply these sleepers to the public railway infrastructure administrator CNCF „CFR” SA.
2. For the replacement of the consecutive special wooden sleepers on bridges Romanian Railway Safety Authority - ASFR shall ask CNCF „CFR” SA to get a technical performance project.
3. Romanian Railway Safety Authority - ASFR shall check the way CNCF „CFR” SA meets with the provisions of the paper no. 3000/16/22.05.2019, issued by Romanian Railway Notified Body for the purchase of wooden impregnated sleepers, homologated and classified in the risk class 1A.
4. Romanian Railway Safety Authority - ASFR shall check the basis of the variation of the speed levels on standard and broad track, and the variation of the loads on axle for broad track between 2005 ÷ 2020.

**3.4.37.** The railway accident happened on the 27<sup>th</sup> August 2019, in the railway county Constanța, noninteroperable track section Palas–Năvodari (managed by SC Grup Feroviar Român SA), **between Palas and Constanța Mărfuri railway stations**, non-electrified single-track line, km 1+175,5, in the running of the freight train no.89847 (got by the railway undertaking SC Tehnotrans Feroviar SRL),

consisted in the derailment of first axle of the locomotive DA 1647, in the running direction, this locomotive hauling the train consisting in two coupled locomotives, DA1657 being dead locomotive.

The investigation report was completed on the 18<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**Direct cause** of the accident is the running of the rolling stock on a part of railway infrastructure with values of the track twist over the maximum accepted ones.

**Contributing factor:**

- improper maintenance that led to the appearance of failures at the cross level of the track.

**Underlying causes:**

*Inobservance of the next provisions:*

- provisions of art.7.A.1. from „*Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no.314/1989*”, regarding the compliance with the tolerances for the cross level prescribed for a rail against another one, both straight line and curve one;
- provisions of art.7.A.4. from „*Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no.314/1989*”, regarding keeping between the tolerances of the track twist gradient;
- provisions of point 4.1. from chapter 4 „*Norms of manpower and material consumption*”, of the „*Instruction for the line maintenance no.300/1982*” regarding the provision with the norm of manpower for current manual maintenance;
- provisions of Sheets no.3 and 4 from „*Instruction 305/1997 regarding the setting of deadlines and order for the track inspection performance*” regarding the way to make the track inspection.

**Root causes:**

- SC Logistică Feroviară SRL (hereinafter referred to as SC LOG FER SRL), as supplier of railway critical services, regarding the performance of the current manual maintenance at the lines, without rail welding, has no procedures for these activities;
- SC GFR SA, as manager of noninteroperable infrastructure has no procedure for the system of checking and control of the supplier of critical service, regarding the line maintenance works.

**Safety recommendations:**

On the 27<sup>th</sup> August 2019, at 13:30 o'clock, in the railway county Constanța, noninteroperable track section Palas–Năvodari, between the railway stations Palas and Constanța Mărfuri, nonelectrified single-track line, km 1+175,5, in the running of the freight train no.89847, the first axle of the hauling locomotive DA 1647 derailed. The train consisted in two locomotives, coupled, DA 1647 hauling and DA 1657 dead.

During the investigation, there was found that the technical condition of the track was improper following a maintenance that was not made in accordance with the provisions of the practice codes.

Considering the railway events happened between the years 2014 ÷ 2019 on the track section Palas - Capu Midia, managed by SC GFR SA, before this accident (e.g. on the 14<sup>th</sup> March 2014, at 12:50 o'clock, km 0+950 Palas Constanța - Mărfuri, on the 14<sup>th</sup> September 2017, at 15:27 o'clock, on the track section 049 of the railway station Capu Midia, on 20<sup>th</sup> April 2019, at 4:40 o'clock, km 17+573 Constanța Mărfuri - Năvodari, on the 30<sup>th</sup> June 2019, at 23:40 o'clock, km 1+175, Palas - Constanța Mărfuri), the investigation commission found that the infrastructure manager did not managed the risks generated by the lack of line maintenance, in order to be able to dispose consequently viable solutions and measures for keeping under control the derailment danger.

Because these issues were found and presented within the investigations of the accidents above mentioned, after which safety recommendations were issued, the investigation commission recommends:

1. Romanian Railway Safety Authority - ASFR shall analyse the opportunity to keep the authorizations for the performance of the management of the noninteroperable infrastructure SC GFR SA.

Considering that starting with the 1<sup>st</sup> April 2019, the maintenances are provided by SC LOG FER SRL, when there were two accidents similar to the investigated one, the causes being the improper maintenance, cumulated with the lack of a procedure that for the performance of the hand maintenance of the lines, without welding the rails, for the noninteroperable lines, the investigation commission recommends:

2. Romanian Railway Safety Authority – ASFR shall analyse the opportunity to keep the authorization of railway supplier of SC LOG FER SRL.

**3.4.38.** The railway accident on the 30<sup>th</sup> August 2019, in the railway county Timișoara, in **Iablanțița railway station**, in the running of the freight train no.59426 (got by the railway undertaking Unicom Tranzit SA), consisted in the derailment of first axle of the hauling locomotive.

The investigation report was completed on the 28<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident is the loss of the guiding capacity of the locomotive guiding axle, climbing of the outside rail of the curve by the guiding wheel of this axle and its fall outside the track.

**Contributing factors:**

- existence at the accident site of some failures at the line cross level, over the limits of the accepted tolerances stipulated in the regulations, leading to the partial transfer of the vertical load (Q) of the guiding wheel;
- exceeding of the tolerances accepted by the regulation framework regarding the balancing of the loads on axle, at the axle no.1 of the locomotive (first axle in the train running direction), it leading to the partial transfer of the vertical load (Q), acting on the guiding wheel;
- exceeding of the tolerances accepted between the close deflections at the outside rail of the curve;
- not working of the wheel flange lubrication system from the locomotive guiding wheel, it leading to the missing in the contact between the guiding wheel and the rail of a friction coefficient that shall ensure a friction favourable to the safety against the derailment.

Overlapping of the dynamic effects above mentioned favoured the increase of the attack impact in the point „0”(zero) and climbing of the rail (from the outside rail of the curve), by the flange of the guiding wheel.

**Underlying causes:**

- inobservance of the provisions of art.7, letter A, points 1 and 3, from “Instruction of norms and tolerances for the construction and maintenance of track for lines with standard gauge no.314/1989“, regarding the tolerances for the cross level prescribed for a rail against another one;
- inobservance of the provisions of art.7, letter B, point 1 from “Instruction of norms and tolerances for the construction and maintenance of track for lines with standard gauge no.314/1989“, regarding the tolerances of the adjoining versine’s of the track;
- inobservance of the provisions of art.37, paragraph 3, point f), from “Instructions for the activity of the locomotive crew- no.201“, regarding the checking and the filling the oil level at the lubricating points and of the oil at the hydraulic transmission, if case.

**Root causes:**

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 “Compliance with the technical specifications, standards and requirements relevant for the whole life cycle of railway tracks in maintenance process“, part of safety management system of the public railway infrastructure administrator CNCFR „CFR“ SA, regarding the performance of the maintenances and periodical repairs at railway tracks;
- nonidentification of the danger generated by the locomotive operation at which the loads on axles and wheels are not properly balanced;
- nonidentification of the danger generated by the improper working of the wheel flange of lubricating system of guiding axels from the locomotive.

**Safety recommendations:**

On the 30<sup>th</sup> August 2019, in the railway county Timișoara, track section Orșova - Caransebeș, at the entry into Iablanița railway station, on the diverging track 3, in the running of the freight train no.59426, consisting in 17 wagons loaded, hauled with the locomotive EA 089, the first axle of the locomotive derailed in the running direction of the train.

During the investigation, the commission found that both the management of the central and regional infrastructure administrator and the management of the railway undertaking identified but did not manage the risks generated by the lack of the maintenance of the railway tracks, respectively of the traction means got, in order to be able to dispose consequently viable solutions and measures for keeping under control the derailment danger.

So, if the public railway infrastructure administrator and the railway undertaking had been applied its own procedures of the safety management system, entirely, as well as the provisions of the practice codes, part of SMS, they should have kept the technical parameters of the track geometry between the limits of tolerances imposed by the railway safety, respectively taken measures in case of exceeding the operation tolerances at the locomotives got, preventing in a such way the accident occurrence.

1. Romanian Railway Safety Authority – ASFR shall assess the way CNCF „CFR” SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed by AGIFER in the last two years, for the accidents occurred on the railway networks, that had similar causes and factors;
2. Romanian Railway Safety Authority – ASFR will ensure that the railway undertaking Unicom Transit SA identifies the dangers generated by the operation of the railway traction units whose axels and wheels are not properly balanced and whose lubricating wheels flange of the guiding axles do not comply with the conditions stipulated in the regulations in force, and the effectiveness of the management of the risks generated by these dangers is proper.

**3.4.39** The railway incident happened on the 8<sup>th</sup> September 2019, in the railway county Craiova, track section Roșiori Nord-Videle, between the **railway stations Rădoiești and Atârnați** (electrified double-track line), at the level crossing provided with automatic installations for road signalling with half-barriers - type BAT, km 90+640, in the running of the freight train no.20272-1, hauled with the locomotive ES 110, got by the railway undertaking Rail Cargo Carrier Romania SRL, consisted in the hit of some parts of the level crossing by the animal protector (plough) of the locomotive.

The investigation report was completed on the 6<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**The direct cause** of the railway incident was the affecting of the structure clearance by some elements of the level crossing, whose position allowed the contact with the plough of the locomotive ES 110, when it passed by.

**Contributing factors:**

- position of the last 3 inner slabs of the level crossing, in the train running direction, at 20-45 mm over the quota for the superior level of the rail;
- detachment of the left metallic cover plate for protection, in the running direction of the train, from the antepenultimate inner slabs and its movement vertically, it leading to the collision with the locomotive plough;
- not fixing of some failures at the track, recorded following the measurements with the car for track geometry measurement, it leading to the transmission of some uncontrolled vibrations vertically of the locomotive, having as consequences the contact between the low part of its plough and the up part of the last 3 inner slabs of the level crossing, in the train running direction.

**Underlying causes:**

- inobservance of the provisions of chapter 5, point 5.4 from the ”Technical note regarding the composition, maintenance and operation of the covered level crossings and lines, with reinforced concrete prefab slabs/1986”, respectively of point 6.4 from ”Department technical instructions regarding the composition, maintenance and operation of the covered level crossings and lines with

reinforced concrete prefab slabs” regarding the level to which the inner slabs of the level crossing have to be kept in operation, against the rail running surface;

- inobservance of the provisions of part II, of the section 2, art. 26(1) and (2) from ”Regulation for railway technical operation no. 002/2001” or of part I, chapter I, section 2, art. 12 of ”Regulation for the running of the trains and shunting of railway vehicles no. 005/2005”, regarding the fact that inside the structure clearance it is not accepted any part of the fixed railway constructions or installations;
- inobservance of the provisions of part V, chapter VI, art. 225, letter b) from ”Instructions for the diagnosis of the track and contact line made with the motorised car for track measurement TMC/2007” regarding the terms for the fixing of the failures of the track geometry parameters, put in evidence following the measurement with the train for the track measurement.

#### **Root causes:**

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 ”Compliance with the technical specifications, standards and requirements relevant for whole life cycle of the tracks in maintenance process” (including the annexes), part of the safety management system of the public railway infrastructure administrator CNCF „CFR” SA, regarding the maintenance of the lines;
- nonapplication of the provisions ”Risks of interfaces with the railway undertakings and the measures for keeping under control”, these being put in evidence into the paper no. 202/1/1395/10.07.2018 of SRCF Craiova, part of the safety management system of the public railway infrastructure administrator CNCF „CFR” SA, regarding the ensuring of the structure clearance in the train running.

#### **Safety recommendations:**

Hit with the plough of the locomotive ES 110 of the train 20272-1 of some parts of the level crossing from km 90+640, track I, track section Videle – Roşiori Nord, happened following the affecting of the structure clearance, keeping in operation some inner slabs with quotas outside the tolerances accepted, as well as of a metallic cover plate detached from its body and moved vertically, cumulated with the existence of some failures at the track, that led to uncontrolled movements of the locomotive vertically (pitch movement).

During the investigation, the commission found that that the management of the infrastructure administrator established the ”Risks of interface with the railway undertakings and measures for keeping under control” through the paper no.202/1/1395/10.07.2018 of the railway county Craiova, this document being part of the safety management system. In this document it is stipulated at point 18 the danger „Not ensuring of the structure clearance in traffic”, having as possible consequences hit by the trains of the railway infrastructure parts, of the vehicles that can be taken out with the arms, of the materials, etc. This risk is considered like frequency *infrequent* and like seriousness *marginal*. It is also considered that, as actor responsible for the appearance of this danger the railway undertaking, and like codes of good practice are mentioned „Regulation for the running of trains and shunting of railway vehicles no. 005/2005” and Orders DGLI 30 and 33/130/1974.

In the Regulation 005, part I, chapter I, section 2, art. 14(1), point a), there are mentioned like responsible with checking and ensuring the structure clearance, for running line: head of line district, his deputy being at least the lineman or, as the case, the responsible with the traffic safety of the company, in charge with the maintenance and/or performs works at the railway infrastructure. Consequently, the commission considers wrong the fact that the railway undertaking is considered the single actor responsible for the management of this danger, being necessary a revision of the document no. 202/1/1395/10.07.2018 of SRCF Craiova.

Also, in the ”Register for the evidence of the own dangers” CNCF „CFR” SA, part of the safety management system, at number 18, it is recorded the danger – „inobservance of the norms regarding the occupation of the structure clearances with vehicles that can be taken out from the line with the arms (monorail, trolley for the track measurement)”. Instead, the consequences associated to this danger refer not only to the vehicles that can be taken out the line with the arms, but also to the materials, machineries, equipments, parts and installations that are in the structure clearance. The investigation commission considers that the presentation of this danger has to be added consequently, according to the definition of the structure clearance, presented in ”Regulation for the running of trains and shunting of railway vehicles no. 005/2005” and ”Regulation for railway technical operation no. 002/2001”. Also, the safety

measure that CNCF „CFR” SA proposed itself (compliance with the provisions of part III, chapter II, section 7, art. 288-296 from the practice code ”Regulation for the running of the trains and shunting of the railway vehicles no. 005/2005”) is not a right one, because the ”Regulation for the running of the trains and shunting of the railway vehicles no. 005/2005” refers to this issue in part I, chapter 2, section 2, art. 12-14.

The investigation commission also found that the infrastructure administrator, at central and regional level, did not identify the risks generated by the lack of maintenance at the tracks (not fixing of the failures recorded during the line measurement with the train for the track measurement, lack of replacement of the reinforced concrete slabs with serious wears, not placing of these slabs at the prescribed level), in order to dispose consequently viable solutions and measures for keeping under control the danger, given by the affecting of the structure clearance. So, in ”Register of risks – synoptic table” of SRCF Craiova, last edition, this issue is not stipulate, not being consequently taken all the measures that impose.

Considering the issues presented, the investigation commission recommends ASFR shall take care that the public railway infrastructure administrator:

- revises its own Safety Management System (SMS), so matches the ”Risks of interface with the railway undertakings” and ”Register for the evidence of its own dangers” with the provisions of the practice codes applicable.

Because these issues regarding the maintenance of the lines were found ad presented also during the investigation of other accidents or incidents, after which safety recommendations were issued, the commission considers that there is no need to issue other similar recommendations.

**3.4.40** The railway accident happened on the 15<sup>th</sup> September 2019, in the railway county Braşov, track section Braşov-Sighişoara, in **Bod railway station**, in the running of the freight train no.50418, got by the railway undertaking Unicom Tranzit SA, consisted in the derailment of first bogie of the hauling locomotive EA no.91 53 0400 386-5, in the running direction of the train, on the switch no.14.

The investigation report was completed on the 14<sup>th</sup> September 2020.

**Direct cause, contributing factors:**

**Direct cause** of the accident was the flange of the guiding wheel of the locomotive (right wheel in the running direction) climbed the rail gauge of the curved point from the switch no.14 in Bod railway station (in a planned area), following the exceeding of the derailment stability limit.

**Contributing factors:**

- cross level of the curved point (outside rail of the curve switch no.14 from the railway station Bod) lower with 21 mm than the level of the curved stock rail (inside rail of the curve of the switch no.14), provided that the value of the tolerance of the track cross level accepted in operation is  $\pm 5$  mm;
- exceeding of the tolerance values accepted for the level, in case of track twist, on the switch no.14 and on the track panel between the switches no.10 and 14 in Bod railway station;
- the value over the limit accepted for the difference between the diameters of the wheels from the same axle, found at the axles no.6, 5, 4, 3 and 2 (first 5 ones in the locomotive running direction).

**Underlying causes:**

The underlying causes of the accident were the inobservance of some provisions from the next instructions and regulations in force:

- inobservance of the provisions of art.19, point 6 from *Instruction of norms and tolerances for track construction and maintenance – lines with standard gauge - no.314/1989*, regarding the values of the tolerances accepted for the cross level at the switches from the reception and dispatching lines;
- inobservance of the provisions of art.7.A, point 3 from *Instruction of norms and tolerances for track construction and maintenance – lines with standard gauge - no.314/1989*, regarding the values of the tolerances accepted for the track twist;
- inobservance of the provisions of point 4.1. of Chapter 4 „Norms of manpower and material consumption”, of the *Instruction for the line maintenance no.300 – edition in force*, regarding the provision with the number of workers for the minimum team necessary to perform the works;

- inobservance of the provisions of Sheet no.4, art.3 from *Instruction for the setting of deadlines and order for the performance of the track inspections - no.305/1997*, regarding the lack of fortnightly inspection and of the work reception from the previous fortnightly inspection, leading to the lack of schedule of the works necessary for putting between the tolerances the track geometry on the switch no.14 of Bod railway station.

**Root causes:**

Nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 *"Compliance with the technical specifications, standards and requirements relevant for the whole life of lines in the maintenance process"*, part of safety management system of the public infrastructure administrator CNCF „CFR” SA, regarding the keeping of the track geometry at the switch no.14 in Bod railway station.

**Safety recommendations:**

The derailment of the locomotive, hauling the freight train no.50418 (got by the railway undertaking SC Unicom Tranzit SA), on the 15<sup>th</sup> September 2019, happened following the lack of suitable maintenance for keeping between the instruction parameters the geometry of the switch no.14 in the railway station Bod and of the failure to update the data regarding the track condition, following the lack of track technical inspection at 15 days and the reception of the works from the previous period of 15 days, in accordance with the provisions of the practice codes (reference/associated documents from the procedures of the safety management system of CNCF „CFR” SA).

Because these issues were found and presented also within the investigation of the similar accident happened on 14<sup>th</sup> August 2019 on the switch no.14 in the railway station Bod, following which Romanian Railway Safety Authority was addressed with the safety recommendation to monitor CNCF „CFR” SA, regarding *"reassessment of the procedures and measures for keeping under control the own risks generated by the geometry condition and schedule of the superstructure maintenance"* we consider that there is no need to issue another identical recommendation.

During the investigation, one found some deficiencies regarding the keeping under control the evolution of the diameters on the running treads of the locomotive wheelsets, that led to the appearance of some differences at the wheels of the same axle, over the accepted limit.

Considering the conclusions of the investigation commission before mentioned, in order to prevent some accidents similar to those presented in this report, AGIFER issues the next safety recommendations:

- Romanian Railway Safety Authority – ASFR shall ask the railway undertaking Unicom Tranzit SA, the revision of the identifications of the risks associated to the railway operations regarding *"the performance of the planned inspection at the wheelsets"* and the insert on the SMS procedures of safety measures from the practice codes (instructions) in force, on order to be sure that the driving axles of the locomotives shall work in normal conditions and complete safety.

**3.4.41.** The railway accident happened on the 17<sup>th</sup> September 2019, in the railway county București, **between București Vest and Vârteju railway stations** (non-electrified double-track line), in the running of freight train no.93618-1, got by the railway undertaking SNTFM „CFR Marfă” SA, consisting in a fire burst into the hauling locomotive DA 1108.

The investigation report was completed on the 6<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**The direct cause** of the incident was the appearance of the electric arc in the plate of terminals at the fastening end (cable lug) of one of the power supply cable of the stator winding (that from the brush holder assembly of the terminal **F**) in the power supply circuit of the traction motor no.4 and its correspondent from the channel of cables, it leading to the perforation and ignition of the insulation, extending of the fire to the other cables of the power supply circuit of the traction motors no.4 and 5 being in the channel of cables and further to the spreading of the fire to the other parts.

**Contributing factors:**

- high level of wear at the power supply cable of the traction motor no.4;

- existing on the terminal plate, on the channel of cables and on the locomotive floor of oil rests coming from the oil leaks from the diesel engine.

**Underlying causes:**

- inobservance of the operational procedure "Maintenance and repair of the traction rolling stock" code PO 74.3, worked out in 2017 in accordance with the provisions NTF no.67-006-2011, approved by the Order of Minister of Transports and Infrastructure no.315/2011, that is the locomotives "have to be withdrawn from operation for planned repairs when one of the norms time or of km imposed is reached first". It is also stipulated that the railway norm above mentioned, although amended by Order of Minister of Transports and Infrastructure no.1359/2012, the railway undertaking did not work out this procedure in accordance with these changes;
- inobservance of the provisions from Instructions for the activity of the locomotive crew no.201/2006 approved by Order of Minister no.2229/2006, respectively of art.44 (3) letter b), regarding the obligation of fixing, within the intermediary inspections, the failures at the parts, installations and aggregates, to which appeared problems in the operation of the locomotive, notified by the driver in the on board book of the locomotive;
- inobservance of the provisions of Technical Specification Planned inspections type PTAE (PTh), R15, RI, RT, R1, R2,2R2,R3 and accidental repairs type RIT, RIR, RAD, RA at the Diesel electric locomotives of 2100 HP code: ST - LDE 2100CP - Edition: 2, revision: 0 in 2015, regarding the obligation to fix the oil leaks from the diesel engine, during all planned inspections.

**Root cause:**

- lack of identification and assessment of the risks of fire in the locomotive, associated to the dangers that could appear in the running of the trains.

**Measures taken:**

Following the accident, the railway freight undertaking SNTFM „CFR Marfă” SA established that the locomotive DA 1108 be submitted to planned repairs.

**Safety recommendations:**

On 17<sup>th</sup> September 2019, at 13:00 o'clock, in the railway county București, track section Chiajna – Jilava (non-electrified double-track line), between București Vest – Vârteju railway stations, on the line I, km 64+900, a fire burst into the locomotive DA 1108, hauling the freight train no.93618-1 (got by the railway undertaking SNTFM „CFR Marfă” SA).

Following the investigation, the commission established that the accident had as root cause lack of identification and assessment of the risks of fire in the locomotive, associated to the dangers that could appear in the running of the trains.

Considering those presented, the investigation commission recommends Romanian Railway Safety Authority – ASFR shall analyse with the railway freight undertaking SNTFM „CFR Marfă” SA, the revision of safety management system so one identifies and assesses the risks of fire into the locomotive, associated to the dangers that could appear in the train running, including those that could appear following the non-withdrawal of the locomotives from operation for planned repairs according to the national norms in force.

**3.4.42.** The railway accident happened on the 22<sup>nd</sup> September 2019, in the railway county Constanța, noninteroperable track section Palas – Năvodari (managed by SC Grup Feroviar Român SA), **between Palas and Constanța Mărfuri railway stations**, non-electrified single-track line, km 1+180, in the running of the freight train no.89972 (got by the railway undertaking SC Tehnotrans Feroviar SRL, hereinafter referred to as SC THF SRL) consisted in the derailment of all axles of the wagon no. 33 87 7852 158-7, the 7<sup>th</sup> one from the rear of the train.

The investigation report was completed on the 16<sup>th</sup> September 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident was the load transfer of the guiding wheel (wheel no.4R) of the wagon no.33877852158-7, it is due to the failures existing at the track cross level.



**Contributing factor:**

- improper maintenance of the line, it leading to the appearance of failures at the track cross level.

**Underlying causes:**

- inobservance of the provisions of art.7.A points 1 and 3 from the "Instruction of norms and tolerances for the track construction and maintenance for lines with standard gauge no.314/1989", regarding the compliance with the tolerances accepted for the track twist and for the cross level prescribed for a rail against the another one, both for the straight line and for the curve;
- inobservance of the provisions from point 4.1. of Chapter 4 „Norms of manpower and material consumption”, of the "Instruction for the line maintenance no.300/1982" regarding the provision with the norm of manpower for the usual manual work maintenance;
- inobservance of the provisions of the sheets no.3 and 4 from the "Instruction no. 305/1997 regarding the establishment of deadlines and order of track inspection performance" regarding the way to do the track inspections.

**Root causes:**

1. lack in the management system of SC LOG FER SRL, render of track maintenance services, of a procedure, that establishes the way to perform the usual manual work maintenance, without welding of the rails, for the noninteroperable track sections.
2. lack in the safety management system, developed by the noninteroperable infrastructure manager (SC GFR SA), of a procedure for monitoring if the service render, with whom there are contract agreement for the performance of the usual maintenance of the tracks, has the resources necessary to carry out these works.

**Safety recommendations:**

On the 22<sup>nd</sup> September 2019, at 01:00 o'clock, in the railway county Constanța, noninteroperable track section Palas–Năvodari, between the railway stations Palas and Constanța Mărfuri, non-electrified single-track line, km 1+180, in the running of the freight train no.89972, all axles of the wagon no. 33 87 7852 158-7, the 7<sup>th</sup> one from the rear of the train, loaded, derailed.

During the investigation, one found that the accident happened following the improper technical condition of the track, generating by its improper maintenance.

As it is stipulated in chapter C.5.6. *Previous similar events*, in the same area, only in 2019, there were two more similar railway accidents. In the investigation reports of the accidents happened, AGIFER issued safety recommendations.

Considering the recommendations issued in the investigation reports of the accidents from the 30<sup>th</sup> June 2020 and 27<sup>th</sup> August 2020, AGIFER renews the safety recommendations issued for these accidents also for this accident, as follows:

1. Romanian Railway Safety Authority – ASFR shall analyse if SC GFR SA, like manager of noninteroperable railway infrastructure, still complies with the conditions that are basis for the granting of the safety authorization.
2. Romanian Railway Safety Authority – ASFR shall analyse if SC LOG FER SRL, still complies with the conditions that are basis for the granting of the authorization of railway supplier for the railway critical service "usual manual work maintenance of the tracks, without the rail welding".
3. Romanian Railway Safety Authority – ASFR shall assess the way the noninteroperable railway infrastructure manager SC GFR SA, identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed for the railway accidents happened on the track section Palas - Capu Midia, in the last five years, with similar causes and factors.

**3.4.43.** The railway incident happened on the 25<sup>th</sup> September 2019, in the railway county Cluj, track section Războieni – Cluj Napoca, in **the railway station Călărași Turda**, consisted in the hit of some elements of the railway installations by a part from the locomotive EA 904, hauling the passenger train no.1838-1.

The investigation report was completed on the 24<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

The direct cause of the incident is the entry, into the structure clearance for the elements of the railway installations, of a part from the locomotive EA 904 (the vertical hydraulic damper).

**Contributing factors:**

- seizure of the vertical hydraulic damper;
- breakage of the welding from the upper support of the vertical hydraulic damper, it permitting the hydraulic damper movement into the structure clearance for the elements of the railway installations;
- keeping in operation of the locomotive EA 904, being in a technical condition that did not ensure the safety conditions, after it exceeded the norms of time and km imposed for the performance of planned repairs.

**Underlying causes:**

- inobservance of the provisions regarding the withdrawal of the locomotive from operation, when the norm of time and km was reached, according to the dispositions point 3.1 of the Norm NF 67-006:2011;
- inobservance of norms of time and km for the performance of planned repairs, disposed in the Norm NF 67-006:2011.

**Root causes:**

- SNTFC did not comply with the requirement code III.4 from the Annex III of the Regulation 445/2011, that is it did not draft a procedure for the management of the locomotive withdrawal, for maintenance;
- SNTFC did not identify the risk of "hit of infrastructure elements by parts detached from the locomotive", generated by the danger represented by the "inobservance of the cycle of planned repairs at the locomotives".

**Additional remarks:**

On 30<sup>th</sup> September 2019, the line staff found hitch inductors damaged between Războieni – Călărași Turda, track I, the part of railway station before that where there were notified the incident happened on the 25<sup>th</sup> September 2019, in the running of passenger train IR no.1838-1. The damages at the inductors were similar those found between Călărași Turda - Câmpia Turzii, that is they had boxes with terminal connections pulled up from the inductor body. The checks showed that the line staff had performed twice the inspection on track I and twice on track II, between 26<sup>th</sup> and 29<sup>th</sup> September 2019, but it did not report damages at the inductors. In the respective period of time, SCB staff had performed an inspection on site at the track circuits, close to the inductors, but it had not observe damages at the inductors.

Considering that during the inspections performed by line and SCB staff, between 26<sup>th</sup> and 29<sup>th</sup> September 2019, on the line Războieni – Călărași Turda, track I, there were found no inductors damaged, provided that 76 trains had run on track I during that period of time, the investigation commission considers that one cannot put in connection the inductors found damaged on 30<sup>th</sup> September 2019 and the part detached from the locomotive EA 904 on the 25<sup>th</sup> September 2019.

**Safety recommendations:**

The incident occurrence was based on causes and factors generated both by the shortfalls in SMS of SNTFC and the deviations from the practice codes. Considering the lessons learned from this incident, the investigation commission considers timely to issue some safety recommendations.

Safety Management System of SNTFC registered a failure in the identification of the risk of "hit the infrastructure elements by the parts detached from the locomotive", risk generated by the danger represented by the "lack of compliance with the cycle of inspections and repairs at the locomotives". For the improvement of railway safety and prevention of some similar events, the investigation commission addresses Romanian Railway Safety Authority - ASFR the next safety recommendation:

1. to ask railway undertaking SNTFC the performance of a risk analysis and application of some additional safety measures, for the risk of "hit the infrastructure elements by parts detached from the locomotive", risk generated by the danger represented by the "lack in the compliance with the cycle of planned repairs at the locomotive".

In the exercise of the function for the management of the engine stock, SNTFC had to draft a procedure that ensure the withdrawal of the locomotives from operation, for their maintenance, but SNTFC overlooked to draft the respective procedure. For the improvement of the railway safety and prevention of similar events, the investigation commission considers timely to address ASFR the next safety recommendation:

2. to ask the railway undertaking SNTFC the implementation of a procedure that ensure the withdrawal of the locomotives from operation for their maintenance, according to the requirement code III.4 from the ANNEX III of the Regulation 445/2011.

**3.4.44.** The railway incident happened on the 27<sup>th</sup> September 2019, in the railway county Cluj, **between the railway stations Oradea and Oșorhei**, consisted in the hit of some elements of the railway installations by a part detached from the locomotive DA 926, hauling the freight train no.83256C.

The investigation report was completed on the 24<sup>th</sup> August 2020.

**Direct cause, contributing factors:**

**Direct cause** of the incident is the entry of a part from the locomotive DA 926 (collar situated between the axles 4 and 5 right side) into the structure clearance for the elements of the railway installations.

**Contributing factors:**

- cracking of the collar because of the material fatigue, this cracking led to the breakage of the collar;
- keeping in operation of the locomotive EA 904, having a technical condition that did not ensure the safety conditions, after exceeding the norms of time imposed for the performance of planned repairs.

**Underlying causes:**

- inobservance of the provisions for the withdrawal of the locomotive from operation, when the norm of time is reached, according to the dispositions of point 3.1 from the Norm NF 67-006:2011;
- inobservance of the norms of time for the performance of the planned repairs, established in the Norm NF 67-006:2011.

**Root cause:**

- SNTFM did not meet with the requirement code III.4 from Annex III of the Regulation 445/2011, that is it overlooked the drafting of a procedure for the management of the locomotive withdrawal from operation, for their maintenance.

**Safety recommendations:**

The incident occurrence was based on causes and factors generated both by the shortfalls of SNTFM SMS, and by the deviations from the practice codes. Considering the lessons learned from this incident, the investigation commission considers timely to issue some safety recommendations.

In the exercise of the function for the management of the engine stock, SNTFM had to draft a procedure that ensure the withdrawal of the locomotives from operation, for their maintenance, but SNTFM overlooked to draft the respective procedure. For the improvement of the railway safety and prevention of similar events, the investigation commission considers timely to address ASFR the next safety recommendation:

1. to ask the railway undertaking SNTFM the implementation of a procedure that ensure the withdrawal of the locomotives from operation for their maintenance, according to the requirement code III.4 from the Annex III of the Regulation 445/2011.

**3.4.45.** The railway accident happened on the 30<sup>th</sup> September 2019, in the railway county Craiova, on the running line between **Drobeta Turnu Severin Mărfuri and Valea Albă railway stations**, in the running of freight train no.33321-2, got by the railway freight undertaking SNTFM „CFR MARFĂ” SA, consisted in the derailment of 3 wagons of the train (from which one overturned).

The investigation report was completed on the 29<sup>th</sup> September 2020.

**Causes and contributing factors:**

**The direct cause** of the accident is the fall of the right wheel (the wheel no.4) of the second axle from the wagon no. 21 53 15038 442, the 10<sup>th</sup> one of the freight train no.33321-2, between the rails, within a curve with left deviation, in the train running direction. It happened following the improper composition of the track superstructure, allowing the movement of the unit rail – metallic plate along the wooden sleepers, leading to the increase of the gauge value over the limits of tolerances accepted in operation.

**Contributing factors:**

- keeping in operation, at the derailment site (km 350+962), of some common wooden sleepers, whose technical condition imposed their replacement, given the lack of provision with sleepers necessary for the infrastructure maintenance.

**Underlying cause:**

- inobservance of the provisions of art.14 from the Instruction of norms and tolerances for the track construction and maintenance – tracks with standard gauge - no.314/1989, regarding the tolerances accepted for the track prescribed gauge.

**Root cause:**

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 "Compliance with the technical specifications, standards and requirements relevant for whole life cycle of the tracks in maintenance process", part of safety management system of the public railway infrastructure administrator CNCF „CFR” SA, regarding the performance of the maintenance and periodical repairs at the lines.

**Additional remarks:**

*Concerning the technical condition of the track superstructure and its geometry*

On the 25<sup>th</sup> August 2020, the members of the investigation commission, together with the Inspector of District 4 Balota, performed the random checking of the technical condition of the track superstructure where this accident happened, and of the areas where, on the 5<sup>th</sup> November 2019 and the 20<sup>th</sup> December 2019, on the running line between the railway stations Balota, Valea Albă and Șimian, there were the derailments from km 348+150 and 352+513.

Following these checkings, there were the next findings:

- the areas, affected by the derailments, were consolidated with new wooden sleepers, but there are areas where between new sleepers there is an unsuitable one;
- the exterior rail of the curve, with lateral wears at the rail head, were replaced with new ones or, in case, reversed;
- the joints, generally, are not next to each other and some of them had the fish plates fastened with two or three horizontal bolts from the total of 4 screws;
- in some area the track bed was not mechanically shaped and there was not ensured the drainage of the water from rainfalls. It generated the re-appearance of the muddy areas, even if in this area there were carried out cleaning of the ballast.

**Safety recommendations:**

Up to the working out of the investigation report, on the running line Balota - Valea Albă-P.M. Șimian many similar accidents happened, following which AGIFER issued safety recommendations, that were partially implemented.

AGIFER renews the safety recommendation issued in the previous investigation report, that is the report for the accident happened on 1<sup>st</sup> February 2018, on the running line Valea Albă - Drobeta Turnu Severin, km 349+819, underlining the need of its implementation, respectively:

*„Analysis through monitoring actions how CNCF „CFR” SA, like administrator of the public railway infrastructure, ensures the conditions so the safety measures proposed for keeping under control the dangers and risks associated, regarding the performance of the infrastructure maintenance, shall be applicable.*

*Romanian Railway Investigation Agency-AGIFER also alerts the public infrastructure administrator about the need to do, as soon as possible, the reassessment of the safety measures*

proposed by itself in the "Register for the evidence of the own dangers CNCF CFR SA" regarding the maintenance of the railway infrastructure, so they may be completely applicable.

*Disregard of this alert shall have like result the increase of the accident number on the railway network, it has already begun to appear".*

AGIFER also considers necessary that Romanian Railway Safety Authority - ASFR, within the inspections shall impose to the public railway infrastructure administrator CNCF "CFR" SA the implementation of the measures disposed.

No implementation of the safety recommendations has a direct contribution on the technical condition of the railway infrastructure, and the recurrence of the accidents, with same causes, shows a minimum concern for the improvement of the traffic safety.

**3.4.46.** The railway accident happened on the 7<sup>th</sup> October 2019, in the railway county Braşov, track section Braşov – Coşlariu (electrified double-track line), in the **railway station Sighişoara**, in the running of the freight train no.50436-1, got by the railway undertaking Unicom Tranzit SA, consisted in the derailment of first axle of the electric locomotive, having the matriculation number 91 53 0480 024-5, being got by the railway undertaking SC LTE-RAIL ROMÂNIA SRL, being dead one in the train composition.

The investigation report was completed on the 6<sup>th</sup> October 2020.

#### **Direct cause, contributing factors:**

**Direct cause** of the accident is the fall of the left wheel from the first axle of the locomotive (coupled after the hauling locomotive) between the running rails, in its running direction, on a track with speed restriction of 10 km/h. This restriction was introduced on the 5<sup>th</sup> March 2010, following the improper technical condition of the track geometry, it allowing, under the action of the dynamic forces transmitted by the rolling stock, the increase of the failures at the gauge and track direction.

#### **Contributing factors:**

- keeping within the track of 6 standard wooden sleepers (from which 4 consecutives and another 2 very close), where the wheel fell between the running rails, these sleepers were not ensuring a suitable fastening of both rails and allowed the movement of the rails radially outward the track, generating the increase of the values of the gauge and of the versines of the rails under the dynamic effect of the rolling stock in running;
- high difference between the loads on the wheels of the axle derailed.

#### **Underlying causes:**

The underlying causes of the accident were the inobservance of some provisions from instructions and regulations in force, respectively:

- inobservance of the provisions of art.4 from „Instructions for speed restrictions, closing of tracks and cutting of power supply no.317/2004”, regarding the keeping for a long time of the speed restriction of 10 km/h, without taking the measures necessary for the rehabilitation of the track geometry and removal of the speed restriction;
- inobservance of the provisions of the practice code „Instruction for line maintenance no.300”, edition in force, leading to fact that the sizing of the number of jobs afferent to the subunits in charge with the infrastructure maintenance was not done in accordance with the provisions of this practice code;
- inobservance of the provisions of Sheet no.4 art.3, Sheet no.11 art. 2 and Sheet no.12 art. 2 from the „Instruction for the setting of the deadlines and order for the performance of the track inspections no.305-edition in force”, regarding the measurement of the gauge, of the level and track versines at the track sections with speed restrictions, generating the failure of schedule of the work performance necessary to put the track geometry of the track 5 from Sighişoara railway station, curve after the switch no.25, between the tolerances.

#### **Root cause:**

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 „*Compliance with the technical specifications, standards and requirements relevant for the whole life cycle of the tracks in maintenance process*”, part of safety management system of the public railway infrastructure

administrator CNCF „CFR” SA, regarding the performance of the maintenance and periodical repairs at lines.

**Additional remarks:**

During the investigation, there were findings on the deficiencies and lacks, without relevance for the conclusions on the accident causes:

1. The locomotive involved in the accident was not submitted to the intermediary inspection in a traction unit from the 22<sup>nd</sup> August 2019, against the provisions of art.44 from the Instructions for the activity of the locomotive crew no.201/2007, that stipulates the performance of a such inspection at 7 days.

**Safety recommendations:**

In accordance with the provisions of Art.26(2) from the Emergency Ordinance no.73/2019 for the railway safety and of the Directive (EC) no.798/2016, the safety recommendations are addressed to Romanian Railway Safety Authority - ASFR, that shall ask and monitor their implementation by the part identified in the recommendation.

***Safety recommendations associated to the accident occurrence***

The railway accident happened following the improper technical condition of the railway infrastructure, keeping for a long time a speed restriction of 10 km/h, introduced on the 5<sup>th</sup> March 2010, because of the unsuitable wooden sleepers.

The investigation commission found that the administrator of the public railway infrastructure has procedures for the guarantee the fact that the staff to whom the responsibilities were appointed within the structures in charge with the maintenance, has the competences and resources suitable for the achievement of the tasks. The analysis of the resources of the unit and basis subunit in charge with the maintenance of the railway infrastructure in Sighișoara railway station put in evidence that these structures perform the activity with inadequate resources against the necessary ones.

The speed level of 10 km/h was established by the staff authorized for the traffic safety, considering as support for analysis its professional experience. Keeping of this speed restriction of 10 km/h, from the 5<sup>th</sup> March 2010 and up to now, corroborated with the provision of inadequate resources against the necessary ones contributed to the improper maintenance of this track, the maintenance was not made in accordance with the provisions of the practice codes (reference/associated documents of the procedures from the safety management system of CNCF „CFR” SA), preventing the keeping of the track geometry between the tolerances accepted.

1. CNCF „CFR” SA shall revise the identification of the own risks generated by the improper technical condition that imposes the keeping for a long time of the speed restrictions, generated by the unsuitable wooden sleepers.

Within the assessment and estimation of the risks associated to the railway operations, SC LTE-Rail România SRL did not identify the danger of distorting along the time of the locomotive suspension, following the action through hard shocks from the parts of the track superstructure, respectively switches, common crossing, joints, differences of level, that can lead to an unsuitable distribution of the locomotive loads on the wheels and axles. If this danger had been identified, the railway undertaking should have been able, according to the point 1.2.2 from the Annex I of the Regulation no.402/2013, to transfer the management of tis danger to the relevant interfaces.

2. The railway undertaking SC LTE-Rail România SRL shall review the assessment and estimation of the risks, for the relevant interfaces in order to identify the danger of distorting along the time of the locomotive suspension, following the action through hard shocks of the parts of the track superstructure and shall ask the joint management of the afferent risk, by suitable safety measures.

***Safety recommendations associated to the additional remarks***

The locomotive involved in the accident was not submitted to the intermediary inspection in a traction unit from the 22<sup>nd</sup> August 2019, against the provisions of art.44 from the Instructions for the activity of the locomotive crew no.201/2007, that stipulates the performance of a such inspection at 7 days.

3. The railway undertaking SC LTE-Rail România SRL shall take the measures necessary for the performance of the intermediary inspections in accordance with the instructions in force.

**3.4.47.** The railway accident happened on the 15<sup>th</sup> October 2019, in the railway county Craiova, between **Roşiori Nord and Măldăeni railway stations**, track II, km 101+845, in the running of the freight train no.23052-1 (got by the railway freight undertaking SNTFM „CFR Marfă” SA), consisted in the derailment of a bogie of a wagon.

The investigation report was completed on the 5<sup>th</sup> October 2020.

**Direct cause and contributing factors:**

**The direct cause** of this accident is the guiding wheel climbed the gauge face of the outside rail of the curve, this wheel being on the right side of the first axle (in the train running direction) of the wagon no.81536650964-5.

**Contributing factors:**

- irregular distribution of the load of the wagon no.81536650964-5 on those 4 constructive areas inside it, leading to the load transfer of the guiding wheel from the first axle, in the train running direction;
- increase of the value of the total clearance between the side bearers from the both sides of the second bogie, over the tolerances accepted, because the turning with 180°, horizontally, of the upper left side bearer of this bogie (in the train running direction), leading to the load transfer of the guiding wheel from the first axle of the wagon no.81536650964-5;
- exceeding of the maximum values accepted for the lateral wears of the outside rail of the curve, that generated the increase of angle of attack ( $\alpha$ ) of the right wheel in the running direction.

**Underlying causes:**

- acceptance in the traffic of the wagon no.81536650964-5, without meeting with the provisions of point 3.3 – Load distribution, from Annex II RIV – *Prescriptions for loading*, regarding the maximum report accepted of 1,25:1 between the wheels (right/left) of the same axle;
- inobservance of the provisions of art.22, point 2 – with reference to the table 25 from „*Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no.314/1989*”, respectively of the provisions of point 4, last paragraph from „*Technical provisions for the measurement of the vertical and lateral wears at the rails/1987*”, regarding the values of the lateral wears of the rails that impose their replacement.

**Root causes:**

- inobservance of the provisions of the operational procedure code PO 75.2, part of safety management system of the railway freight undertaking SNTFM „CFR MARFĂ” SA, regarding the checking that have to be carried within the reception of the own wagons from the trade partners;
- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07- „*Compliance with the technical specifications, standards and requirements relevant for the whole life cycle of the tracks in the maintenance process*”, part of safety management system of the administrator of the public railway infrastructure CNCF „CFR” SA, regarding the performance of the maintenance and repair at tracks.

**Additional remarks:**

One found some deficiencies in the line maintenance, that could generate the appearance of some dangers with effect for the traffic safety:

- some finding notes, submitted to the commission, do not have effect; e.g although in some finding notes there are references at the nonconformities existing at the accident site, these being found also by the investigation commission and contributing at the accident occurrence, no concrete measure for their removal was taken.

**Measures taken:**

The administrator of the public railway infrastructure replaced reinforced concrete sleepers and completed the fastenings affected in the curve where the accident happened.

The railway undertaking SNTFM „CFR Marfă” SA notified, by the paper C.8.1.3/6/2020, the measures disposed for the inspection of the loading way of the wagons during their delivery/reception to/from the beneficiaries from the catchment area of the railway station Constanța Port, for keeping under control the risk induced by the inconsistent loading of wagons, that is:

- updating of the Loading - Unloading Framework Convention for the composition of the complex crew, participating in the delivery-reception to the customer of the wagons loaded, respectively empty, with the name of the station agent (train manager, storekeeper) instead of storekeeper;
- working out of the standard regulations between the staff of the railway station Constanta Port zona B and the staff of the Inspection Point Constanța Port, where the duties of all employees involved in the operations of delivery-reception of wagons, to and from the beneficiaries shall be stipulated;
- retraining of the traffic, commercial, wagon staff regarding the provisions:
  - o Framework Convention for Loading-Unloading with SC SOCEP SA;
  - o Sheet no.5 - Delivery-reception of wagons between the staff SNTFM „CFR Marfă” SA and the customer- part C, point 4.3 from the Disposition no. 3/2010;
- monitoring of the operation staff regarding the compliance with the provisions of the working instructions and agreements upon a schedule for 8 weeks.

#### **Safety recommendations:**

The derailment of a bogie (first one in the running direction) from the wagon no.81536650964-5 happened following both to some technical and loading nonconformities and to some deficiencies of the track superstructure.

The investigation commission found that the management of the infrastructure administrator, central and regional level, did not completely identify and did not properly manage the risks generated by the lack of maintenance and monitoring of the lines (in this case the cause being the failure of replacement of the rails with lateral wears over the limits accepted), in order to be able to dispose consequently viable solutions and measures for keeping under control the danger given by these. So, in the „Register of risks – synoptic table” of SRCF Craiova, last edition, this issue is not stipulated, consequently all the necessary measures not being taken.

In order to prevent the occurrence of some similar accidents or incidents in the future, in accordance with the provisions of Art.26(2) from the Emergency Ordinance no.73/2019 for the railway safety, the investigation commission issues the next recommendation:

- reassessment of the „Register of risks – synoptic table” of SRCF Craiova, so the dangers from the operation be kept under control disposing viable solutions and measures.

Regarding the factor favouring the derailment, represented by the improper loading of the wagon no.81536650964-5, because during the investigation one took a series of measures for keeping under control the risks generated by the irregular loading of the wagons, the members of the investigation commission did no more consider necessary the issuing of some safety recommendations for the railway freight undertaking regarding this nonconformity.

**3.4.48.** The railway accident happened on 17<sup>th</sup> October 2019, in the railway county Cluj, track section Cluj Napoca – Oradea, between **Cluj-Napoca and Baciu railway stations**, km 503+070 (electrified double-track line), track I, in the running of passenger train no.144-1, got by the railway undertaking SNTFC „CFR Călători” SA, consisted in a fire burst into the hauling locomotive DHE 561.

The investigation report was completed on the 13<sup>th</sup> October 2020.

#### **Direct cause, contributing factors:**

**The direct cause** of the fire was the ignition of the diesel, draining through a hole in the locomotive tank, by the sparks of the brake shoes, during the train braking.

#### **Contributing factors:**

- perforation of the diesel tank by a nonidentified object.

**Underlying causes:** none

**Root causes:** none

**Safety recommendations:** none.

**3.4.49.** The railway accident happened on the 27<sup>th</sup> October 2019, in the railway county Craiova, track section Craiova – Filiași (electrified double-track line), in **Ișalnița railway station**, on the line



no.5, in the running of freight train no.50402 (got by the railway undertaking SC Unicom Tranzit SA), consisted in a fire burst into the electric hauling locomotive EA 010.

The investigation report was completed on the 20th October 2020.

**Direct cause, contributing factors:**

**Direct cause** of the fire was the overheating of the cables from the power supply circuit of the traction engine no.4, following the increase of the amperage, it leading to the ignition of their isolation and then to the fire spreading to the other blocks from the engine room.

**Contributing factors:**

- improper operation of the locomotives commands when the train stopped in the railway station Işalnița (reversing gear on „Forward”, the locomotive switch on the position 2 – traction) it leading to the keeping of the locomotive on traction, when the train was stopped and kept stopped by the braking system of the wagons.

**Underlying causes:**

- inobservance of the provisions from Instructions for the activity of the locomotive crew no.201/2006 approved by Order of Minister no.2229/2006, respectively of art.9 - (1) letter j), that is the locomotive crew had to drive/operate the locomotive in accordance with the technical and operation regulations, specific to this type of locomotive.

**Root causes:** none.

**Additional remarks:**

- inobservance of the provisions of art.12 - (1) letter e), from Instructions for the activity of locomotive crew no.201/2006, that is, after the freight train stop no.50402 in the railway station Işalnița, on the 27<sup>th</sup> October 2019, the driver left unduly the locomotive;
- inobservance of the provisions of art.80.- (1) letter b), of the Regulation for hauling and braking no.006/2005, that is, after the atop of freight train no.50402 in the railway station Işalnița, on the 27<sup>th</sup> October 2019, although the stop was over 30 minutes, the keeping stopped off the train not being made by applying the hand brakes of the wagons.

**Safety recommendations:**

Considering the improper way the driver met with his duties, it contributing at the accident occurrence, the investigation commission issues the next recommendations:

Romanian Railway Safety Authority – ASFR shall ask the railway freight undertaking SC Unicom Tranzit SA the reassessment of the risks generated by the danger ”Not meeting by the railway staff of his duties established by the specific regulation framework, it could lead to material damages, accidents and incidents” and to dispose effective measures for keeping it under control.

**3.4.50.** The railway accident happened on the 5<sup>th</sup> November 2019, in the railway county Craiova, track section Strehaia – Drobeta Turnu Severin, on the running line **between the railway stations Balota and Valea Albă** (electrified single-track), in the running of freight train no.80352-1, got by the railway undertaking SC Grup Feroviar Român SA, consisted in the derailment of 24<sup>th</sup> wagon (the last but one).

The investigation report was completed on the 4<sup>th</sup> November 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident is the fall between the rail, on the curve with right deviation, in the running direction of the train, of the right wheel (wheel no.1) of the leading axle from the wagon no.84537850319-5, the 24<sup>th</sup> of the freight train no.80352-1. It happened following the improper composition of the track superstructure, allowing the radial movement, on both tracks, of the unit rail – metallic plate on the wooden sleepers, leading to the increase of the value of the track gauge over the limits of the tolerances accepted in operation.

**Contributing factors:**

- keeping in operation, at the derailment site, of some wooden sleepers whose technical condition was imposing their replacement.

**Underlying causes:**

- inobservance of the provisions art.25, points 2 and 4 from the „Instruction of norms and tolerances for the track construction and maintenance, for lines with standard gauge no.314/1989”, regarding the failures that impose the replacement of the wooden sleepers, respectively the improper sleepers are not accepted within the track, in some conditions.

**Root causes:**

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 „*Compliance with the technical specifications, standards and requirements relevant for whole life time of the lines in the maintenance process*”, part of safety management system of the public railway infrastructure administrator CNCF „CFR” SA, regarding the performance of the maintenance and periodical repairs at railway tracks.

**Safety recommendations:**

The derailment of the wagon no.84537850319-5 (the 24<sup>th</sup> one of the train) happened following the improper maintenance of the track, at the curve from km 347+742 to km 348+433.

Keeping in operation of some lines with many components out of service, because of:

- non provision with the material and human resources in accordance with the requirements generated by the technical conditions that the railway infrastructure has to meet with so the railway traffic be safety;
- for a long time, the maintenance, periodical repair/renewal of the track were not performed;
- setting up of measures for keeping under control the risks of accidents/incidents, imposing the compliance with the provisions of the practice codes, but without ensuring the resources that make possible their compliance,

there are weaknesses of the management, for whose removal it is necessary the involvement of the public railway infrastructure manager.

Considering the fact that between Balota – Şimian there were many similar accidents in the last years, for their prevention in the future, in accordance with the provisions of Art.26(2) from the Government Ordinance no.73/2019 for the railway safety, the investigation commission issues the next safety recommendations:

1. Romanian Railway Safety Authority – ASFR shall assess how the public railway infrastructure administrator CNCF „CFR” SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued in the investigation reports completed for the accidents happened on the track section Balota – Drobeta Turnu Severin, in the last three years, with similar causes and factors.
2. Romanian Railway Safety Authority – ASFR shall analyse with the public railway infrastructure administrator CNCF „CFR” SA, its activity of management of the risk generated by the keeping in operation of the improper wooden sleepers that have to be replaced very urgently, when there will be established also concrete measures for the improvement of the railway safety level.

**3.4.51.** The railway incident happened on the 9<sup>th</sup> November 2019, in the railway county Craiova, track section Caracal – Piatra Olt, non-electrified single-track line, in **the railway station Caracal**, in the shunting of diesel electric locomotive DA 913, consisted in the hit of short control bar, inside control bar and the draw bar of the switch no.24, by the lower part of the casing of the gear box from the axle no. 2 of the locomotive.

The investigation report was completed on the 5<sup>th</sup> November 2020.

**Direct cause, contributing factors:**

**The direct cause** of the incident is the lower part of the casing of the gear box from the axle no. 2 of the diesel electric locomotive DA 913 left the structure clearance of the rolling stock and entered

the track structure clearance, then the short control bar, inside control bar and the draw bar of the switch no.24 from the railway station Caracal were hit.

**Contributing factors:**

- existence of some old cracks on about 90% at the welded joint between the tin casing of the lower part of the gear box casing and its roll collar during the locomotive operation;
- nonidentification of cracks during the inspections on the technological pitch, for the locomotive fitting-out and during the planned inspections, because of the fixing position of the tin casing of the lower part of the gear box casing on the roll collar;
- lack of anchoring wire for the fastening of the gear box from the axle no.2 of the locomotive;
- improper checking of the bogies during the inspection type PTAE on the pitch for inspection and supply of the locomotive, made by the operation staff (locomotive examiner);
- keeping in operation of diesel electric locomotive DA 913, after it reached the norm of time for the performance of planned repairs.

**Underlying causes:**

- inobservance of the provisions from Instructions for the activity of the locomotive crew no.201/2007, art.37, paragraph (3), letter a) regarding the obligation of the operation staff (locomotive examiner) after the inspection on the pitch for locomotive inspection, fuel supply and putting into service it had to check visually the existence and the integrity of all locomotive parts and subassemblies ;
- inobservance of the provisions from "TECHNICAL SPECIFICATION Planned inspections type PTAE (PTh), R15, RI, RT, R1, R2, 2R2, R3 and accidental repairs type RIT, RIR, RAD, RA at the diesel-electric locomotives of 2100 HP", Annex 3, part I "List of works, inspections within the technological process for supply and fitting-out of diesel-electric locomotive PTAE (PTh)", point A "Mechanic and pneumatic part", where, at paragraph 7, the locomotive examiner had to make the visual inspection of the gear boxes and filling the oil level, if case;
- inobservance of the provisions of Chapter 3 – Norms for the performance of the planned inspections and repairs at the railway vehicles and their periodicity (cycle) from the Railway Norm 67-006:2011 "Railway Vehicles. Types of planned inspections and repairs. Norms of time or norms of 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, as follows:
  - o subpoint 3.1, that is the diesel electric locomotive DA 913 was not withdrawn from running after the achievement of the norm of time stipulated for the performance of planned repairs;
  - o table 3.1, letter A, position no.3, that is the cycle of planned repairs for the diesel electric locomotive DA 913 was not met with.

**Root causes:** none.

**Safety recommendations:**

In case of the incident happened in the railway station Caracal in the setting back of diesel electric locomotive DA 913 from end X to the end Y of the railway station, for the hauling of freight train no.23060-1, it was found that the detachment from the welded joint between tin casing of the lower part of the gear box casing and the roll collar happened because the existence of an old crack on about 90% in the section of the casing tin, at the welding point with the collar.

The appearance between the tin casing of the lower part of the gear box and the roll collar could be identified during the planned repairs, provided that the norms of time or km imposed by the Railway norm NF 67-006:2011 "Railway Vehicles. Types of planned inspections and repairs. Norms of time or norms of km run for the performance of planned inspections and repairs" amended by Order of Minister of Transports and Infrastructure no.1359/2012, were not met with.

After the detachment of the lower casing of the gear box from the roll collar, its exit from the locomotive structure clearance was also possible generated by the lack of the anchoring wires of the gear box.

Considering these above mentioned, the investigation commission considers necessary to issue the next safety recommendation:

- SNTFM “CFR Marfă” SA that gets „Certificate of Entity in charge with the Maintenance” shall be asked to analyse again the processes for the performance of the inspections and repairs at diesel-electric locomotive of 2100 HP, so be sure that within these processes are made, completely, the works stipulated in the technical specifications or tender books including the compliance with the railway norm NF 67-006:2011 "Railway Vehicles. Types of planned inspections and repairs. Norms of time or norms of km run for the performance of planned inspections and repairs" amended by Order of Minister of Transports and Infrastructure no.1359/201

**3.4.52.** The railway accident happened on the 19<sup>th</sup> November 2019, in the railway county Timișoara, in **the railway station Bârzava**, in the running of the passenger train no.74-1 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in the derailment of first axle of the hauling locomotive.

The investigation report was completed on the 17<sup>th</sup> November 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident was the loss of the guiding capacity of the locomotive leading axle, climbing the built-up common crossing (situated on the outside rail of the curve of the diverging track) of the switch no. 7 from Bârzava railway station, and it fell outside the track. The derailment of the guiding wheel of the locomotive led, in the same time, to the derailment of the wheel corresponding to that axle.

**Contributing factors:**

- existence at the accident site of some failures at the cross level of the line, over the limits of the tolerances accepted, stipulated in the regulation framework, that led to the partial transfer of the vertical load of the guiding wheel;
- existence of a lateral threshold of 2,5 mm on the gauge face of the rail at the heel joint from the diverging track of the switch no.7 of Bârzava railway station, that led to the increase of the approach angle at the contact between the guiding wheel and the rail and the sudden load transfer of the locomotive guiding wheel.

**Underlying causes:**

- inobservance of the provisions of art.7, paragraph A, points 1 and 3 from the “ Instruction of norms and tolerances for the construction and maintenance of track for lines with standard gauge no.314/1989“, regarding the tolerances at the cross level prescribed for a rail against another one;
- inobservance of the provisions of chapter III art.21, point 7 from the „Instruction of norms and tolerances for the construction and maintenance of track for lines with standard gauge no.314/1989“, regarding not allowing of lateral thresholds at the joints on the active surface of rails.

**Root cause:**

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 “Compliance with the technical specifications, standards and relevant requirements for whole life time of lines in maintenance process“, part of safety management system of public railway infrastructure administrator CNCFR „CFR“ SA, regarding the performance of the maintenance and periodical repairs at lines.

**Safety recommendations:**

On the 19<sup>th</sup> November 2019, at 13:55 o’clock, in the railway county Timișoara, track section Radna - Iliia (electrified double-track line), administrated by CNCF „CFR” S.A., in Bârzava railway station, in the running of the passenger train no.74-1, hauled with the locomotive EA 551, got by the railway undertaking SNTFC „CFR Călători” S.A., the first axle of the locomotive derailed in the running direction of the train.

During the investigation, the commission found that the management of the public railway infrastructure administrator, at central and regional level, identified but did not effectively manage the risks generated by the shortcomings in the maintenance of the line administrated, in order to dispose consequently solutions and measures viable for keeping under control the derailment danger. So, if the public railway infrastructure manager should have completely applied the own procedures of the safety

management system, as well as the provisions of the practice codes, part of SMS, had been able to keep the technical parameters of the track geometry between the limits of the tolerances imposed by the railway safety, preventing in a such way this accident occurrence.

Considering the common objectives of prevention, the accidents and incidents, respectively of development and improvement of railway safety on Romanian railway and metro network and taking into account the lessons that can be learned from this accident, the investigation commission considers relevant to address ASFR the next safety recommendations:

1. Romanian Railway Safety Authority – ASFR shall ask the public railway infrastructure administrator CNCF „CFR” SA to record in the form for the evidence of the own dangers, the danger generated by the existence of the lateral thresholds at the joint and to establish measures for keeping under control the derailment, following this danger.
2. Romanian Railway Safety Authority – ASFR shall analyse with the public railway infrastructure administrator CNCF „CFR” SA its activity regarding the effectiveness of the measures for keeping under control the dangers generated by the improper maintenance of the track geometry on the crosses-over of the running lines and of the reception/dispatching lines, when it shall establish also effective measures for the improvement of the railway safety.

**3.4.53.** The railway accident happened on the 26<sup>th</sup> November 2019, in the railway county Craiova, track section Roşiori Nord - Caracal (electrified double-track line), between **the railway stations Măldăeni and Mihăeşti**, track I, km.109+200, in the running of the passenger train IR no.1825 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in a fire burst into two cars of the train (that is the 4<sup>th</sup> and the 5<sup>th</sup> ones).

The investigation report was completed on the 10<sup>th</sup> November 2020.

**Direct cause, contributing factors:**

Considering:

- destructions at the double-deck car, that limited the findings;
  - information received from the witnesses and staff involved, regarding the fire force and spread during the time (in the railway station Roşiori Nord there was no smoke emanation and after about 10 minutes the car was violently burning);
  - information collected from the photos and movies taken by different witnesses during the fire;
  - the fact that during the investigation there were found no signs about the improper working of the braking and electric installation of the double-deck car;
  - previous cases where one tried to arson some cars on same track section,
- the investigation commission considers like *probable cause* of the accident, the existence of some external actions that led to the triggering of the fire on the lower part the WC cabin, situated in front-right side, in the running direction of the car no.50532616058-5 (end with hand brake), followed by its violent spread in the intercommunication area of the front car (no.50532049251-3).

**Factors contributing:**

- the influence of the air flows generated by the train running and the wind.

**Underlying causes:** none.

**Root causes:** none.

**Safety recommendations:**

On the 26<sup>th</sup> November 2019, at about 16:35 o'clock, in the railway county Craiova, track section Roşiori Nord - Caracal (electrified double-track line), between the railway stations Măldăeni and Mihăeşti, track I, km.109+200, in the running of the passenger train IR no.1825 (got by the railway undertaking SNTFC „CFR Călători” SA), a fire burst into two cars (the 4<sup>th</sup> and the 5<sup>th</sup> ones) of the train.

Considering that in that case the probable of the fire was the existence of an external action, the members of the investigation commission consider that there is not necessary to issue some safety recommendations.

**3.4.54.** The railway serious accident, happened on the 18<sup>th</sup> December 2019, in the railway county

București, in **Ploiești Triaj railway station**, switch no. 62-76/84, in the running of freight train no. 30558-1 (got by the railway undertaking Deutsche Bahn Cargo Romania SRL) and of the passenger train no. 5008 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in a collision between the hauling locomotives of the trains.

The investigation report was completed on the 7<sup>th</sup> December 2020.

**Direct cause, contributing factors:**

**The direct cause** is the cumulation of the actions performed in the chronological succession of the causal chain, as follows:

- improper organization of the freight traffic, drafting of specific regulations noninstructional and insufficient, the traffic was not managed by the Traffic Controller and lack of technical barriers (endowments);
- lack of communications by the radio station;
- not tracking of the reception route for the freight train, in conditions of running upon calling signal, and nonidentification of the running line in order to be able to comply with its particularities;
- making of entry route for the passenger train on the line 6A, accepting the wrong reporting regarding the stop of the freight train on the line 4A;
- running beyond the end of the reception route without having a permissive passing indication.

**Contributing factors, without their order be a prioritization:**

- non-compliant reporting of the freight train stabling by the exterior station movements inspector end X, it determining the disposing station movements inspector to think that the train stopped;
- not informing of the drivers of the railway freight undertaking DBCR about the provisions of the temporary regulations regarding the traffic through the railway station Ploiești Triaj and the lack of their training;
- driver inexperience, cumulated with the improper recognition of the track section where he was operating and the lack of the certificate for this track section;
- not stopping of the train at the entry signal XBF for the driver notification about the train stop in the railway station;
- unsuitable monitoring, at all hierarchical levels, of the way the traffic is organized and the way the operator from the Traffic Controller manages the traffic;
- use in the traffic of a signalling non-compliant with the regulations from the Signalling Regulation no. 004/2006;
- the wrong working system according which the freight trains that were received on the lines 2A-5A were not stopped for being handled with the running order that stipulate the running conditions provided that this working system did not stipulate the involvement of the external station movements inspector for ensuring the passing through the corresponding signals;
- exceeding of speed of 20 km/h for the freight train, received upon calling signal;
- exceeding of the speed of 15 km/h, according to the Sheet for the Speed Restrictions Notification, for the freight train on the line 4A.

**Underlying causes:**

- inobservance of the provisions of art.247 align (2), art.170 paragraph (1), art.173 paragraph (1) letter b, art.173 paragraph (2), art.174 paragraph (2) and art.177 paragraph (3) from the Regulation for the traffic and shunting of the railway vehicles no.005/2005, on the ban of the simultaneous receptions of trains, reporting of train stabling, train stop in a station after the departure from the neighbour railway station, when the needs impose it;
- inobservance of the provisions art.132, art.136, art.59 paragraph (1) letter b), art.93 paragraph (2), art.58 paragraph (2) and art.157 paragraph (5) letter a) from the Instructions for the activity of the locomotive crew no.201/2006, regarding the obligations of the driver in the train driving to observe the signals and the running line, the communication way by the radio station, notification of the need to stop the train in a station where it had to pass without stop, running of the train through the sectioning points of the lines without exit signals;

- inobservance of the provisions of art.1 paragraph (7), art.1 paragraph (8) and art.117 paragraph (15) from the Signalling Regulation no. 004/2006, regarding the obligation to meet with the type of signal and plate stipulated in the regulation, forbidding of the derogations, amendments or stipulations regarding the regulation, as well as of the signal *passing without stop* given by the movements inspector.

**Root causes;**

- lack of a change analysis in accordance with EU Regulation no. 402/2013, regarding the change generated by the organization of the traffic and shunting during the works at the bridge from km 57+560;
- lack of regulation the performance of a change analysis in accordance with EU Regulation no. 402/2013;
- non-identification by the infrastructure administrator, within the monitoring activity, of the improper way of organization and management of the traffic during the works at the bridge from km 57+560;
- lack of a risk analysis, made by the infrastructure administrator, for the identification of the own hazards and risks associated, regarding the organization of the traffic and shunting on the lines without exit signal, during the works at the bridge from km 57+560;
- lack of a risk analysis, made by the infrastructure administrator, for the identification of the hazards and interface risks associated, regarding the organization of the traffic and shunting on the lines without exit signal, during the works at the bridge from km 57+560;
- failure in the identification, during the monitoring activities performed at all levels of the public railway infrastructure administrator, of the hazards and risks associated in the own and interface activity, following the new traffic conditions through the railway station Ploiești Triaj;
- failure in the identification, during the monitoring activities performed at all levels of the railway freight undertaking, of the hazards and risks associated in the own and interface activity, following the new traffic conditions through the railway station Ploiești Triaj;
- improper organization by the railway undertaking DBCR of the action for the granting of the complementary certificate to the driver of the locomotive hauling the freight train no.30558-1, for the track section where the accident happened;
- improper organization by the railway undertaking DBCR of the recognition by the locomotive crew of the track section where the accident happened;
- drafting of Temporary Regulations that exceeded the regulation competence of CNCF „CFR” SA regarding the change of use and types of shunting signals.

**Safety recommendations:**

On the 18<sup>th</sup> December 2019, at 15:38 o'clock, in the railway county București, in the railway station Ploiești Triaj, switch no. 62-76/84, the freight train no. 30558-1, got by the railway undertaking DBCR, collided head-on with the passenger train no. 5008, got by the railway undertaking SNTFC „CFR Călători” SA.

Following the investigation of this serious accident, the investigation commission concluded that it is based on a series of deficiencies of the safety management system both at the level of the public railway infrastructure administrator, and at that of the railway freight undertaking involved.

So, the public railway administrator:

- it did not regulate and did not make an analysis of change, in accordance with the Regulation UE no 402/2013, generated by the re-organization of the traffic following the rehabilitations at the bridge at km 57+560;
- it did not identify, during the monitoring activities performed at all levels of the public railway infrastructure administrator, the hazards and risks associated in the own activity, following the new traffic conditions through the railway station Ploiești Triaj, for their management in safety conditions;
- it did not organize with the railway undertakings interested the identification of the interface hazards and risks, following the new traffic conditions through the railway station Ploiești Triaj.

Railway freight undertaking DBCR:

- it did not organize properly the notification of the information regarding the railway safety, received from the infrastructure administrator, so the Temporary Regulations were not notified to the interested staff (especially to the drivers);
- monitoring of its own activities did not lead to the identification of the wrong way of freight train running in Ploiești Triaj railway station, so the locomotive crew accepted tacitly this wrong system of railway traffic;
- the procedure for the "evaluation of the drivers for the granting/updating of the certificate/locomotive license" does not contain clear provisions regarding the way to take an exam for the evaluation of the knowledge for getting the competences, so it be kept in accordance with the "requirements for the procedures of granting and updating the complementary certificate";
- in the afferent bibliography "The specific training program, of the theoretical knowledge, for the railway infrastructure on which the driver shall run", there are missing some articles from the instructions and regulations in force, very important for the driver activity.

Also, during the investigation there was found that:

- one used in the activity signals that are not of the type presented in the Signalling Regulation;
- The Signalling Regulation stipulates that a shunting signal on the bracket or dwarf one, can be provided with light red unit instead light blue one, without mentioning which are the conditions where the light blue unit is replaced by the light red one and without stipulating unequivocally that the indication is the same in both cases (it being understood). Use of those two types of signalling can generate confusion and, more dangerous, their use for the solving of some traffic problems can lead to accidents that, usually, in such cases are serious.

Considering the causes of the serious accident, the investigation commission considers necessary the issuing of the next safety recommendations:

- A. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator CNCF „CFR” SA shall:
  1. regulate the performance of an analysis of a change in accordance with the Regulation UE no.402/2013 regarding the common safety method for risk evaluation and assessment;
  2. include in its own monitoring strategy also the monitoring of the changes about the works made at the railway infrastructure that have an impact on the traffic and shunting for the identification and management in safety conditions of all dangers and risks associated in the own activity;
  3. organize with the railway undertakings interested the identification of interface hazards and risks, following the changes about the works made at the railway infrastructure that impact the traffic and shunting for their safety management;
  4. analyse the opportunity to make a pilot project using the radio records in the railway station, supporting the improvement of railway safety, extending it in accordance with the results and identification of the financing sources.
- B. Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking DBCR shall:
  1. organize the training of its own staff so the regulations sent by the infrastructure administrator be notified to the interested staff;
  2. include in its own monitoring strategy also the monitoring of the changes about the works at the railway infrastructure that impact the traffic and shunting for the identification and management in safety conditions of all hazards and risks associated in its own and interface activity;
  3. draft again the documents of training/authorization/certification of the drivers, in order to be sure that they receive all the information relevant for the job exercise and that the evaluation exam for the certification shall be done so ensure the understanding of all requirements necessary for the train driving on the railway infrastructure for which the certification is got.
- C. Romanian Railway Safety Authority – ASFR shall:
  1. ask all infrastructure administrators and managers the identification of all signals for traffic and shunting that are not of the type presented in the signalling regulation and dispose measures accordingly;
  2. analyse the opportunity of changing the Signalling Regulations no.004 so be excluded the use of the light red position at a shunting light signal or be stipulated unequivocally its use.



**3.4.55.** The railway accident happened on the 20<sup>th</sup> December 2019, in the railway county Craiova, track section Drăgotești - Borăscu – Turceni, electrified single-track line, in **Drăgotești railway station**, in the running of freight train no.23644, got by the railway undertaking SNTFM „CFR Marfă” SA, consisted in the derailment of three wagons of the train.

The investigation report was completed on the 18<sup>th</sup> December 2020.

**Direct cause, contributing factors:**

**The direct cause** of the accident was the fall between the rails of the first right wheel (wheel R<sub>8</sub>) from the second bogie of the 20<sup>th</sup> wagon of the train, followed by the fall between the rails of the second left wheel (wheel R<sub>5</sub>) of the same bogie, on the switch no.15 of the railway station Drăgotești. It generated also the derailment of the wheels from the 2nd bogie of the wagon, of all wheels of the 21<sup>st</sup> wagon and of the first bogie of the 22<sup>nd</sup> wagon, on the switch no. 11.

**Contributing factors:**

- existence of 5 consecutive improper special wooden sleepers, at the derailment site, that permitted the radial movement of the unit rail – metallic plate, leading to the increase of the value of the track gauge over the limits of the tolerances accepted in operation;
- degradation of the polyamide centre wear plate (serious wear and crushed, missing about 70% of it) from the first bogie in the train running direction of the train (wheels no.5÷8) from the wagon no. 81536652711-8 (the 20th of the train);
- exceeding of the loading limit and implicitly of the axle load accepted for the wagon that generated the accident and at 18 wagons before it in the train, in the running direction.

**Underlying causes:**

- inobservance of the provisions of art.25, points 2 and 4 from ”Instruction of norms and tolerances for the construction and maintenance of track for lines with standard gauge no.314/1989”, regarding the failures that impose the replacement of the wooden sleepers, respectively the not-keeping within the track of some improper sleepers;
- loading of the wagons of the freight train no.23644, without meeting with the provisions of points 3.1 and 3.2 of the Annex II RIV, regarding the maximum axle load and loading limits.

**Root causes:**

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 ”Compliance with the technical specifications, standards and requirements relevant for whole life cycle of the lines in maintenance process”, part of safety management of the public railway infrastructure administrator CNCF „CFR” SA, regarding the performance of the maintenances and periodical repairs at the lines;
- nonapplication of all provisions of the operational procedure code PO 75.2 – ed.3/00 ”Delivery of the wagons in the dispatching railway station”, part of the safety management system of SNTFM „CFR Marfă” SA and of the Common Working Agreement, no.C.S 1.1/788/01.04.2019, regarding the checking of the freight loading.

**Additional remarks:**

During the investigation, there were found some deficiencies in the maintenance, that could lead to the appearance of some dangers with effects for the traffic safety:

- the switch no.15 Drăgotești was fitted in 1977, being proposed for replacement by the Line Section L4 Drobeta Turnu Severin;
- the Line Section L4 proposed in 2019 the replacement of 102 switches, the most of them not being supplied;
- also the control program for the Line District Turceni is completely followed, the findings notes have no effects, they did not contain the problems of the district, e.g. there were not mentioned the nonconformities found by the investigation commission at the accident site, although they existed for a long time and became more and more serious from one year to another, or the lack of material and blue workers existing in the district.

**Measures taken:**

Soon after the accident occurrence, some measures for the partial removal of the water from the track bed and for the replacement of some special sleepers within the switches no. 15 and 11 were taken.

#### **Safety recommendations:**

The derailment of the wagons no.81536652711-8, 81536653129-3 and 81536653289-4 (the 20th, 21st and 22nd ones from the locomotive) happened inclusively following the improper maintenance of the track at the switch no. 15.

Keeping in operation of some lines with many faulty parts, because:

- non provision with all the material and human resources, according to the requirements determined by the technical conditions that the railway infrastructure has to meet with, so the railway traffic be safety;
- lack, for a long time, of the works of maintenance, periodical repair/renewal of the track;
- setting of measures for keeping under control the risks of accidents/incidents, imposing the compliance with the provisions of the practice codes, but without ensuring the resources that make it possible,

there are weaknesses of the management, for which solving it is necessary the involvement of all decision makers of the company.

Considering the fact that between Turceni – Drăgotești happened many similar accidents in the last years (as it is described at point C.6.), in order to prevent the occurrence of others in the future, in accordance with the provisions art.26 (2) of the Emergency Government Ordinance no.73/2019 for railway safety, the investigation commission issues the next safety recommendations:

1. Romanian Railway Safety Authority – ASFR shall assess the way the public railway infrastructure administrator CNCF „CFR” SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed for the accidents happened on the track section Turceni - Drăgotești, in the last five years, with similar causes and factors;
2. Romanian Railway Safety Authority – ASFR shall ask the railway public infrastructure administrator CNCF „CFR” SA the re-evaluation of ”*Register of risks – summary*” of SRCF Craiova, so the hazards in the operation shall be kept under control disposing viable solutions and measures;
3. Romanian Railway Safety Authority – ASFR shall analyse, together the public railway infrastructure administrator CNCF „CFR” SA, its activity regarding the management of the hazard generated by the keeping in operation of improper wooden sleepers that have to be replaced immediately, when it shall set clear measures for the improvement of the railway safety.

The commission found that, the railway undertaking established the performance of some inspections, that its own staff has to do in the activity of reception the forwarding for transportation. These inspections were established both for this activity generally within the Operational Procedure 75.2 and for the concrete case of wagons taken from SC Complexul Energetic Oltenia SA upon Common Working Agreement, no. C.S 1.1/788/01.04.2019. Considering the fact that, although inspections at the upper part of the wagons are disposed, these cannot be practically done by the staff of the railway undertaking, because in Drăgotești railway station the lines open for traffic are electrified ones.

Considering this issue, the investigation commission issues the next safety recommendations:

4. Romanian Railway Safety Authority – ASFR shall take care that the railway undertaking revises the measures established for the inspection of the way of loading the wagons at their reception in Drăgotești railway station, in order to keep under control, the risk of exceeding the limit of loading and implicitly of the accepted axle load.

**3.4.56.** The railway accident happened on the 20<sup>th</sup> December 2019, in the railway county Craiova, on the track section Craiova- Drobeta Turnu Severin, electrified single-track line, between the **Drobeta Turnu Severin Mărfuri and Valea Albă railway stations**, km 352+513, in the running of freight train no.93818 (got by the railway freight undertaking SNTFM „CFR Marfă” SA) consisted in the derailment of both axles of the second bogie of the 9<sup>th</sup> wagon.

The investigation report was completed on the 10<sup>th</sup> December 2020.

#### **Direct cause, contributing factors:**

**Direct cause** of the accident is the right wheel of the first axle of the second bogie from the wagon no.81536651701-0, the 9<sup>th</sup> one of the freight train no.93818, fell between the rails, on a curve left deviation, in the running direction of the train. It happened following the improper technical condition of the constructive elements of the track superstructure, it allowing the movement of the unit rail-metallic plate in the direction of the increase and exceeding of the maximum accepted value of the track gauge, under the action of the dynamic forces transmitted by the wheels of the rolling stock, this effect being enhanced by the existence of some technical deficiencies at the wagon derailed.

**Contributing factors:**

- keeping in operation, at the derailment site, of some normal wooden sleepers, whose technical condition imposes their replacement;
- deficiencies existed at the polyamide centre wear plates of the wagon no.81536651701-0 (deteriorated completely at the bogie derailed and partially at another bogie), that led to the increase of the dynamic forces transmitted to the track by this wagon, when it ran on curve;
- front to front of the wheelset dimensions, from the leading axle of the second bogie from the wagon no.81536651701-0, smaller than the minimum accepted value for operation.

**Underlying causes:**

- inobservance of the provisions of art.14 from "Instruction of norms and tolerances for the construction and maintenance of track – lines with standard gauge - no.314/1989", regarding the tolerances accepted for the track gauge prescribed;
- inobservance of the provisions of art.25, points 2 and 4 from "Instruction of norms and tolerances for the construction and maintenance of track – tracks with standard gauge - no.314/1989", regarding the failures that impose the replacement of the wooden sleepers, respectively the fact that improper sleepers are not accepted within the track, in some conditions;
- inobservance of the provisions of art.4 from "Instructions for the speed restrictions, line closing and cutting of power supply no.317 / 2004", regarding the restriction, for short period of time, of the trains maximum speed, following the loosening of the track superstructure;
- inobservance of the provisions of art.221(2) letter a from the Regulation of railway technical operation – no.002 and Table no.1 from the Instructions for the technical inspection and maintenance of wagons in operation no.250/2005, regarding the keeping between the tolerances accepted of the value for the distance between the front to front of the wheelset dimensions, for their acceptance in operation.

**Root causes:**

The investigation commission identified like root causes of the accident the deficiencies in the drafting of the safety management system, written down in chapter C.5.2. *Safety management system* from this investigation report, respectively:

- nonapplication of all provisions of the operational procedure code PO SMS 0-4.07 "Compliance with the technical specifications, standards and requirements relevant for whole life time of tracks in maintenance process", part of safety management system of the public railway infrastructure administrator CNCF „CFR" SA, regarding the performance of the maintenances and periodical repairs at tracks;
- nonidentification in the Register of Risks, got by the railway undertaking SNTFM „CFR Marfă", drafted according to the procedure PO 431 SCI/M "Operational Procedure Management of Risks", of the risk generated by the danger represented by the appearance of some failures between the planned repairs, that because their position cannot be determined at the technical inspections, that favoured the accident occurrence, respectively deterioration of the polyamide centre wear plates fitted between the low and upper centre castings of the wagon bogies;
- lack of provisions in the procedure SMS-002, got by the railway undertaking SNTFM „CFR Marfă", for the staff with responsibilities in the management, training and control of safety traffic, possible involved in the analysis of the staff managing the maintenance of the rolling stock, regarding the analysis of the relevant information regarding the investigation and the causes of the event happened in the previous activity, causes based on the improper condition of the wagons and development of some plans of preventive measures, following these analyses It is stipulated in the Annex II of the

Regulation (UE) no.1158/2010 of the Commission regarding a common safety method for the assessment of the conformity with the requirements for getting the safety certificates, criterion Q.3.

**Safety recommendations:**

Up to the drafting of the investigation report, on the running line Balota - Valea Albă - P.M. Șimian there were many accidents, with similar causes, for which AGIFER issued safety recommendations, that were partially implemented.

The track route at the accident site is sinuous, with many curves with radius under 350 m, high gradients and much faster wears appear at the track parts. These wears generate failures at the track geometry, that can exceed the accepted tolerances.

The appearance of the failures at the track geometry, that exceed the accepted tolerances and their keeping for long time led to the increase of the risk of derailment danger.

In order to slow down the evolution of the failures above mentioned, the safety authorized staff introduced speed restriction of 30 km/h, having like support for analysis his professional experience.

The provision with insufficient resources in relation to the needs contributed at the improper maintenance of this line, that was not carried in accordance with the provisions of the practice codes (reference/associated documents of the procedures from CNCF „CFR” SA safety management system), preventing the keeping of track geometry between the accepted tolerances and the restriction for short time of the maximum speed of the train.

The members of the investigation commission concluded that the existence of some nonconformities about the maintenance of the wagons allowed keeping in operation of the wagon no.81536651701-0, having the polyamide centre wear plates deteriorated (completely at the derailed bogie and partially at the another one) it favouring its derailment. During the checking, in AGIFER records, six years before this accident (interval of time for the periodical repairs), one found that in case of 7 railway accidents, happened in the running of the freight trains got by the railway undertaking SNTFM „CFR Marfă” SA, the factor contributing to the event occurrence is the deterioration of the polyamide centre wear plates put between the lower and upper centre castings of the bogies of the wagons derailed.

During the investigation, the commission found that the railway undertaking SNTFM „CFR Marfă” SA did not identify the risk generated by the appearance of some failures at the polyamide centre wear plates put between the lower and upper centre castings of the wagon bogies, appeared between the planned repairs, and did not draft, in accordance with the provisions of the criterion Q.3, from the Annex II of the Regulation (UE) no.1158/2010, a plan with preventive measures, following the analysis of the relevant information related to the investigation and the causes of the events happened in the previous activity, it allowing the keeping in traffic of a wagon having the polyamide plates deteriorated, although the appearance of this failure repeated, favouring the occurrence of some accidents. The measures adopted following the analysis of this risk can be directed to the increase of the quality of the polyamide plates used during the planned repairs (RP, RTI) or by setting the performance of some additional inspections of the condition of these plates between the planned repairs.

Considering the conclusions of the investigation commission above mentioned, for the prevention of some cases of accidents, that could happen in conditions similar those presented in this report, AGIFER issue the next safety recommendations:

1. CNCF „CFR” SA shall revise the identification of the own risks generated by the existence of some failures at the track geometry that impose the keeping for long time the speed restrictions due to the improper wooden sleepers.
2. Railway undertaking SNTFM „CFR Marfă” SA shall assess the risk generated by the appearance of some failures at the polyamide centre wear plates put between the lower and upper centre castings of the wagon bogies, failures appeared between the planned repairs and shall set up measures necessary for keeping under control this risk.

**3.4.57.** The railway incident happened on the 22<sup>nd</sup> December 2019, in the railway county Brașov, track section Coșlariu – Simeria (electrified double-track line), in **the railway station Vințu de Jos**, consisted in a runaway of a group of 5 wagons loaded (got by the railway undertaking SC CER - Fersped SA) from the line n.9 and forcing of the switches no.12 and 14.

The investigation report was completed on the 3<sup>th</sup> December 2020.

**Direct cause, contributing factors:**

**Direct cause** of the incident was the uncontrolled movement of the set of 5 wagons, that were not ensured for resting stopped on the line no.9 of the railway station Vințu de Jos, on a track section with gradient of 2,38 ‰ to the railway station Blandiana, following a cummulation of factors.

**Contributing factors:**

- using in the shunting activity in the railway station Vințu de Jos a wrong working system regarding the way to keep stopped the wagons that are no more shunted, putting in all cases some brake shoes at the ends of the set of wagons;
- using for shunting an incomplete shunting crew and carrying of all tasks by a single person, the foreman shunter;
- not keeping stopped the set of 5 wagons, in accordance with the provisions of the regulations in force, applying the active brakes and putting the brake shoes at the wheels from the ends of the set of wagons.

**Underlying causes:**

Underlying causes of the incident were the inobservance of some provisions from the instructions and regulations in force, respectively:

- Sheet no.25 of Operation Technical Plan of the railway station Vințu de Jos, regarding the way to keep stopped against the runaway the wagons that are not shunted;
- Regulation for the running and shunting of the railway vehicles, art.67, regarding the way to keep stopped against the runaway the wagons that are not shunted.

**Root causes:** none.

**Safety recommendations:**

Considering the improper way the shunting crew carried his duty tasks, it contributing to the incident occurrence, the investigation commission issues the next safety recommendation:

- Romanian Railway Safety Authority – ASFR shall ask the railway freight undertaking CER-Fersped SA to reassess the risks generated by the danger ”not keeping stopped the trains and the sets of wagons in the composition railway stations (end of track section)” and to dispose additional measures for their keeping under control.

**3.4.58.** The railway incident happened on 6<sup>th</sup> February 2020, in the railway county București, in **the railway station Sărulești**, in the running of freight train no.30578, got by the railway freight undertaking SC Deutsche Bahn Cargo Romania SRL, consisted in the hit of the point machine of the mobile crossing from the switch no.10, by the folding cover detached from the 9<sup>th</sup> wagon of the train.

The investigation report was completed on the 24<sup>th</sup> February 2020.

Following the commission findings, on the 24<sup>th</sup> February 2020, the investigation was closed and the incident re-classified according to the provisions of *Investigation Regulation*, art.9 ”*there are not accidents or incidents the situations and facts that led to the accidental traffic closing, following the next causes:*

- a) *natural ones, respectively floods, landfalls, snow-drifts, falls of stones, trees or of other unforeseen obstacles, earthquakes, vegetation fires.*”

**3.4.59.** The railway incident happened on the 21<sup>st</sup> February 2020, in the railway county Constanța, **between the railway stations Palas and Constanța Port Zona B**, consisted in the routing of freight train no.83124Z-1, got by the railway undertaking SNTFM „CFR Marfă” SA, to the railway station Constanța Port Zona B, instead the railway station Constanța Port Terminal Ferry-Boat.

The investigation report was completed on the 20<sup>th</sup> November 2020.

**Direct cause, contributing factors:**

**The direct cause** of the incident is the wrong making of the train route, operating the switch no.8

and commanding the position of the signal XIIB with route indicator B to the railway station Constanța Port Zona B instead A to Constanța Port Terminal Ferry-Boat.

**Contributing factors:**

- failure in tracking on the light panel the train passing route;
- failure in checking the disposition of the Traffic Controller, about the train running;
- failure in tracking the route indicator from the signal XIIB;
- failure in taking the measures (for stopping the train at the signal XIIB, following the wrong position of the route indicators).

**Underlying causes:**

- inobservance of provisions from art. 208, letter f of "Regulation for train running and railway vehicle shunting" no. 005/2005, regarding the checking of the train route on the light panel or on the display, if it is suitable for the train, line and direction commanded;
- failure in taking the measures for stop upon the uncertain position of the route indicator that was on B position instead A position, according to art.121(4) of "Signalling Regulation" no. 004/2006;
- inobservance of the provisions of art.127 point 1 letter a and art.127(2) from "Instructions for the activity of the locomotive crew" no. 201/2007, regarding the carefully follow of the positions of the fixed and mobile signals and of the indicators, put in accordance with the specific regulations.

**Root causes:** none.

**Safety recommendations:** none.

**3.4.60.** The railway incident happened on the 3<sup>rd</sup> March 2020, in the railway county Craiova, track section Piatra Olt–Pitești (non-electrified single-track line), in **the railway station Pitești**, consisted in the fact that the passenger train IR no.1892, got by the railway passenger undertaking SNTFC „CFR Călători” SA, entered on a wrong entry route at the line no.2, occupied by the passenger train no.1781, got by the railway passenger undertaking SNTFC „CFR Călători” SA, instead the line no.1.

The investigation report was completed on the 9<sup>th</sup> June 2020.

**Direct cause, contributing factors:**

The incident was generated by the wrong setting of the reception route for the passenger train no.1892, consisting in the improper operation of the switch no.19 and of the route button from the mechanic panel.

**Contributing factors:**

- the pointsman set wrong the reception route for the passenger train no.1892, after receiving the disposal from the points examiner;
- not-checking of the keys of the switch locks, received by the points examiner from the pointsman after setting the reception route;
- not-checking of the reception route for the passenger train no.1892 by the points examiner after its setting by the pointsman;
- not fitting on site of the switch position indicator after the completion of the line rehabilitations.
- improper operation on the key mechanic panel of the route button for the line no.2 instead the route button for the line no.1.
- the personal problems which were not notified to the hierarchical head and which decreased the concentration capacity.

**Underlying causes:**

- inobservance of the provisions from the Job Description no.422/311/28.06.2018 - Railway station Pitești – Traffic Division for the job points examiner, point 6, paragraph 13, regarding the inspections that had to be done by the points examiner after receiving the keys of the switch locks from the pointsman, lesser the visual inspection on site upon the switch indicators (that are not or are not comply with) of the wright setting of the route;
- inobservance of the provisions from the Regulations for the working of the installations SBW, ATM, BLA of the railway station Pitești – section CT3 Roșiori – division of installations Craiova, chapter

III, subchapter I, point 1, paragraph 2, regarding the wrong setting of the reception route by the pointsman and the inspection that the points examiner had to do after receiving the keys of the switch locks from the pointsman;

- inobservance of the provisions from the Regulations for the working of the installations SBW, ATM, BLA of the railway station Pitești – section CT3 Roșiori – division of installations Craiova, chapter III., subchapter III, point 2, regarding the operation of route buttons on the key mechanic panel, that had to be done by the points examiner;
- impossibility to comply with the provisions from the Signalling regulations no. 004/2006, art.133 paragraph (1), regarding the acquittance by the points examiner of the position given by the indicator for the switch position, because the indicators for the switch position are not;
- inobservance of the provisions from the Regulations for the train running and shunting of railway vehicles, no.005/2005, art.142, points a and b, regarding the inspection by the points examiner of the switch keys brought by the pointsman and of the switch indicators, if they are suitable to the commanded route.

**Root causes:**

- the installations SBW – ATM fitted in the railway station Pitești have a such design so they do not ensure the control on the command equipment from the movements office for the line to which the route was ordered;
- the command equipment from the office of the movements inspector control only the entries or exits from those 3 running directions, respectively Golești, Bradu de Sus and Pitești Nord;
- the line on which the route is set is controlled only by the key mechanic panel that is not dependent from this point of view on the command equipment from the office of the movements inspector;
- the control performed by the movements inspector at the line on which the route had to be set is given only in the report of the points examiner;
- the installation allows that the points examiner be able to set a wright route at a line and to notify the setting of the route at another line.
- the Job Description of the points examiner was not changed, it stipulating at point 6, paragraph 13, that it needs the visual inspection on site upon the switch indicators (that are not or are nonconformed) the wright setting of the route.

**Additional remarks:**

During the investigation, other deficiencies were identified, without relevance for the incident causes, as follows:

- the driver did not look at entry route of the train, it leading to the forcing of the switch no.21, trailed, the driver of the multiple unit not observing it and not stopping.

**Safety recommendations:**

Considering the root causes of the incident and that on the 15<sup>th</sup> April 2019 a similar incident happened, consisting in the wrong setting of the route on the line 4 instead the line 2, the investigation commission recommends Romanian Railway Safety Authority to get sure that the public railway administrator CNCF „CFR” SA shall take the measures for:

- fitting on site switch indicators to meet with the provisions of the Signalling Regulation no.004/2006;
- change of the provisions from the Job Description of the points examiner regarding the visual inspection on site of the right setting of the route;
- analysis of the possibility to replace or improve the present installation SBW, ATM, BLA in the railway station Pitești with an interlocking system which solve all the limits of the present one.
- performance of a risk analysis regarding the dangers represented by the improper operation of the installations SCB and the unsuitable inspection of the entry/exit routes and the assessment of the need to introduce these dangers in the category of the unacceptable nonconformities.

**3.4.61.** The railway incident happened on 5<sup>th</sup> March 2020, in the railway county Brașov, in **the railway station Teiuș**, in the running of passenger train IR no.1818 (got by the railway undertaking SNTFC „CFR Călători” SA), consisted in the wrong making of the entry route for the train in the railway station, on the line 5 occupied.

The investigation report was completed on the 2<sup>nd</sup> December 2020.

**Direct cause, contributing factors:**

**The direct cause** of the incident was the disposing station movements inspector made wrongly the entry route for the train no. 1818.

**Contributing factor:**

- wrong making of the entry route by individual operation of the switches, following the biannual maintenances.

**Underlying cause:**

- inobservance of the provisions of art. 207, letter d from Regulation for the train running and railway vehicle shunting no. 005/2005, regarding the checking of the train route on light panel or on the display, if it is right for the train, line and direction commanded.

**Root causes:** none.

**Safety recommendations:**

Considering the number of the similar incidents happened on railway network this year (4), the investigation commission recommends Romanian Railway Safety Authority shall be sure that:

1. Railway public infrastructure administrator CNCF „CFR” SA shall take measures for the analysis of the need to include the danger represented by the wrong making of the entry route in case of biannual inspections, and the route has to be ensured by the individual operation of the switches, by pushing the buttons for the switch operation on the position requested by the route, in the category *unacceptable nonconformities*.

**3.4.62.** The railway incident happened on the 6<sup>th</sup> March 2020, in the railway county Timișoara, track section Timișoara– Arad, in **Arad railway station**, consisted in making the centralised exit route from the line 1P for the passenger train no.1766 (got by the railway passenger undertaking SNTFC „CFR Călători” SA) to the railway station Aradu Nou, instead to the railway station Glogovăț.

The investigation report was completed on the 4<sup>th</sup> December 2020.

**Direct cause, contributing factors:**

The direct cause of the incident was the disposing station movements inspector end X set wrong the exit route for the passenger train no.1766, to another direction (Aradu Nou) than that stipulated (Glogovăț), forcing the switch no.47 that gives permission to that direction, corroborated with the failure in watching the direction indicator of the exit signal Y1 by the external station movements inspector platform end X and picking up the palette for the dispatching of the train no.1766 to another direction than that stipulated and not-watching of the direction indicator of the exit signal Y1 by the driver of the locomotive hauling the train no.1766 and the occupation of the running line Arad – Aradu Nou.

**Contributing factor:**

- failure in the notification by the movements inspector end X of the driver of the train no.1766 through the radio station RER that the train no.1766 had exit route and shall be dispatched to Glogovăț.

**Underlying causes:**

- failure in the application of the provisions of art. 208, letter f of the Regulation for the running of the trains and shunting of the railway vehicles no. 005/2005, regarding the checking of the train route on the track diagram or on the display, if it is suitable for the train, line and direction commanded;
- failure in the application of the provisions of art. 197 from the Regulation for the running of the trains and shunting of the railway vehicles no. 005/2005, regarding the departure order for the passenger trains;
- failure in taking the measures for the stop upon the unsuitable position of the direction indication that was on A instead G, according to art.121(3) from the Signalling Regulation no. 004/2006;
- failure in the application of the provisions of art. 119 (1), (2), (3) from Instructions for the activity of the locomotive crew no. 201/2007, regarding the close watching of the positions of the fixed and mobile signals and of the indicators put in accordance with the specific regulations.



**Root causes:**

- training of the movement staff did not lead to the development of right working skills, for the performance of all operations for the dispatching of a train (one did not check the direction of train dispatching, neither by the disposing station movements inspector end X nor by the external station movements inspector, although both of them had this obligation, being the second case in the same railway station);
- monitoring of the movement activity did not lead to the identification of wrong working systems, although the technical possibilities allow the analysis of the working way of the movements inspector for 30 days and no analysis was run for it;
- the training of the locomotive crew did not lead to the development of some right skills for the performance of all operations for the train dispatching (the driver did neither check upon the signal the direction of the train dispatching and nor notify by the radio station the dispatching direction, being the second case in the same railway station).

**Safety recommendations:**

Considering the root causes of the incident and taking into account that on the 13<sup>th</sup> April 2010 a similar incident happened, consisting in a wrong setting of the route to Aradu Nou instead Glogovăț, the investigation commission recommends Romanian Railway Safety Authority take care that:

1. the public railway infrastructure administrator CNCF „CFR” SA shall take measures to run a risk analysis for the dangers represented by:
  - o the movements inspector did not comply with all the obligations regarding the dispatching of a train;
  - o lack of analysis of the movements inspector activity upon the reports supplied by the electronic signal box
 and the analysis of the need to include these nonconformities in the category of the unacceptable nonconformities.
2. the railway passenger undertaking SNTFC „CFR Călători” SA shall take measures for the performance of a risk analysis for the danger represented by:
  - o the drivers did not comply with all the obligations for train dispatching
 and the analysis of the need to include these nonconformities in the category of unacceptable nonconformities.

**3.4.63.** The railway incident happened on 5<sup>th</sup> April 2020, in the railway county Brașov, **between the railway stations Lunca Bradului and Răstolița**, in the running of passenger train IR no.1645 (got by SNTFC „CFR Călători” SA), hauled with electric locomotive EA no.112, consisted in the hit of traffic safety installations by parts of the subassemblies of the hauling locomotive.

The investigation report was completed on the 23<sup>rd</sup> September 2020.

**Direct cause, contributing factors:**

**Direct cause** of the incident is the breakage of the fastening hold (total new breakage) on the locomotive body of the bolt of the vertical hydraulic damper vertical afferent to the axle no.4, left side, exit of the damper from the structure clearance of the rolling stock (locomotive) and its entrance in the structure clearance of the track.

**Contributing factors:** none.

**Underlying causes:** none.

**Root causes:** none.

**Additional remarks:**

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

- during the technical inspection of the locomotive in the working point Deda, made by the driver and staff on duty within the technological process from the engine shed, there was not found the hydraulic

damper missing, that, afterwards, proved to be felt on the running line before the railway station Deda. The lack of the locomotive damper was found by the staff of the railway county Braşov.

**Safety recommendations:** none.

**3.4.64.** The railway incident happened on the 10<sup>th</sup> April 2020, in the railway county Braşov, **between the railway stations Topliţa and Gheorgheni**, consisting in hit of the inductor afferent to the exit signal Y III of the railway station Topliţa and of other 7 inductors situated between the railway stations Topliţa and Gheorgheni, by parts of the subassemblies of the locomotive EA nr.185, hauling the freight train no.80324, got by the railway undertaking SC Grup Feroviar Român SA.

The investigation report was completed on the 8<sup>th</sup> December 2020.

**Causes and contributing factors:**

**Direct cause** of the incident is the breakage of the of the fastening hold (old breakage 70%) on the locomotive body of the bolt from the vertical hydraulic damper afferent to axle no.3 right side and the exit of the damper from the structure clearance of the rolling stock (locomotive).

**Contributing factors:** none.

**Underlying causes:** none.

**Root causes:** none.

**Additional remarks:**

During the investigation, there were the next findings on some deficiencies and gaps, without relevance for the conclusions on the accident causes:

- after the last inductor found hit, the train ran a distance of 63 km and passed through 6 railway stations. From these, only the promised (movements office) of the railway station Siculeni is on the right side of the train, in the running direction of the train involved in the incident. After the passing of the train through the railway station Siculeni, the vertical hydraulic damper detached, afferent to the axle no.3, right side, was not found, it being detached;
- in the railway station Izvoru Oltului the train no.80324 was composed from 2 sets of wagons. When the train left the railway station, the driver did not observe that the vertical hydraulic damper afferent to axle no.3, right side, was detached and that it could continue to damage infrastructure elements.

**Safety recommendations:**

In accordance with the provisions of art.26(2) of the Government Emergency Ordinance no.73/2019 for the railway safety and of the Directive (EC) no.798/2016, the safety recommendations are addressed to Romanian Railway Safety Authority - ASFR, that shall ask and track their implementation by the party identified in the recommendation.

***Safety recommendations associated to the additional remarks***

During the investigation, there were found some nonconformities about the technical checking made by the driver, when the train left the railway station Izvoru Oltului, respectively the visual inspection made by the movements inspector of the railway station Siculeni. These activities did not influence the incident occurrence, but the hydraulic damper, detached and not found, could produce the damage of a higher number of inductors or other upshots. In order to prevent some accidents/incidents with similar causes, the investigation commission considers necessary to issue the next safety recommendation:

1. Grup Feroviar Român SA and CNCF „CFR” SA shall take measures for the revision of the own procedures/instructions afferent to those two activities, in order to be sure that the operation staff will be able, in its activity, identify the possible parts detached from the railway vehicles.

**3.4.65.** The railway incident happened on the 26<sup>th</sup> April 2020, in the activity of SC TMB METROREX SA Bucureşti, **track section Berceni - Pipera (M2)**, consisted in hit of the infrastructure elements by a part detached from the train TEM 1320-2320.

The investigation report was completed on the 20<sup>th</sup> May 2020.

Following the findings of the investigation commission, on the 20<sup>th</sup> May 2020, the investigation was closed, because the incident from the 26<sup>th</sup> April 2020 was similar to those happened on the metro network, Main line II, with the trains CAF, on the 4<sup>th</sup> May 2018 (TEM CAF no.1317-2317) and on 23<sup>rd</sup> July 2018 (TEM CAF no.1320-2320).

The incident from the 26<sup>th</sup> April 2020 happened following the delay in the implementation of the measures stipulate in „*Tests on the anti-rolling rod, Metroul București*”, code C.G5REP010718, edition D, drafted by CAF Spania, delays generated by some unforeseen natural causes. Upon the preliminary findings, the breakage of the torque rod happened in same conditions and with same characteristics of the previous incident, and from the investigation of this case, no lessons, necessary in operation, could be learnt.

**3.4.66.** The railway incident happened on 16<sup>th</sup> September 2020, in the railway county București, in **the railway station București Sud**, consisted in the train L 59503 (dead locomotive DHC 873, got by the railway undertaking SC Express – Forwarding SRL) passed the entry signal F1/2 in stop position.

The investigation report was completed on the 8<sup>th</sup> December 2020.

**Causes and contributing factors:**

**Direct cause** of the incident is inobservance of the entry signal F1/2, which position was on stop.

**Contributing factors:** none.

**Underlying causes:** none.

**Root causes:** none.

**Additional remarks:**

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

- following the incident, the notification of Safety Department was made with delay. The movements inspector of the railway station București Sud notified the railway station manager about the incident by phone at 13.05 o'clock. The railway station manager informed the Head of division about the incident at 13.20 o'clock.. The verbal notification was made by the movements inspector of the railway station București Sud to the shift head of the Traffic Controller at 14.30 o'clock. The written notification to the Traffic Controller was sent at 15.24 o'clock. The provisions of art.35, art.36, art.39 from the Government Decision no.117/2010, for the approval of the Investigation Regulation and the provisions of PO SMS 0-4.03 a CNCF „CFR” SA for the notification of railway accidents and incidents, were not met;
- the locomotive DHC 873 ran on 16<sup>th</sup> September 2020, having the installations for the automatic control of the train speed and for safety and vigilance not working, against the provisions of the Instructions for the activity of the locomotive crew no.201, approved by Order of minister no.2.229 from 23rd November 2006.

**Safety recommendations:** none.

**3.4.67.** The railway incident happened on the 24<sup>th</sup> September 2020, in the railway county București, in **the railway station Chitila**, consisted in routing the passenger train IR no.1795, got by the railway undertaking SNTFC „CFR Călători” SA to the railway station Buftea, instead the railway station Săbăreni.

The investigation report was completed on 8<sup>th</sup> December 2020.

**Causes and contributing factors:**

The direct cause of the incident is the wrong making of the train route, operating the switch no.48 on direct line, giving permission to Buftea and asking for position of the route signal XP1 from line 1 with direction indicators „R” to the railway station Buftea instead the railway station Săbăreni.

**Contributing factors:**

- the disposing station movements inspector, the local station movements inspectors I and II did not pay attention to the monitors where there was the passing route of the passenger train IR no.1795;
- the train driver did not pay attention to the route signal XP1, respectively to the direction indicator of the speed indicators, so the train driver was not able to take the measures for train stopping at the route signal XP1.

**Underlying causes:**

- inobservance of the provisions of art. 208, point (2), letter f of Regulation for the train running and railway vehicle shunting no. 005/2005, regarding the checking of the train route on the light panel or on the display, if it corresponds to the train, line and direction ordered;
- inobservance of the provisions art.127, point (1), letter a and art.127 point (2) from Instructions for the activity of the locomotive crew no. 201/2007, regarding the careful monitoring of the positions of the fixed and mobile signals and of the indicators put according to the specific regulations.

**Root causes:** none.

**Additional remarks:**

During the investigation, one found some deficiencies about the notification of the railway incident as follows:

- after the incident occurrence, the disposing station movements inspector and the driver re-parked the train in the railway station, on the line 1 without running order, infringing the instructions;
- after the incident the movements inspector on duty in the railway station Chitila did not notify the railway station management about the incident in the running of passenger train no.1795, consisting in the wrong making of the route on the line 1 of the railway station Buftea and not to the railway station Săbăreni, respectively he did not meet with the provisions PO SMS 0-4.03, edition 5, revision 1 from 2016, for the notification of the railway accidents and incidents happened on the railway network;
- the notification of the incident happened in the railway station Chitila was made by the train manager, filling in and handing over the event report, upon the command of the staff of the railway station Pitești, this report was endorsed according to the internal procedures of SNTFC „CFR Călători” SA.
- the manager of the railway station Pitești, after the notification received from the train manager, notifies the management of SRTFC Craiova, he works out on the 25<sup>th</sup> September 2020 the written address to the Commercial Division, notifying the Safety Traffic Inspectorate on the 20<sup>th</sup> October 2020;
- the driver did not work out the Event Report and did not notify the management of the Depot Pitești;

The provisions of art.35, art.36, art.39 from the Investigation Regulation and the provisions of the procedure PO SMS 0-4.03, edition 5, revision 1 from 2016 of CNCF „CFR” SA for the notification of the railway accidents and incidents were not met with.

**Safety recommendations:** none.

### 3.5 Accidents and incidents investigated within the last 5 years

Investigations performed between 2016-2020:

Accidents investigated <sup>(1)</sup>		2016	2017	2018	2019	2020	TOTAL
Accidents (Art.19, 1 + 2)	Train collisions	1	-	-	-	2	3
	Collisions between trains and obstacles	-	-	-	-	-	-
	Train derailments	17	26	22	27	31	123
	Level crossing accidents	-	-	-	1	-	1
	Persons accidents generated by the rolling stock in motion	-	-	-	-	-	-
	Rolling stock fires	5	5	3	4	9	26
	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>		<b>14</b>	<b>17</b>	<b>12</b>	<b>31</b>	<b>25</b>	<b>99</b>
<b>TOTAL</b>		<b>37</b>	<b>48</b>	<b>37</b>	<b>63</b>	<b>67</b>	<b>252</b>

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

## 4. RECOMMENDATIONS

### 4.1. Brief revision and presentation of the recommendations issued in 2020

Through the issued recommendations, Romanian Railway Investigation Agency 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.	4456	passenger	<b>Jibou - Mirşid</b>	19.01.2019	17:40	16.01.2020	<b>accident</b>	Multiple unit derailment

		In the railway county Cluj, <b>between Jibou and Mirșid railway stations</b> , non-electrified single-track line, there was the derailment of the multiple unit ADH no.1420, being in the composition of the passenger train no.4456.						
		Recommendations issued	4	<p>1. Romanian Railway Safety Authority – ASFR shall request the railway undertaking the revision of the SMS procedures that have to meet with the requirement L1 from the <i>Regulations 1158/2010</i>, adding clear provisions that establish the responsibilities for its own staff, in order to guarantee the performance of the activities for the quick identification, collection, listing, implementation and monitoring of the relevant safety requirements for each type of rolling stock.</p> <p>2. Romanian Railway Safety Authority – ASFR shall request the railway undertaking the revision of the SMS procedures that have to meet with the requirement L.2 from the <i>Regulations 1158/2010</i>, adding clear provisions that establish the responsibilities for its own staff, in order to guarantee the performance of the activities for the identification/drafting and use of the suitable specific documents for each type of rolling stock.</p> <p>3. Romanian Railway Safety Authority – ASFR shall request the railway undertaking the revision of the SMS procedures that have to meet with the requirement P1 from the <i>Regulations 1158/2010</i>, adding provisions that establish the responsibilities for its own staff, in order to guarantee the updating of the safety provisions for each type of rolling stock and safety equipment, and the information from the provisions be <i>accurate, complete, coherent and easy to understand</i>;</p> <p>4. Romanian Railway Safety Authority – ASFR shall request the railway undertaking and the economic operator that perform <i>maintenance</i>, the revision of the technical specification which cover planned inspections/accidental repairs by lifting, introducing some additional operations of checking/ adjustment of the height of the air cushions, of the mechanical clearances and loads on wheels, for keeping under control the load transfers between the wheels of the diesel multiple unit.</p>				
		Recommendations implemented (closed)	3	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendations no.1, 2 and 3, issued following the investigation of this accident, that they were analysed, the measures to be taken were identified and implemented. <i>SNTFC „CFR Călători” SA checked and updated the procedures so they meet with the requirements.</i>				
		Recommendations in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.4, issued following the investigation of this accident, that it was partially implemented, being still in implementation process. <i>Through the paper no.DT2/2/56/11.02.2021 the Driver guide for the operation of the multiple units type ADH 11 (training, driving and stabling), edition August 2011, was disposed for use, in the program for continuous training. The risks generated by the failure of the secondary suspension with air cushions shall be assessed.</i>				
2.	Rake of wagons	Rake of wagons	<b>Overground Depot Berceni – Underground Depot Berceni</b>	26.01.2019	09:54	23.01.2020	<b>incident</b>	hard hit of the stop buffer by a unit of an electric metro train

		In the activity of SC TMB „METROREX” SA București, during the shunting of the rake of vehicles, consisting in the electric train TEM no.1322-2322 (being in active state) and its hauling locomotive LDH no.92 53 0 86-0100-7, from the <b>overground depot Berceni to the underground depot Berceni</b> , there was the uncontrolled increase of the speed of the rake of vehicles, it leading to hard hit of the stop buffer from the line no.8, by the unit of the electric metro train S.TEM no.1322, followed by its derailment and the injury of a REM driver.							
		Recommendations issued	2	1. Romanian Railway Safety Authority-ASFR shall ask METROREX take care that the manufacturer TEM BM3-CAF shall re-assess the vehicle software, so it ensures a proper safety level, including in case of its operation by hauling; 2. Romanian Railway Safety Authority-ASFR shall ask METROREX take care that the manufacturer TEM BM3-CAF shall added in the Driver Manual with the operations needed to be performed during the operation in hauling condition, if the rake of vehicles type BM3-CAF is coupled at a shunting locomotive.					
		Recommendations not implemented (open)	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on those two safety recommendations issued following the investigation of this incident, that these were not implemented.					
		passenger	<b>Valea Vișeului - Leordina</b>	31.01.2019	02:10	22.01.2020	<b>informative</b>	A rock hit 2 locomotives and 2 cars	
		In the railway county Cluj, on the running line Salva - Sighetu Marmăției (non-electrified single-track line), <b>between Valea Vișeului and Leordina railway stations</b> , km 10+342, in the running of the passenger train no. 4111-2, there was the collision between the vehicles of the train and a piece of stone detached from a slope, leading to the damage of the hauling locomotive DA 1228 and the dead one DA 881, the damage and derailment of the first two cars.							
		Recommendations issued	2	1. Romanian Railway Safety Authority – ASFR shall analyse, by means of monitoring, how CNCF „CFR” SA, like administrator of the public railway infrastructure, ensures the conditions so the safety measures established for keeping under control the dangers and associated risks, in connection with the performance of the public railway infrastructure maintenance, to be applicable. 2. Romanian Railway Safety Authority – ASFR shall analyse, by means of monitoring, of the way in which CNCF „CFR” SA, like administrator of the public railway infrastructure, ensures the fulfilment of the requirements that were necessary to obtain the safety authorizations.					
3.	4111-2	Recommendations implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this incident, that it was analysed, the measures, to be taken, were identified and implemented. <i>The Track Division Cluj took the next measures:</i> a) to perform quarterly, or whenever is necessary, a removal of stones and material detached from the rocky wall, accumulated behind the side piling from the dangerous point km 10+100 ÷ 10+240; b) in case of bad weathers, codes given by the weather stations, one proceeds to the guarding of the dangerous point, with workers of the line section L9 Sighet; c) in PAAS there were included funds for the rock removal, being in process of completion the auction documents.					
		Recommendations in implementation process		Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this incident, that it is in implementation process.					

		(open))		It shall be checked during the surveillances organized and performed according to Minister of Transports' Order OMT no.650/1998 and to the Regulation (EU) 761/2018.				
4.	13642	passenger	Sărățel - Mărișelu	10.02.2019	13:20	06.02.2020	accident	Derailment of the multiple unit
		In the railway county Cluj, track section Sărățel - Deda (electrified single-track line), <b>between the railway stations Sărățel and Mărișelu</b> , km 5+709, in the running of passenger train Regio no.13642, got by the railway undertaking SNTFC „CFR Călători” SA, there was the derailment of two axles (5 <sup>th</sup> and 6 <sup>th</sup> ones in the running direction) of the multiple unit ADH no.1421.						
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority shall request the infrastructure administrator the revision of the danger evidence and the performance of a risk analysis, for the dangers generated by the unsuitable maintenance of the dangerous points.</p> <p>2. Romanian Railway Safety Authority shall request the railway undertaking the revision of the SMS procedures that have to meet with the criterium code F.2 from the Regulations 1158/2010, for working out a procedure in order to guarantee that the staff appointed with the responsibilities for the provision with the necessary rolling stock, composing the trains in running, gets also the authority and the adequate resources for the performance of these activities.</p>				
		Recommendations implemented (closed)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the two safety recommendations issued following the investigation of this accident, that they were analysed, the measures, to be taken, were identified and implemented.</p> <p><i>Risk analysis no.48/SC/3/362/2020.</i></p> <p><i>SNTFC „CFR Călători” SA checked the procedures of SMS and identified procedures that shall meet with the requirement F2 from the Regulation no.1158/2010.</i></p> <p><i>SNTFC „CFR Călători” SA checked and updated the procedures so they shall meet with the requirements.</i></p> <p><i>The risks generated by the failure of the secondary suspension with air cushions were assessed.</i></p>				
5.	74-1	passenger	Săvârșin	02.03.2019	12:45	28.02.2020	accident	Locomotive derailment
		In the railway county Timișoara, track section Radna - Ilia (electrified double-track line), in <b>the railway station Săvârșin</b> , when the passenger train IR no.74-1 (got by the railway undertaking SNTFC „CFR Călători” SA) was dispatched from the deflecting section 1 to Vărădia, on the track I, there was the derailment of the first axle from the first bogie of the locomotive EA 689, in the running direction, and lifting of the wheels from the axles 2 and 3 of the same bogie on the profile of the check-rail of the switch no.18 from the end Y of the railway station.						
		Recommendations issued	3	<p>1. Romanian Railway Safety Authority - ASFR shall analyse together with the railway transport undertaking that get locomotives type 060-EA or 040-EC, the opportunity to introduce into the safety management system some regulations (procedures) that provide measures for periodic inspection, during the planned inspections type RT or R1, the transfer of the loads on the axle and mechanical clearances, in order to keep under control the risks induced by the changes in time of the characteristics of the rubber suspension elements.</p>				



				<p>2. Romanian Railway Safety Authority – ASFR, together with the public railway infrastructure administrator CNCF „CFR” SA, shall carry out a risk analysis to find the opportunity to introduce the danger of "exceeding the admitted track tolerances" like unacceptable nonconformity.</p> <p>3. Romanian Railway Safety Authority – ASFR, together with the public railway infrastructure administrator CNCF „CFR” SA shall carry out a risk analysis to find the opportunity to introduce the danger of under-sizing the staff from Lines Districts like unacceptable nonconformity.</p>				
		Recommendation in implementation process (open)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it was partially implemented, still being in implementation process</p> <p><i>SNTFC checks the distribution of the loads on wheels and axles according the Railway Technical Norm 67-003:2008. Additionally, this checking is made at about 8 months (during the planned inspections type R2) and during the first inspection (IRT) after the arrival of the locomotive from the planned repair.</i></p> <p><i>It is in implementation process the determination of the loads on wheels at the first planned inspection, irrespective of its type, after the replacement of the whole set of rubber suspension elements.</i></p>				
		Recommendation implemented (closed)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.2 and 3, issued following the investigation of this accident, that they were analysed, the measures, to be taken, were identified and implemented.</p> <p><i>The danger „exceeding of the tolerances accepted by the track” is set up like relevant nonconformity „Problems at the gauge and level on the curves and after the switches”. The plan of measures was drafted, sent to all track sections L and it is included in the control theme.</i></p> <p><i>The Line Division Timișoara asks yearly, and again when it is necessary, if case, the staff necessary for training for the traffic safety jobs and the rest of staff necessary (filling of the vacancies) for the staff selection.</i></p>				
		passenger	<b>Telciu - Coșbuc</b>	08.03.2019	20:59	05.03.2020	<b>accident</b>	Derailment of a wagon
		<p>In the railway county Cluj, <b>between Telciu and Coșbuc railway stations</b>, km.10+718, in the running of the passenger train no.4136, got by the railway undertaking SNTFC”CFR Călători” SA, there was the derailment of first axle from the second bogie of the car no.50537131042-4, being the 5<sup>th</sup> one in the train composition.</p>						
6.	4136	Recommendations issued	6	<p>1.Romanian Railway Safety Authority – ASFR shall take steps for the express and clear cancellation of the provisions of OMT 290/2000, that are contradictory to the further upper level legal papers, that have like object the products and services with impact on the railway safety, for the prevention of some situation of their contradictory application.</p> <p>2. Romanian Railway Safety Authority – ASFR shall ask the infrastructure manager a risk analysis for the dangers generated by the wooden sleepers already fitted in the track, that were purchased upon other requirements than those from the technical standard in force, or they did not meet with the condition regarding the conformity certification upon the technical specifications;</p>				

			<p>3. Romanian Railway Safety Authority – ASFR shall ask the infrastructure manager the revision of the SMS procedures, that have to meet with the criterium C.1 from the Annex II of the Regulations 1158/2010, adding clear provisions for the appointment of the responsibilities to its own staff, regarding the checking and control of the contractors competence, performances and results in the railway safety field, at the selection moment.</p> <p>4. Romanian Railway Safety Authority – ASFR shall ask the infrastructure manager the revision of SMS procedures that have to meet with the criterium code V.3 from the Annex II of the Regulations 1158/2010, adding clear provisions for the appointment of the responsibilities to its own staff, regarding the identification of the norms for the supply of maintenance and materials for the initial selection level of the suppliers and product purchase.</p> <p>5. Romanian Railway Safety Authority – ASFR shall ask the infrastructure manager the revision of the internal procedures for purchases, being necessary the harmonization of these procedures with the legal provisions regarding the conformity certification of the products with the technical specifications.</p> <p>6. Romanian Railway Safety Authority – ASFR shall ask the infrastructure manager the revision of the danger evidence, being necessary a risk analysis for the dangers generated both by the violation of the safety requirements for the products and non-meeting with the conditions for the certification of the conformity with the technical specifications for the purchased products.</p>
		Recommendations implemented (closed)	<p>2 Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.2 and 6, issued following the investigation of this accident, were analysed, the measures to be taken were analysed and implemented.</p> <p><i>The risk analysis no. 48/SC/3/386/22.03.2019, made following the identification and assessment of the factors of risk in the Safety Management System, regarding the dangers associated to the keeping within the track the improper wooden sleepers and the responsibilities of the own staff, concerning their checking, respectively the way to deal with the nonconformities on this occasion.</i></p> <p><i>Line Division Cluj revised "Own register of dangers", being made the changes necessary to monitor more efficient the risks, following the safety recommendations issued by AGIFER in the investigation reports completed in the railway county Cluj.</i></p>
		Recommendations in implementation process (open)	<p>2 Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.1 and 5, issued following the investigation of this accident, that they are in implementation process.</p> <p><i>The project drafted by Romanian Railway Notified Body was submitted to analysis, the proposals consisted in the harmonization with the government decision for the interoperability.</i></p> <p><i>The procedures PO no.0-7.4.1-06 Management of the materials purchased for the performance of the maintenance, current repairs, overhauls and investments and PO no.0-7.4.1-01 Drafting, registering, notification and tracking of contract progress shall be revised.</i></p>
		Recommendations not implemented (closed)	<p>2 Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.3 and 4, issued following the investigation of this accident, that they were analysed and shall not be implemented</p>

7.	30684	freight	<b>Zam</b>	14.03.2019	09:20	05.03.2020	<b>accident</b>	Derailment of 5 wagons	
		In the railway county Timișoara, track section Arad - Simeria (electrified double-track line), <b>in the railway station Zam</b> , on the switch no.5, operated on “deflecting section” and passed trailing, in the running of freight train no.30684 (got by the railway undertaking SC DEUTSCHE BAHN CARGO ROMÂNIA SRL), there was the derailment of the first axle from five wagons type Hbbills (loaded with paper rolls).							
		Recommendations issued	<b>1</b>	1. Romanian Railway Safety Authority – ASFR shall analyse through own actions of supervision how the safety management system of the public railway infrastructure administrator is applied and, if case, shall ask CNCF „CFR”SA, to rectify or to re-assess the measures for keeping under control the own risks.					
		Recommendation implemented (closed)	<b>1</b>	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>The railway county Timișoara performed a risk analysis where, the measures, deadlines and responsibilities for the staff of the line division and section for keeping under control the own risks, were established.</i>					
8.	12392	passenger	<b>Dârste</b>	29.03.2019	05:35	23.03.2020	<b>accident</b>	Locomotive derailment	
		In the railway county Brașov, track section Brașov – Ploiești Vest (electrified double-track line), <b>in the railway station Dârste</b> , in the running of the passenger train no.12392, got by the railway passenger undertaking SNTFC „CFR Călători” SA , there was the derailment of first bogie in the running direction of the electric hauling locomotive no. 91 53 0477 268-3.							
		Recommendations issued	<b>8</b>	1. Romanian Railway Safety Authority – ASFR shall ask and monitor that CNCF „CFR” SA will analyse the possibility to assure the distance between the centrelines of the direct tracks II and III and of the cross level between the tracks, as well as the relocation of the turnouts no.4 and 8, meeting with the length of the connecting crossover between them.					
				2. Romanian Railway Safety Authority – ASFR shall ask and monitor that SNTFC „CFR Călători” SA will regulate the compulsoriness to perform the works for the repositioning of the nozzles/ /grease spray nozzles of the equipment for the lubrication of the flange of wheel and for the working of this equipment after the reprofiling of the running surfaces at the wheelset, in order to assure that the locomotive running is made in full traffic safety conditions.					
3. Romanian Railway Safety Authority – ASFR shall ask and monitor that SNTFC „CFR Călători” SA will perform an assessment of the risks for the reprofiling of the running surfaces of the wheelset for the railway vehicles, in accordance with the provisions of the Regulations (UE) no.402/2013, for keeping under control the risks generated by this new activity.									

			<p>4. Romanian Railway Safety Authority – ASFR shall ask and monitor that CNCF „CFR” SA will perform the identification of the dangers and the assessment of the risks associated to the railway operations, in accordance with the provisions of the Regulations (UE) no.1169/2010, for the railway counties where there are locomotive sheds where one performs reprofiling of the running surfaces and shall dispose the fitting of some automatic equipments for the rail lubricating on the directions of running from the depot, before the switches highly passed over, on which it is possible to be traffic to the diverging sections, and where it shall be considered necessary, for keeping under control the risk of derailment, having like cause a high rate of friction between the running surface of the wheelset and the rail</p> <p>5. Romanian Railway Safety Authority – ASFR shall ask and monitor that SNTFC „CFR Călători” SA will take the measures for the performance of a complete inspection at the underground lathe and for the removal of the negative issues found during the modernization, and shall impose the compulsoriness of checking the new running profile, with the pattern, after each reprofiling.</p> <p>6. Romanian Railway Safety Authority – ASFR shall ask and monitor that SNTFC „CFR Călători” SA will revise the Technical Specification code ST 01-2017 for reprofiling the running surfaces of the wheelset for the railway vehicles on the underground lathe type HEGENSCHIEDT – 106 CNC, so it be in accordance with the provisions of the regulations in force.</p> <p>7. Romanian Railway Safety Authority – ASFR shall begin an action for the harmonization of the national regulation framework with European standards.</p> <p>8. Romanian Railway Safety Authority – ASFR shall take measures for the regulation of the position in the train composition of a railway vehicle, involved in a derailment, within a train for the running to a traction unit.</p>
		Recommendations implemented (closed)	<p>2</p> <p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.1 and 5, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>Into the Line Division Braşov one analyzed the possibility to assure the distance between the centres of the direct lines II and III and the cross level between the lines of the railway station Dârste, as well as the relocation of the switches no.4 and 8, meeting with the length of the cross-over between them and the conclusion was that the distance between the centres of the direct lines II and III of the railway station Dârste meets with the provisions of art.13, point 8 from the Instruction no.314/1989. The change of the railway station lay out shall be made within the rehabilitations on the pan-European corridor IV, from which the railway station Dârste is part.</i></p> <p><i>SNTFC „CFR Călători” SA made an inspection / a repair at the underground lathe type HEGENSCHIEDT - 106 CNC, now it is working.</i></p>
		Recommendations in implementation process (open)	<p>5</p> <p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.2, 3, 6, 7 and 8, issued following the investigation of this accident, that they are in implementation process.</p> <p><i>SNTFC „CFR Călători” SA asked through the paper no.DT5/2/158/10.03.2020, SCRL Braşov, society that performs maintenance of the rolling stock, to carry out the maintenances.</i></p>

				<p><i>SNTFC „CFR Călători” SA is in process of performing the assessment of the risks for reprofiling the running surfaces of the pair of wheels SNTFC „CFR Călători” SA initiated the revision of ST 1-2017 in accordance with the legal provisions.</i></p> <p><i>It was analyzed together with the railway undertaking the insertion in the national safety norms a provision about the position in the train for running of a motorised railway vehicle, involved in a derailment, to the traction unit. The railway undertaking is going to send proposals.</i></p>					
		Recommendations not implemented (closed)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.4, issued following the investigation of this accident, that it was analyzed, and shall not be implemented.</p>					
9.	16013	passenger	Sângiorgiu Nou	06.04.2019	12:19	03.04.2020	accident	Fire in a multiple unit	
		<p>In the railway county Braşov, track section Luduş – Măgheruş Şieu (non-electrified, noninteroperable single-track section, managed by SC RC CF TRANS SRL Braşov), km.72+700, <b>in the railway station Sângiorgiu Nou</b>, in the running of passenger train no.16013, got by the railway passenger undertaking SC Regio Călători SRL Braşov, a fire burst into the motorised wagon no. 95 53 9971 602-1 of the multiple unit type AMX, that was composing the train.</p>							
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority – ASFR shall and monitor that SC RC-CF TRANS SRL, like manager of the noninteroperable railway infrastructure and SC Regio Călători SRL, like railway undertaking on these track sections, will warn the passengers and the inhabitants of that area, through methods specific to the railway system or through the administrative units (city halls), that the danger represented by the vegetation fires in the safety perimeter of the railway infrastructure can generate a fire for the running railway vehicles, with effects for the health of passengers.</p> <p>2. Romanian Railway Safety Authority – ASFR shall analyse the opportunity to add to the practice codes above mentioned or to add to the results of the actions for the identification of the risks associated to the railway operations, performed by the railway undertaking involved, provisions clear for the action in case of some vegetation fires in the safety perimeter of the railway infrastructure and concrete measures for the action in such situations, in order to ensure that the risk of fires at the railway vehicles, generated by the danger, given by the vegetation fires in the perimeter of railway infrastructure, is kept under control.</p>					
		Recommendations implemented (closed)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>The prefectures of the administrative counties Mureş, Cluj and Bistriţa Năsăud were informed to dispose locally measures for the notification and information of the owners of the lands, situated close to the line, for the prohibition of the vegetation arson, following the cleaning of the lands by individuals.</i></p> <p><i>Provisions, on how to do in case of vegetation arson, are in own SMS of each undertaking, according to the Regulation (EU) 762/2018.</i></p>					
10.	89970	freight	Năvodari - Constanţa Mărfuri	20.04.2019	17:40	15.01.2020	accident	Derailment of a wagon	

		In the railway county Constanța, track section Palas – Capu Midia (non-interoperable track section, managed by SC GRUP FERVIAR SA), non-electrified single-track line, <b>between the railway stations Năvodari and Constanța Mărfuri</b> , km 17+573, in the running of freight train no.89970, got by SC Tehnotrans Feroviar SRL, consisted in the derailment of 4th wagon from the composition of the train.						
		Recommendations issued	1	1. ASFR shall analyse if the railway infrastructure manager SC Grup Feroviar Român SA is still complying with the conditions that were basis for the issuing of the safety authorizations types A and B.				
		Recommendation implemented (closed)	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>Suspension of the safety authority no.AS20001, according to the paper no.2210/551/30.06.2021</i>				
		freight	<b>Vasiova - Reșița Nord</b>	21.04.2019	21:50	13.04.2020	accident	Derailement of 2 wagons
		In the railway county Timișoara, on the non-interoperable running line, single-track and non-electrified one, managed by RC-CF Trans SRL, <b>between the railway stations Vasiova and Reșița Nord</b> , in the running of freight train no.69492-1 (got by the railway freight undertaking Tim Rail Cargo SRL), consisted in the derailment of 2 wagons of the train.						
		Recommendations issued	2	1. Romanian Railway Safety Authority – ASFR shall take care that the non-interoperable railway infrastructure manager SC RC – CF Trans SRL has the resources and also the capability to meet with the requirements for the maintenance of the railway infrastructure, that were basis for the granting of the safety authorization. 2.Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking SC Tim Rail Cargo SRL carried out a risk analysis for the danger represented by the consignor.				
		Recommendations implemented (closed)	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>Implemented, it was checked during the state control.</i>				
		freight	<b>Valea Lungă</b>	07.05.2019	23:36	05.05.2020	accident	Fire in an electric locomotive
		In the railway county Brașov, track section Brașov - Teiuș (electrified double-track line), when the freight train no.33901 left <b>the railway station Valea Lungă</b> (train got by the railway undertaking SNTFM „CFR Marfă” SA), track I, the locomotive type EA no.698, running like a dead one in the train composition, burst into flames.						
		Recommendations issued	4	1. Romanian Railway Safety Authority shall revise the way of filling in the Safety Certificate part B, Annex II, in order to avoid the writing down of the locomotives that do not comply with the legal requirements. 2. Romanian Railway Safety Authority shall ask the railway freight undertaking SNTFM „CFR Marfă” SA the revision of the operational procedure „Maintenance and repairs at the traction rolling stock” code: PO-74.3 for adding provisions regarding the way to manage the risks generated by the use of the locomotives, after reaching the norms of time/km for the performance of the planned repairs, in accordance with the regulations in force.				
11.	69492-1							
12.	33901							

				<p>3. Romanian Railway Safety Authority shall ask the railway freight undertaking SNTFM „CFR Marfă” SA to make an inventory for adding, at the locomotives from its own stock, the protection parts (covers, doors), whose lack is a danger of fire or endanger the staff safety.</p> <p>4. Romanian Railway Safety Authority shall ask the railway infrastructure manager CNCF „CFR” SA the disposal of measures so that the power supply cutting and the earth connection be made as soon as possible in order to permit the effective intervention in the area with electrified line, in emergency situation.</p>				
		Recommendations implemented (closed)	4	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>The paper no. L2.1/77/29.03.2021, Operational procedure Control of the locomotive maintenance and their putting again in operation code PO 04.3.</i></p> <p><i>The recommendation was notified to Electrification Branch Braşov, for the tracking of the intervention time decrease, so the cut of the power supply and the earth-leakage of the contact wire be made as soon as possible, in order to be able to permit the effective intervention in case of fires at the rolling stock, on electrified railways.</i></p>				
13.	80964	freight	<b>Chitila</b>	13.05.2019	04:20	12.05.2020	<b>accident</b>	Derailment of a wagon
In the railway county Bucureşti, in <b>the railway station Chitila</b> , in the running of freight train no.80964 (got by the railway undertaking TEHNOTRANS FERROVIAR SRL), there was the derailment of the second bogie from the 14 <sup>th</sup> wagon of the train, in the running direction.								
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority – ASFR shall take care that Tehnotrans Feroviar SRL, like entity in charge with the maintenance can ensure, within the maintenance management system established, the management of the withdrawal from operation of the wagons for their maintenance in case of failures.</p> <p>2. Romanian Railway Safety Authority – ASFR shall take care that Tehnotrans Feroviar SRL, like railway freight undertaking, within the safety management system, shall re-assess the risks generated by the withdrawal from operation of the wagons for their maintenance.</p>				
		Recommendation implemented (closed)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>Implemented, checked during the state control.</i></p>				
14.	2046	passenger	<b>Milova</b>	26.05.2019	19:15	14.04.2020	<b>accident</b>	Locomotive derailment
In the railway county Timișoara, in <b>the railway station Milova</b> , in the running of passenger train no.2046, got by the railway passenger undertaking SNTFC „CFR Călători” SA, consisted in the derailment of the last axle (in the running direction) of the hauling locomotive EC-117.								

		Recommendations issued	1	1. Romanian Railway Safety Authority shall take care that the public railway infrastructure administrator CNCF „CFR” SA shall do an analysis of the change in accordance with EU Regulations no.402/2013 regarding the common safety method for the assessment and evaluation of the risks, at the rehabilitations of the railway infrastructure with impact on the performance of traffic and shunting, before the works beginning.				
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>Closing the line, track II Milova - Radna and track II Milova - Conop and delivery of the site to the constructor on the Pan-European Corridor IV, the railway system suffered no significant change. The traffic on track I Milova - Radna and on track I Milova - Conop, upon the permissive positions of the signals. The working way of the movements inspector from the railway station Milova, for the traffic interruption from the 26<sup>th</sup> May 2019, at CED CR 2 equipment, was stipulated in Instruction for the operation of the installation of the railway station Milova</i>				
		passenger	<b>Reșița Nord - Vasiova</b>	01.06.2019	12:00	28.05.2020	<b>accident</b>	Derailment of a multiple unit
		In the railway county Timișoara, track section Reșița Nord – Berzovia (noninteroperable track section), non-electrified single-track section managed by RC - CF TRANS SRL, <b>between the railway stations Reșița Nord and Vasiova</b> , km 53+900, there was the derailment of 3 <sup>rd</sup> bogie of the multiple unit AMX 572-7, composing the passenger train no.16104 (got by the railway undertaking REGIO CALĂTORI SRL).						
15.	16104	Recommendations issued	1	1. Romanian Railway Safety Authority – ASFR shall make sure that RC-CF TRANS SRL, as manager of noninteroperable infrastructure, makes an analysis of the risk associated to the danger generated by keeping in operation of the improper wooden sleepers. ASFR shall also monitor, through specific actions, the way the measures resulted following the analysis, for keeping under control the risk of a similar accident are implemented by the manager of the noninteroperable infrastructure RC-CF TRANS SRL.				
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>Paper no.498/S/11.02.2021 – Minute for keeping within the track a group of 5 improper wooden sleepers, from which 3 of them are in turn.</i>				
		freight	<b>Bucureștii Noi</b>	07.06.2019	23:30	27.05.2020	<b>accident</b>	Derailment of two wagons
16.	23052-1	In the railway county București, track section București Nord - Videle (electrified double-track line), in <b>Bucureștii Noi railway station</b> , Governmental line, km 0+270, in the running of the freight train no.23052-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), there was the derailment of two wagons, the 7 <sup>th</sup> and the 8 <sup>th</sup> ones after the locomotive.						



		Recommendations issued	1	1.Romanian Railway Safety Authority-ASFR shall analyse through own surveillances the way the safety management system of the public railway infrastructure administrator is applied and if case to ask CNCF „CFR”SA the rectification or the re-assessment of the measures for keeping under control the own risks.				
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>The railway county București analyzed how the safety requirements and the compliance with the codes of good practice were implemented for the danger generated by: improper technical condition of the wooden sleepers, that did not allow the fastening of the coach screws for the fastening of the metallic plates, so under the action of the dynamic forces sent to the rails by the wheels of the rolling stock, the gauge values increased over the maximum accepted value of 1470 mm. Following the risk analysis no.L6/46/07.08.2020 the conclusion was that the risk level is medium and the risk tracking is made through controls.</i>				
		freight	<b>Iablași</b>	23.06.2019	11:45	17.06.2020	<b>accident</b>	Derailment of two wagons
		In the railway county Timișoara, in <b>Iablași railway station</b> , line 1, in the running of the freight train no.46481B (it being got by the railway undertaking Deutsche Bahn Cargo România SRL), there was the derailment of two wagons, the 19 <sup>th</sup> and the 23 <sup>rd</sup> ones in the composition of the train.						
17.	46481B	Recommendations issued	1	1. Romanian Railway Safety Authority – ASFR shall re-assess the way the public railway infrastructure administrator CNCF „CFR” SA ensures the safety measures, for keeping under control the dangers and risks associated to them, regarding the performance of the infrastructure maintenance and shall be sure that these measures can be totally applied.				
		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it is in implementation process. <i>It shall be checked during the surveillances organized and performed according to Order of Minister of Transports OMT no.650/1998 and of the Regulation (EU) 761/2018.</i>				
		Freight	<b>București Triaj</b>	29.06.2019	15:30	26.06.2020	<b>accident</b>	Locomotive derailment
18.	83216-1	In the railway county București, in <b>București Triaj railway station</b> , Post 17, in the running of freight train no.83216-1 (got by the railway undertaking SNTFM ”CFR Marfă” SA), there was the derailment of first axle (axle no.6) from the locomotive ED-062, in the running direction.						
		Recommendations issued	2	1.Romanian Railway Safety Authority – ASFR shall analyse through own actions of surveillance the way the safety management system of the public railway infrastructure administrator is applied.				

				<p>2. Romanian Railway Safety Authority – ASFR shall take care that SC „CFR IRLU” SA, the economic operator to which SNTFM „CFR Marfă” SA, as entity in charge with the maintenance of its own locomotives, entrusted the functions of „maintenance development” and „maintenance performance”, shall harmonize the work schedule of the Technical Specification code ST-LE 5100 KW – „Planned inspections type PTAE, RAC, RI, RT, R1 and R2 and accidental repairs type RIT, RIR, RAD, RA at the electric locomotives of 5100kW”, with the provisions of the Railway Technical Norm no.67-003:2008, regarding the checking of the alignment and parallelism of the wheelset during the inspections type RT, R1 and R2, if the interval of time of 12 months from the last adjustment was exceeded.</p>					
		Recommendations in implementation process (open)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they are in implementation process.</p> <p><i>It shall be checked during the surveillances organized and performed according to Order of Minister of Transports OMT no.650/1998 and of the Regulation (EU) 761/2018.</i></p>					
19.	50826	freight	Mehadia	29.06.2019	22:15	25.06.2020	accident	Locomotive derailment	
		<p>In the in the railway county Timișoara, in the railway station <b>Mehadia</b>, line 2, in the running of freight train no.50826 (belonging to the railway freight undertaking EXPRESS FORWARDING SRL), there was the derailment of the hauling locomotive EA 080-4, of the dead locomotive DA 899-4 and of the first wagon of the train.</p>							
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority - ASFR shall assess the way the public railway infrastructure manager CNCF „CFR” SA, identified and applied the measures that had to be taken for the implementation of safety recommendations issued within the investigation reports completed for railway accidents happened on the track section Orșova - Caransebeș, in the last two years, with similar causes and factors.</p> <p>2. Romanian Railway Safety Authority - ASFR shall analyse together with the public railway infrastructure manager CNCF „CFR” SA, its activity for the management of the risk associated with the danger generated by the keeping in operation of inappropriate wooden sleepers that must be replaced in emergency I, when it shall lay down the measures and works necessary to improve railway safety.</p>					
		Recommendation implemented (closed)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented.</p> <p><i>The danger generated by keeping in operation the improper wooden sleepers is established like relevant nonconformity in the annex 3 at point 8 like „Running on track sections with partial fastening, as well as with improper sleepers, over the limits accepted by the instructions, without taking the measures for the decrease of the speed established”. It was set up a plan of measures, that was sent to all track sections and included in the control theme.</i></p>					
		Recommendations in implementation process (open)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it is in implementation process.</p> <p><i>It shall be checked during the surveillances organized and performed according to Minister of Transports’ Order OMT n0.650/1998 and to the Regulation (EU) 761/2018.</i></p>					

		freight	<b>Palas - Constanța Mărfuri</b>	30.06.2019	23:40	29.06.2020	<b>accident</b>	Locomotive derailment
		In the railway county Constanța, noninteroperable line section Palas–Năvodari (managed by SC Grup Feroviar Român SA), <b>between Palas and Constanța Mărfuri railway stations</b> , non-electrified single-track line, km 1+175, in the running of the freight train no.89573 (got by the railway undertaking SC Grup Feroviar Român SA), there was the derailment of first bogie of the hauling locomotive DA 1513, in the running direction.						
		Recommendati ons issued	4	1. Romanian Railway Safety Authority – ASFR shall analyse if SC GFR SA as manager of noninteroperable railway infrastructure still meets with the conditions that were basis for the issuing of the safety authorization;				
	2. Romanian Railway Safety Authority – ASFR shall analyse if SC TEF SRL still meets with the conditions that were basis for the issuing of the authorization of railway supplier for the railway critical service – „ manual current maintenance of tracks, without rail welding”.							
	3. Romanian Railway Safety Authority – ASFR shall ask the railway undertaking SC GFR SA to analyse the opportunity of revision the technical specification ST-G.4.1-II/2013, so by the operations carried within the intermediary inspections be ensured the drainage of the water from the spring boxes and the proper lubrication of the support points between the locomotive box and the bogies.							
	4. Romanian Railway Safety Authority – ASFR shall assess the way the manager of the noninteroperable railway infrastructure SC GFR SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed for the accidents occurred on the track section Palas - Capu Midia, during the last five years, having similar causes and factors.							
20.	89573	Recommendati ons implemented <b>(closed)</b>	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.1 and 3, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented. <i>The suspension of the safety authorization no.AS20001, according to the paper no.2210/551/30.06.2021</i> <i>One took the measures for training again the staff in charge with the locomotive maintenance within GFR SA.</i>				
		Recommendati on in implementatio n process <b>(open)</b>	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.4, issued following the investigation of this accident, that it is in implementation process. <i>The suspension of the safety authorization no.AS20001, according to the paper no.2210/551/30.06.2021.</i>				
		Recommendati on implemented <b>(closed)</b>	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it was analyzed, and shall not be implemented.				
21.	20919-2 34393-2	freight	<b>Rădoiști - Olteni</b>	08.07.2019	01:28	30.06.2020	<b>accident</b>	Overtaking and serious collision between two freight trains

		In the railway county Craiova, track section Videle – Roşiori Nord (electrified double-track line), <b>between the railway station Rădoişti and Olteni</b> , km 76+400, in the running of freight train no.20919-2 (got by the railway freight undertaking SC Cargo Trans Vagon SA), consisted in overtaking and serious hit of the freight train no.34393-2 (got by the railway freight undertaking SC Constantin Grup SRL), stopped upon the position of the caution signal PrY of the entry signal Olteni, it leading to the derailment of three wagons of the freight train no.20919-2.						
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority - ASFR shall ensure that the way in which railway undertaking SC Cargo Trans Vagon SA, revised its procedures regarding:</p> <ul style="list-style-type: none"> <li>- the identification of the risks associated to the railway operations and the working out of the measures for the control of the risks;</li> <li>- maximum continuous duty accepted for the locomotive, meet the scope aimed, so the changes made at these procedures lead to the keeping under control the risks generated by the fatigue of the locomotive crew.</li> </ul> <p>2. During the supervision that shall be performed at SC Cargo Trans Vagon SA, Romanian Railway Safety Authority - ASFR shall check if the railway undertaking performs the railway transports meeting with the maximum continuous duty accepted for the locomotive</p>				
		Recommendations implemented (closed)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>Implemented, checked during the state control.</i></p>				
		passenger	<b>Plosca - Alexandria</b>	31.07.2019	17:13	30.07.2020	<b>accident</b>	Fire in a diesel locomotive
		In the railway county Craiova, track section Roşiori Nord – Alexandria, non-electrified single-track line, <b>between Plosca and Alexandria railway stations</b> , km 217+250, in Buzescu railway station, in the running of the passenger train no.9371 (got by the railway undertaking SNTFC „CFR Călători” SA), a fire burst into the hauling locomotive DA 637.						
		Recommendations issued	1	<p>1. Romanian Railway Safety Authority shall ask the railway passenger undertaking SNTFC „CFR Călători” SA to analyse the opportunity to revise the technical specification PLANNED INSPECTIONS TYPE PTH3, RT, R1, R2, 2R2, R3 AT DIESEL ELECTRIC LOCOMOTIVES, code ST 6-2003, so the maintenances scheduled at the fuel and greasing installations at MD ensure the checking and fixing of the oil leaks in all points where they happened, between two planned inspections.</p>				
		Recommendation in implementation process (open)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it is in implementation process.</p> <p><i>Removal of the accidental leakages of oil products at the fuel installations is a priority for the maintenance of the locomotives with heat engines. The paper DT5/2/ 562/23.10.2020 was sent, for reminding the measures in this respect. It is also asked SCRL Braşov, in the paper DT5/2/438/07.08.2020, to analyze again the technical specification ST 6-2004.</i></p>				
22.	9371	passenger	<b>Buda</b>	07.08.2019	16:10	04.08.2020	<b>accident</b>	Fire in an electric locomotive

		In the railway county București, track section Ploiești Vest - Brașov (electrified double-track line), <b>in the railway station Buda</b> , in the running of passenger train no.1636 (got by the railway undertaking SNTFC „CFR Călători” SA), a fire burst into the hauling electric locomotive, type EA no.008						
		Recommendations issued	2	1. Romanian Railway Safety Authority – ASFR shall ask SNTFC „CFR Călători” SA to take the measures imposed to supply, within the process of planned technical inspection at the locomotives, the necessary spare parts, so the provisions of technical specifications be exactly met. 2. Romanian Railway Safety Authority – ASFR shall ask SNTFC „CFR Călători” SA to take the measures imposed for re-training of the staff in charge with the implementation of the provisions above mentioned, in each railway county.				
		Recommendations implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>The provision with the necessary of spare parts for the maintenance of the motorised railway vehicles, is a permanent requirement in the activity of SNTFC „CFR Călători” SA. The railway counties 1÷8 were asked the provision with spare parts necessary for the maintenance of the railway vehicles, besides those ensured at central level of the society.</i>				
		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it is in implementation process <i>It was requested the compliance with the regulations on the participation of its representatives from the railway counties in the setting up the measures for the removal of the event consequences and traffic resuming.</i>				
		freight	<b>Bod</b>	14.08.2019	06:20	13.08.2020	<b>accident</b>	Locomotive derailment
		In the railway county Brașov, track section Brașov–Sighișoara, in <b>the railway station Bod</b> , when the freight train no.90920 ( got by the railway freight undertaking SC Rail Force SRL Brașov) was parked on the deflecting section no.4, the axle no. 6 of the electric locomotive EA no.1093, first axle in the running direction, derailed.						
		Recommendations issued	2	1. Railway Safety Authority – ASFR shall ask CNCF „CFR”SA the reassessment of the procedures and measures for keeping under control the own risks generated by the geometry condition and the planning of the superstructure maintenance. 2. Railway Safety Authority – ASFR shall ask SC Rail Force SRL Brașov the reassessment of the procedures for keeping under control the risks associated to the railway transport, afferent to the repair of the pair of wheels.				
24.	90920	Recommendations implemented (closed)	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented. <i>Line Division Brașov, through the controls makes sure that within the maintenance of the lines there are completely met with both the provisions of the procedures from the own safety management and the measures for keeping under control the own risks generated by the condition of the track geometry and the planning of the track superstructure maintenance.</i>				

				<i>One re-assessed the procedures for keeping under control the risks associated to the railway transports, afferent to the pair of wheels repair.</i>				
		freight	<b>Constanța Port Zona B – Palas</b>	14.08.2019	19:48	12.08.2020	<b>accident</b>	Fire in a electric locomotive
25.	50792	In the railway county Constanța, track section <b>Constanța Port Zona B – Palas</b> (electrified double-track line), track I, km 2+000, in the running of freight train no.50792 (got by the railway undertaking SC Express Forwarding SRL), a fire burst into the hauling locomotive EA 047.						
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority - ASFR shall take care that the railway undertakings SC Express Forwarding SRL and SC THF SRL (as entity in charge with maintenance) analyse the possibility to reduce the time between two inspections, according to the wear level and technical condition of the locomotive.</p> <p>2. Romanian Railway Safety Authority - ASFR shall take care that SC Injector SRL (entity with functions of maintenance of the locomotives or motor railcars) will revises the technical specification ST.REV.LE-INJ/2018, so complies with the provisions of the Railway technical norm "Railway vehicles. Electric locomotives of 5.100 kW and 3.400 kW. Technical provisions for planned inspections and repairs" from the 18th March 2008, approved by Order of Minister of Transports no.366/2008 from the 18th March 2008.</p>				
		Recommendations in implementation process (open)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they are in implementation process.</p> <p><i>They were analyzed together with the railway undertaking during the surveillances through the state controls, state inspections and the technical specification, for the granting of ERI Certificate for the task IV, is going to be changed.</i></p>				
		freight	<b>premises of the economic operator SC EGGER România SRL to the railway station Dornești.</b>	19.08.2019	14:00	18.08.2020	<b>incident</b>	Derailment of a locomotive and 4 wagons
26.	Rake of wagons	In the railway county Iași, in shunting activity, there was the derailment of the hauling locomotive and 4 wagons (one of them reclined) of a rake of wagons consisting in 24 wagons (all of them loaded), on the metallic bridge from km 0+522, between the railway stations Dornești - Rădăuți, this rake of wagon running <b>from the premises of the economic operator SC EGGER România SRL to the railway station Dornești.</b>						
		Recommendations issued	4	<p>1. Romanian Railway Safety Authority-ASFR shall analyse the cases where there are used impregnated sleepers by companies that do not get railway technical agreement and supply these sleepers to the public railway infrastructure administrator CNCF „CFR” SA.</p> <p>2. For the replacement of the consecutive special wooden sleepers on bridges Romanian Railway Safety Authority-ASFR shall ask CNCF „CFR” SA to get a technical performance project.</p>				

									<p>3. Romanian Railway Safety Authority-ASFR shall check the way CNCF „CFR” SA meets with the provisions of the paper no. 3000/16/22.05.2019, issued by Romanian Railway Notified Body for the purchase of wooden impregnated sleepers, homologated and classified in the risk class 1A.</p> <p>4. Romanian Railway Safety Authority-ASFR shall check the basis of the variation of the speed levels on standard and broad track, and the variation of the loads on axle for broad track between 2005-2020.</p>
		Recommendations implemented (closed)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this incident, that it was analyzed, the measures to be taken were identified and implemented.</p> <p><i>Replacement, in turn, of the special sleepers on bridges is made meeting with the technological processes, measurements of traffic safety and track geometry on bridge, stipulated in the specific regulations. In the Laboratory for Measurements at the Track Geometry it is made the plan and profile design of the track on bridge, if necessary.</i></p>					
		Recommendations in implementation process (open)	3	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations, no.1,3 and 4, issued following the investigation of this incident, that they are in implementation process. <i>It shall be checked within the surveillances organized and performed according to the Minister of Transport's Order OMT no.650/1998 and to the Regulation (EU) 761/2018.</i></p> <p><i>If from the analysis of the technical specifications for the purchase of impregnated wooden sleepers there are references according to OMT 290/2000, Romanian Railway Safety Authority - ASFR shall ask that the interoperability constituents be joined by EC conformity statement. ASFR aims the setting up of an expert commission for the analysis of the safety recommendation and the establishment of a conclusion.</i></p>					
		freight	<b>Palas - Constanța Mărfuri</b>	27.08.2019	13:30	18.08.2020	<b>accident</b>	locomotive derailment	
		<p>In the railway county Constanța, noninteroperable track section Palas–Năvodari (managed by SC Grup Feroviar Român SA), <b>between Palas and Constanța Mărfuri railway stations</b>, non-electrified single-track line, km 1+175,5, in the running of the freight train no.89847 (got by the railway undertaking SC Tehnotrans Feroviar SRL), there was the derailment of first axle of the locomotive DA 1647, in the running direction, this locomotive hauling the train consisting in two coupled locomotives, DA1657 being dead locomotive.</p>							
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority - ASFR shall analyze the opportunity to keep the authorizations for the performance of the management of the noninteroperable infrastructure SC GFR SA.</p> <p>2. Romanian Railway Safety Authority – ASFR shall analyze the opportunity to keep the authorization of railway supplier of SC LOG FER SRL.</p>					
		Recommendations implemented (closed)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented.</p> <p><i>The suspension of the safety authorization no.AS20001, according to the paper no.2210/551/30.06.2021.</i></p>					
27.	89847								

		Recommendation not implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it was analyzed, and shall not be implemented.				
		freight	Iablași	30.08.2019	05:10	28.08.2020	accident	locomotive derailment
28.	59426	In the railway county Timișoara, in <b>Iablași railway station</b> , in the running of the freight train no.59426 (got by the railway undertaking Unicom Tranzit SA), consisted in the derailment of first axle of the hauling locomotive.						
		Recommendations issued	2	<p>1. Romanian Railway Safety Authority – ASFR shall assess the way CNCF „CFR” SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed by AGIFER in the last two years, for the accidents occurred on the railway networks, that had similar causes and factors.</p> <p>2. Romanian Railway Safety Authority – ASFR will ensure that the railway undertaking Unicom Tranzit SA identifies the dangers generated by the operation of the railway traction units whose axles and wheels are not properly balanced and whose lubricating wheels flange of the guiding axles do not comply with the conditions stipulated in the regulations in force, and the effectiveness of the management of the risks generated by these dangers is proper.</p>				
		Recommendation implemented (closed)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented.</p> <p><i>One took measures for the identification of the dangers generated by the operation of the rolling stock, removing the deficiencies at the locomotive regarding the equipment for the greasing of the flanges of wheels and balancing of the load on axle, by weighing the locomotives when they are submitted to accidental repairs or planned inspections.</i></p>				
		Recommendation in implementation process (open)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it is in implementation process.</p> <p><i>It shall be checked during the surveillances organized and performed according to the Minister of Transport's Order OMT n0.650/1998 and to the Regulation (EU) 761/2018</i></p>				
		freight	Rădoiești - Atârnați	08.09.2019	23:42	06.08.2020	incident	Hit of the installations by a locomotive
29.	20272-1	In the railway county Craiova, track section Roșiori Nord-Videle, <b>between the railway stations Rădoiești and Atârnați</b> (electrified double-track line), at the level crossing provided with automatic installations for road signalling with half-barriers - type BAT, km.90+640, in the running of the freight train no.20272-1, hauled with the locomotive ES110, got by the railway undertaking Rail Cargo Carrier Romania SRL, some parts of the level crossing were hit by the animal protector (plough) of the locomotive.						
		Recommendations issued	1	1. Romanian Railway Safety Authority - ASFR shall take care that the public railway infrastructure administrator revises its own Safety Management System (SMS), so matches the Risks of interface with the railway undertakings and Register for the evidence of its own dangers with the provisions of the practice codes applicable.				



		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation issued following the investigation of this incident, that it is in implementation process. <i>The own Safety Management System (SMS) shall be revised, so there will be an agreement between the Risks of Interfaces with the railway undertaking and the Register of danger evidence with the provisions of the practice codes applicable.</i>					
30.	50418	freight	<b>Bod</b>	15.09.2019	13:18	14.09.2020	<b>accident</b>	locomotive derailment	
		In the railway county Braşov, track section Braşov-Sighişoara, <b>in Bod railway station</b> , in the running of the freight train no.50418, got by the railway undertaking Unicom Tranzit SA, there was the derailment of first bogie of the hauling locomotive EA no.91 53 0 400386-5, in the running direction of the train, on the switch no.14.							
		Recommendations issued	1	1.Romanian Railway Safety Authority – ASFR shall ask the railway undertaking Unicom Tranzit SA, the revision of the identifications of the risks associated to the railway operations regarding „the performance of the planned inspection at the wheelsets” and the insert on the SMS procedures of safety measures from the practice codes (instructions) in force, on order to be sure that the driving axles of the locomotives shall work in normal conditions and complete safety.					
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>One took measures for the identification of the risks associated, regarding the performance of the planned inspection at the pair of wheels. After ending the identification, the Register of risks shall be filled in with the level of residual risk associated to each risk identified by the list of risks. After filling in the Register of risks, it will be sent to the repair subunits of the railway undertaking, for acquaintance and implementation.</i>					
31.	93618-1	freight	<b>Bucureşti Vest – Vârteju</b>	17.09.2019	13:00	06.08.2020	<b>accident</b>	Fire in a locomotive diesel	
		In the railway county Bucureşti, <b>between Bucureşti Vest and Vârteju railway stations</b> (non-electrified double-track line), in the running of freight train no.93618-1, got by the railway undertaking SNTFM „CFR Marfă” SA, a fire burst into the hauling locomotive DA1108.							
		Recommendations issued	1	1. Romanian Railway Safety Authority – ASFR shall analyse with the railway freight undertaking SNTFM „CFR Marfă” SA, the revision of Safety management system so one identifies and assesses the risks of fire into the locomotive, associated to the dangers that could appear in the train running, including those that could appear following the non-withdrawal of the locomotives from operation for planned repairs according to the national norms in force.					
		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation issued following the investigation of this accident, that it is in implementation process. <i>Paper no L2.1/77/29.03.2021.</i>					
32.	89972	freight	<b>Palas - Constanţa Mărfuri</b>	22.09.2019	01:00	16.09.2020	<b>accident</b>	wagon derailment	

		In the railway county Constanța, noninteroperable track section Palas–Năvodari (managed by SC Grup Feroviar Român SA), <b>between Palas and Constanța Mărfuri railway stations</b> , non-electrified single-track line, km 1+180, in the running of the freight train no.89972 (got by the railway undertaking SC Tehnotrans Feroviar SRL, hereinafter referred to as SC THF SRL) there was the derailment of all axles of the wagon no. 33 87 7852 158-7, the 7 <sup>th</sup> one from the rear of the train.						
		Recommendations issued	3	<ol style="list-style-type: none"> <li>1. Romanian Railway Safety Authority – ASFR shall analyse if SC GFR SA, like manager of noninteroperable railway infrastructure, still complies with the conditions that are basis for the granting of the safety authorization.</li> <li>2. Romanian Railway Safety Authority – ASFR shall analyse if SC LOG FER SRL still complies with the conditions that are basis for the granting of the authorization of railway supplier for the railway critical service „usual manual work maintenance of the tracks, without the rail welding”.</li> <li>3. Romanian Railway Safety Authority – ASFR shall assess the way the noninteroperable railway infrastructure manager SC GFR SA, identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed for the railway accidents happened on the track section Palas - Capu Midia, in the last five years, with similar causes and factors.</li> </ol>				
		Recommendations implemented (closed)	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendations no. 1 and 3, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented. <i>The suspension of the safety authorization no.AS20001, according to the paper no.2210/551/30.06.2021.</i>				
		Recommendation not implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it was analyzed, and shall not be implemented.				
		passenger	<b>Călărași Turda</b>	25.09.2019	23:55	24.08.2020	<b>incident</b>	Hit of installations by a locomotive
		In the railway county Cluj, track section Războieni – Cluj Napoca, in <b>the railway station Călărași Turda</b> , some elements of the railway installations were hit by a part from the locomotive EA 904, hauling the passenger train no.1838-1.						
		Recommendations issued	2	<ol style="list-style-type: none"> <li>1. Romanian Railway Safety Authority-ASFR shall ask the railway undertaking SNTFC the performance of a risk analysis and application of some additional safety measures, for the risk of hit the infrastructure elements by parts detached from the locomotive, risk generated by the danger represented by the lack in the compliance with the cycle of planned repairs at the locomotive;</li> <li>2. Romanian Railway Safety Authority-ASFR shall ask the railway undertaking SNTFC the implementation of a procedure that ensure the withdrawal of the locomotives from operation for their maintenance, according to the requirement code III.4 from the ANNEX III of the Regulation 445/2011.</li> </ol>				
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this incident, that it was analyzed, the measures to be taken were identified and implemented.				
33.	1838-1							

				<i>One asked the Depot Cluj to make a risk analysis of the incident happened in the locomotive EA 904 of the Depot Cluj on the 25<sup>th</sup> September 2019.</i>					
		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this incident, that it is in implementation process. <i>The operational procedure for the maintenance of the motorised railway vehicles deal with some measures in this respect, being in completion process an operational procedure for the order, tracking and reception of accidental repairs and planned technical inspections for the motorised rolling stock - MRM.</i>					
34.	83256C	freight	<b>Oradea - Oșorhei</b>	27.09.2019	---	28.08.2020	<b>incident</b>	Hit of the installations by a locomotive	
		In the railway county Cluj, <b>between the railway stations Oradea and Oșorhei</b> , there was the hit of some elements of the railway installations by a part detached from the locomotive DA 926, hauling the freight train no.83256C.							
		Recommendations issued	1	1. Romanian Railway Safety Authority-ASFR shall ask the railway undertaking SNTFM the implementation of a procedure that ensure the withdrawal of the locomotives from operation for their maintenance, according to the requirement code III.4 from the ANNEX III of the Regulation 445/2011.					
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this incident, that it was analyzed, the measures to be taken were identified and implemented. <i>Paper no.L2.1/77/29.03.2021.</i>					
35.	33321-2	freight	<b>Drobeta Turnu Severin Mărfuri - Valea Albă</b>	30.09.2019	08:15	29.09.2020	<b>accident</b>	Derailment of 3 wagons	
		In the railway county Craiova, on the running line between <b>Drobeta Turnu Severin Mărfuri and Valea Albă railway stations</b> , in the running of freight train no.33321-2, got by the railway freight undertaking SNTFM „CFR MARFĂ” SA, there was the derailment of 3 wagons of the train (from which one overturned).							
		Recommendations issued	1	1. Romanian Railway Safety Authority-ASFR shall analyse through monitoring actions how CNCF „CFR” SA, like administrator of the public railway infrastructure, ensures the conditions so the safety measures proposed for keeping under control the dangers and risks associated, regarding the performance of the infrastructure maintenance, shall be applicable.					
		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it is in implementation process. <i>It shall be checked during the surveillances organized and performed according to the Minister of Transports' Order OMT no.650/1998 and to the Regulation (EU) 761/2018.</i>					
36.	50436-1	freight	<b>Sighișoara</b>	07.10.2019	06:44	06.10.2020	<b>accident</b>	Locomotive derailment	

		<p>In the railway county Braşov, track section Braşov – Coşlariu (electrified double-track line), in <b>the railway station Sighişoara</b>, in the running of the freight train no.50436-1, got by the railway undertaking Unicom Tranzit SA, consisted in the derailment of first axle of the electric locomotive, having the matriculation number 91 53 0480 024-5, being got by the railway undertaking SC LTE - Rail România SRL, being dead one in the train composition.</p>	
		Recommendations issued	<p>3</p> <ol style="list-style-type: none"> <li>1. Romanian Railway Safety Authority-ASFR shall ask CNCF CFR” SA shall revise the identification of the own risks generated by the improper technical condition that imposes the keeping for a long time of the speed restrictions, generated by the unsuitable wooden sleepers.</li> <li>2. Romanian Railway Safety Authority - ASFR shall ask the railway undertaking SC LTE - Rail România SRL to review the assessment and estimation of the risks, for the relevant interfaces in order to identify the danger of distorting along the time of the locomotive suspension, following the action through hard shocks of the parts of the track superstructure and shall ask the joint management of the afferent risk, by suitable safety measures.</li> <li>3. Romanian Railway Safety Authority - ASFR shall ask the railway undertaking SC LTE - Rail România SRL take the measures necessary for the performance of the intermediary inspections in accordance with the instructions in force.</li> </ol>
		Recommendations implemented (closed)	<p>1</p> <p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented.</p> <p><i>At Line Division Braşov, the dangers generated by keeping for long time the speed restrictions generated by the improper wooden sleepers were analyzed and the conclusion was that the risk exposure is 9, so the danger mentioned generates a medium risk. This risk needs actions for its decrease and one can establish measures for control for some medium and long periods of time. The risk control is made applying the practice codes: Instruction 317/2004, Instruction 305/1997, Instruction 329/editions from 1966 și 1972.</i></p> <p><i>The railway county Timișoara – it is like relevant nonconformity ”Not fastening of the fastening parts at the joints during the technical inspections at the track, it can lead to appearance of vertical and lateral shoulder”. It having a very low frequency, it is permanently tracked by track inspections and during the hierarchical controls.</i></p> <p><i>The railway county Timișoara – there are established like relevant nonconformities ”Non removal of the failures at the line, found during the inspections performed in accordance with instructional provisions, registered during the line inspections with the testing and recording car or with the trolley” and „Inobservance of the technological processes during the performance of the track works”. A plan of measures was drafted, it was sent to all line sections L and it is included in the control theme.</i></p>
		Recommendations in implementation process (open)	<p>2</p> <p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.2 and 3, issued following the investigation of this accident, that they are in implementation process.</p> <p><i>Paper no.26/TF/26.02.2021 - ASFR</i></p> <p><i>Paper no.109/TF/30.09.2021 - AGIFER.</i></p>
37.	23052-1	freight	<p><b>Roşiori Nord - Măldăeni</b></p> <p>15.10.2019 13:10 05.10.2020 <b>accident</b> Derailment of a wagon</p>

		In the railway county Craiova, <b>between Roşiori Nord and Măldăeni railway stations</b> , track II, km 101+845, in the running of freight train no.23052-1 (got by the railway freight undertaking SNTFM „CFR Marfă” SA), there was the derailment of a bogie of a wagon.						
		Recommendations issued	1	1. Romanian Railway Safety Authority-ASFR shall ask CNCF „CFR” SA, like public railway infrastructure administrator the reassessment of the „Register of risks – synoptic table” of SRCF Craiova, so the dangers from the operation be kept under control disposing viable solutions and measures.				
		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it is in implementation process. <i>The „Register of risks – synoptic table” of the railway county Craiova shall be re-assess within the control and audit actions in 2021.</i>				
		freight	<b>Işalniţa</b>	27.10.2019	20:00	20.10.2020	<b>accident</b>	Fire in an electric locomotive
		In the railway county Craiova, track section Craiova – Filiaşi (electrified double-track line), in <b>Işalniţa railway station</b> , on the line no.5, in the running of freight train no.50402 (got by the railway undertaking SC Unicom Tranzit SA), a fire burst into the electric hauling locomotive EA 010.						
38.	50402	Recommendations issued	1	1. Romanian Railway Safety Authority – ASFR shall ask the railway freight undertaking SC Unicom Tranzit SA the reassessment of the risks generated by the danger ”Not meeting by the railway staff of his duties established by the specific regulation framework, it could lead to material damages, accidents and incidents” and to dispose effective measures for keeping it under control.				
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>There were re-assessed the risks generated by the danger ”Non-performance by the railway staff the tasks established by the specific regulations, that could lead to material damages, accidents or incidents”.</i>				
		freight	<b>Balota - Valea Albă</b>	05.11.2019	21:20	04.11.2020	<b>accident</b>	Derailment of a wagon
		In the railway county Craiova, track section Strehaia – Drobeta Turnu Severin, on the running line between the <b>railway stations Balota and Valea Albă</b> (electrified single-track), in the running of freight train no.80352-1, got by the railway undertaking SC GRUP FERVIAR ROMÂN SA, consisted in the derailment of 24 <sup>th</sup> wagon (the last but one).						
39.	80352-1	Recommendations issued	2	1.Romanian Railway Safety Authority – ASFR shall assess how the public railway infrastructure administrator CNCF „CFR” SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued in the investigation reports completed for the accidents happened on the track section Balota – Drobeta Turnu Severin, in the last three years, with similar causes and factors.				

				2. Romanian Railway Safety Authority – ASFR shall analyse with the public railway infrastructure administrator CNCF „CFR” SA, its activity of management of the risk generated by the keeping in operation of the improper wooden sleepers that have to be replaced very urgently, when there will be established also concrete measures for the improvement of the railway safety level.					
		Recommendations in implementation process (open)	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they are in implementation process. <i>It shall be checked during the surveillances organized and performed according to the Minister of Transports’ Order OMT no.650/1998 and to the Regulation (EU) 761/2018.</i>					
40.	DA 913	shunting	Caracal	09.11.2019	02:40	05.11.2020	incident	Hit of the installations by a locomotive	
		In the railway county Craiova, track section Caracal – Piatra Olt, non-electrified single-track line, in the railway station Caracal, in the shunting of diesel electric locomotive DA 913, the short control bar, inside control bar and the draw bar of the switch no.24 were hit by the lower part of the casing of the gear box from the axle no.2 of the locomotive.							
		Recommendations issued	1	1.Romanian Railway Safety Authority – ASFR shall ask SNTFM “CFR Marfă” SA that gets „CERTIFICATE OF ENTITY IN CHARGE WITH THE MAINTENANCE” shall be asked to analyse again the processes for the performance of the inspections and repairs at diesel-electric locomotive of 2100 HP, so be sure that within these processes are made, completely, the works stipulated in the technical specifications or tender books including the compliance with the railway norm NF 67-006:2011 ”Railway Vehicles. Types of planned inspections and repairs. Norms of time or norms of km run for the performance of planned inspections and repairs” amended by Order of Minister of Transports and Infrastructure no.1359/201.					
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this incident, that it was analyzed, the measures to be taken were identified and implemented. <i>Paper no.L2.1/77/29.03.2021.</i>					
41.	74-1	passenger	Bârzava	19.11.2019	13:55	17.11.2020	accident	Derailment of a locomotive	
		In the railway county Timișoara, in the railway station Bârzava, in the running of the passenger train no.74-1 (got by the railway undertaking SNTFC „CFR Călători” SA), there was the derailment of first axle of the hauling locomotive.							
		Recommendations issued	2	1. Romanian Railway Safety Authority – ASFR shall ask the public railway infrastructure administrator CNCF „CFR” SA to record in the form for the evidence of the own dangers, the danger generated by the existence of the lateral thresholds at the joint and to establish measures for keeping under control the derailment, following this danger.					

				<p>2. Romanian Railway Safety Authority – ASFR shall analyse with the public railway infrastructure administrator CNCF „CFR” SA its activity regarding the effectiveness of the measures for keeping under control the dangers generated by the improper maintenance of the track geometry on the crosses-over of the running lines and of the reception/dispatching lines, when it shall establish also effective measures for the improvement of the railway safety.</p>				
		Recommendations implemented (closed)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this accident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>The railway county Timișoara – it is like relevant nonconformity ”Not fastening of the fastening parts at the joints during the technical inspections at the track, it can lead to appearance of vertical and lateral shoulder”. It having a very low frequency, it is permanently tracked by track inspections and during the hierarchical controls.</i></p> <p><i>The railway county Timișoara – there are established like relevant nonconformities ”Non removal of the failures at the line, found during the inspections performed in accordance with instructional provisions, registered during the line inspections with the testing and recording car or with the trolley” and „Inobservance of the technological processes during the performance of the track works”. A plan of measures was drafted, it was sent to all line sections L and it is included in the control theme.</i></p>				
		freight - passenger	Ploiești Triaj	20.12.2019	15:35	07.12.2020	Serious accident	Front collision between passenger train and a freight one
42.	30558-15008	Recommendations issued	9	<p>In the railway county București, in <b>Ploiești Triaj railway station</b>, switch no. 62-76/84, in the running of freight train no.30558-1 (got by the railway undertaking Deutsche Bahn Cargo Romania SRL) and of the passenger train no.5008 (got by the railway undertaking SNTFC „CFR Călători” SA), there is a front collision between the hauling locomotives of the trains.</p> <p>1.Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator CNCF „CFR” SA will regulate the performance of an analysis of a change in accordance with the Regulation UE no.402/2013 regarding the common safety method for risk evaluation and assessment.</p> <p>2.Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator CNCF „CFR” SA will include in its own monitoring strategy also the monitoring of the changes about the works made at the railway infrastructure that have an impact on the traffic and shunting for the identification and management in safety conditions of all dangers and risks associated in the own activity.</p>				

				<p><b>3.</b> Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator CNCF „CFR” SA will organize with the railway undertakings interested the identification of interface hazards and risks, following the changes about the works made at the railway infrastructure that impact the traffic and shunting for their safety management.</p>
				<p><b>4.</b> Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator CNCF „CFR” SA will analyze the opportunity to make a pilot project using the radio records in the railway station, supporting the improvement of railway safety, extending it in accordance with the results and identification of the financing sources.</p>
				<p><b>5.</b> Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking DBCR will organize the training of its own staff so the regulations sent by the infrastructure administrator be notified to the interested staff.</p>
				<p><b>6.</b> Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking DBCR will include in its own monitoring strategy also the monitoring of the changes about the works at the railway infrastructure that impact the traffic and shunting for the identification and management in safety conditions of all hazards and risks associated in its own and interface activity.</p>
				<p><b>7.</b> Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking DBCR will draft again the documents of training/authorization/certification of the drivers, in order to be sure that they receive all the information relevant for the job exercise and that the evaluation exam for the certification shall be done so ensure the understanding of all requirements necessary for the train driving on the railway infrastructure for which the certification is got.</p>
				<p><b>8.</b> Romanian Railway Safety Authority – ASFR shall ask all infrastructure administrators and managers the identification of all signals for traffic and shunting that are not of the type presented in the signalling regulation and dispose measures accordingly.</p>
				<p><b>9.</b> Romanian Railway Safety Authority – ASFR shall ask analyse the opportunity of changing the Signalling Regulations no.004 so be excluded the use of the light red position at a shunting light signal or be stipulated unequivocally its use .</p>



		Recommendations implemented (closed)	8	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.2, 3, 4, 5, 6, 7, 8 and 9, issued following the investigation of this serious accident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>The documents of the module of training / assessment / authorization of the drivers were revised, being introduced a special chapter regarding the running regulations issued by the infrastructure administrator, presentation of the interface risks for these running conditions, presentation of the safety measures that are compulsory to be taken, so the certification of the locomotive crew shall assure the understanding of the requirements necessary for the train hauling or shunting in safety conditions.</i></p> <p><i>Procedure SMS PO 37.</i></p> <p><i>The cases identified were remedied.</i></p> <p><i>A working group was set up, consisting in ASFR - OTF – CNCF „CFR” SA for cleaning up the national safety norms, that are contradictory to TSI or are object of SMS.</i></p> <p><i>There is a decision of the CNCF „CFR” SA general manager regarding the appointment of an internal commission for the analysis of the significant changes stipulated by the Regulation (EU) no.402/2013.</i></p> <p><i>Within the controls afferent to 2021, the changes at the works performed at the railway infrastructure, that impact the traffic and shunting, shall be monitored.</i></p> <p><i>In case of significant changes, one will apply the provisions of Regulation EU 402/2013.</i></p>					
		Recommendation in implementation process (open)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this serious accident, that it is in implementation process.</p> <p><i>One shall analyse the opportunity to get a pilot project, using the record of the radio communications in the railway stations.</i></p>					
43.	23644	freight	<b>Drăgotești</b>	20.12.2019	11:45	18.12.2020	<b>accident</b>	Derailement of 3 wagons	
		<p>In the railway county Craiova, track section Drăgotești - Borăscu – Turceni, electrified single-track line, in <b>Drăgotești railway station</b>, in the running of freight train no.23644, got by the railway undertaking SNTFM „CFR Marfă” SA, there was the derailment of three wagons of the train.</p>							
		Recommendations issued	3	<p>1. Romanian Railway Safety Authority – ASFR shall assess the way the public railway infrastructure administrator CNCF „CFR” SA identified and applied the measures that had to be taken for the implementation of the safety recommendations issued within the investigation reports completed for the accidents happened on the track section Turceni - Drăgotești, in the last five years, with similar causes and factors.</p> <p>2. Romanian Railway Safety Authority – ASFR shall ask the railway public infrastructure administrator CNCF „CFR” SA the re-evaluation of „Register of risks – summary” of SRCF Craiova, so the hazards in the operation shall be kept under control disposing viable solutions and measures.</p>					

				<p><b>3.</b> Romanian Railway Safety Authority – ASFR shall analyse, together the public railway infrastructure administrator CNCF „CFR” SA, its activity regarding the management of the hazard generated by the keeping in operation of improper wooden sleepers that have to be replaced immediately, when it shall set clear measures for the improvement of the railway safety.</p>				
		Recommendations implemented (closed)	1	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented.</p> <p><i>The dangers generated by the keeping for a long time of the speed restrictions due to the improper wooden sleepers were analyzed and it was concluded that risk exposure is 9, so the dangers generate a medium risk. This risk needs actions for its decrease and one can establish control measures for some medium and long periods of time. The control of the risk is made applying the practice codes: Instruction 317/2004, Instruction 305/1997, Instruction 329, editions 1966 and 1972.</i></p>				
		Recommendations in implementation process (open)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.1 and 3, issued following the investigation of this accident, that they are in implementation process.</p> <p><i>It shall be checked during the surveillances organized and performed according to the Minister of Transport's Order OMT no.650/1998 and to the Regulation (EU) 761/2018.</i></p>				
		freight	<b>Drobeta Turnu Severin Mărfuri - Valea Albă</b>	20.12.2019	17:40	10.12.2020	<b>accident</b>	Derailment of a wagon
44.	93818	<p>In the railway county Craiova, on the track section Craiova - Drobeta Turnu Severin, electrified single-track line, between <b>Drobeta Turnu Severin Mărfuri and Valea Albă railway stations</b>, km 352+513, in the running of freight train no.93818 (got by the railway freight undertaking SNTFM „CFR Marfă” SA) there was the derailment of both axles of the second bogie of the 9th wagon.</p>						
		Recommendations issued	2	<p><b>1.</b> CNCF „CFR” SA to revise the identification of the own risks generated by the existence of some failures at the track geometry that impose the keeping for long time the speed restrictions due to the improper wooden sleepers.</p> <p><b>2.</b> Romanian Railway Safety Authority – ASFR shall ask the railway undertaking SNTFM „CFR Marfă” SA shall assess the risk generated by the appearance of some failures at the polyamide centre wear plates put between the lower and upper centre castings of the wagon bogies, failures appeared between the planned repairs and shall set up measures necessary for keeping under control this risk.</p>				

		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.2, issued following the investigation of this accident, that it was analyzed, the measures to be taken were identified and implemented. <i>According to the paper no.V1.2/08/07.01.2021, one analyzed the frequency of the failures both in operation and in repairs, and the conclusion is that the rate of failures reported to the number of wagons is under 3%, so one considers that the risk generated by the appearance of the risk generated by the appearance of some failures at the polyamide plates has no character of phenomenon. Nevertheless, one drafted Sheets for the risk assessment code: F PO 5-1 and Sheet of measures for the risk prevention code: F PO 5-2.</i>					
		Recommendation in implementation process (open)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation no.1, issued following the investigation of this accident, that it is in implementation process. <i>From the last report (July 2020), the next works were performed:</i> - there were fitted 62 new wooden sleepers and 51 ones semi-good; - there were fitted 960 m new rail type 49 of 30 m (32 pieces) and 345 m rail type 49 semi-good (different lengths); - double diamond crossing no.19/21 of the railway station Balota was replaced; - there were performed packings of sleepers type CI on the line I of the railway station Valea Alba, between km 348+564 and 349+459 and on the switch no.1, 3, 2 and 10 of the railway station Valea Alba.					
45.	group of 5 wagons	shunting	Vințu de Jos	22.12.2019	05:20	03.12.2020	incident	Runaway of a rake of wagons	
		In the railway county Braşov, track section Coşlariu – Simeria (electrified double-track line), in the railway station Vințu de Jos, there was a runaway of a group of 5 wagons loaded (got by the railway undertaking SC CER-Fersped SA) from the line n.9 and forcing of the switches no. 12 and 14.							
		Recommendations issued	1	1. Romanian Railway Safety Authority – ASFR shall ask the railway freight undertaking CER-Fersped SA to reassess the risks generated by the danger "not keeping stopped the trains and the sets of wagons in the composition railway stations (end of track section)" and to dispose additional measures for their keeping under control.					
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this incident, that it was analyzed, the measures to be taken were identified and implemented. <i>The risks generated by the danger "lack of application the parking brakes at the set of wagons and group of wagons in the forming / composition railway stations (end of track section)" were re-assessed and disposed additional measures for keeping it under control.</i>					

		passenger	<b>Pitești</b>	03.03.2020	09:43	09.06.2020	<b>incident</b>	Wrong entry route for a passenger train
46.	1892	In the railway county Craiova, track section Piatra Olt–Pitești (non-electrified single-track line), <b>in the railway station Pitești</b> , consisted in the fact that the passenger train IR no.1892, got by the railway passenger undertaking SNTFC „CFR Călători” SA, entered on a wrong entry route at the line no.2, occupied by the passenger train no.1781, got by the railway passenger undertaking SNTFC „CFR Călători” SA, instead the line no.1.						
		Recommendations issued	4	<p>1. Romanian Railway Safety Authority shall get sure that the public railway administrator CNCF „CFR” SA shall take the measures for fitting on site switch indicators to meet with the provisions of the Signalling Regulation no. 004/2006.</p> <p>2. Romanian Railway Safety Authority shall get sure that the public railway administrator CNCF „CFR” SA shall take the measures for change the provisions from the Job Description of the points examiner regarding the visual inspection on site of the right setting of the route</p> <p>3. Romanian Railway Safety Authority shall get sure that the public railway administrator CNCF „CFR” SA shall take the measures for the analysis of the possibility to replace or improve the present installation SBW, ATM, BLA in the railway station Pitești with an interlocking system which solve all the limits of the present one.</p> <p>4. Romanian Railway Safety Authority shall get sure that the public railway administrator CNCF „CFR” SA shall take the measures for the performance of a risk analysis regarding the dangers represented by the improper operation of the installations SCB and the unsuitable inspection of the entry/exit routes and the assessment of the need to introduce these dangers in the category of the unacceptable nonconformities.</p>				
		Recommendations implemented (closed)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.2 and 4, issued following the investigation of this incident, that they were analyzed, the measures to be taken were identified and implemented.</p> <p><i>The Job Description for examiner of points was made again Traffic Department made the risk analysis no.4/1/d-477/07.07.2020.</i></p>				
		Recommendations in implementation process (open)	2	<p>Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9<sup>th</sup> August 2021, notified on the safety recommendations no.1 and 3, issued following the investigation of this incident, that they are in implementation process.</p> <p><i>CNCF „CFR” SA made the supply arrangements, but there are delays because the equipment are no more manufactured in Romania and it is trying to purchase from EU states.</i></p> <p><i>It shall be analyzed.</i></p>				
47.	1818	passenger	<b>Teiuș</b>	05.03.2020	11:26	02.12.2020	<b>incident</b>	Entry route made wrong for a passenger train

		In the railway county Braşov, in <b>the railway station Teiuş</b> , in the running of passenger train IR no.1818 (got by the railway undertaking SNTFC „CFR Călători” SA), the entry route for the train in the railway station, on the line 5 occupied, was made wrong.						
		Recommendations issued	1	1. Romanian Railway Safety Authority shall be sure that the railway public infrastructure administrator CNCF „CFR” SA shall take measures for the analysis of the need to include the danger represented by the wrong making of the entry route in case of biannual inspections, and the route has to be ensured by the individual operation of the switches, by pushing the buttons for the switch operation on the position requested by the route, in the category unacceptable nonconformities.				
		Recommendation implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this incident, that it was analyzed, the measures to be taken were identified and implemented. <i>At the Traffic Division Braşov, it was made a risk analysis for the dangers generated by, ”wrong making of the entry route in case of performance biannual inspections, operating individually the switches and assuring the route pressing the buttons for switch operation on the position requested by the route and its blocking” and it was concluded that the risk exposure is 4, so the danger mentioned generates a medium risk. This risk needs actions for its decrease and one can establish control measures for some medium and long periods of time. The risk control is made applying the practice codes in force.</i>				
		passenger	Arad	06.03.2020	15:15	04.12.2020	incident	Dispatching route made wrong for a passenger train
		In the railway county Timişoara, track section Timişoara– Arad, in <b>Arad railway station</b> , consisted in making the centralised exit route from the line 1P for the passenger train no.1766 (got by the railway passenger undertaking SNTFC „CFR Călători” SA) to the railway station Aradu Nou, instead to the railway station Glogovăţ.						
48.	1766	Recommendations issued	2	1. Romanian Railway Safety Authority take care that the public railway infrastructure administrator CNCF „CFR” SA shall take measures to run a risk analysis for the dangers represented by: - the movements inspector did not comply with all the obligations regarding the dispatching of a train; - lack of analysis of the movements inspector activity upon the reports supplied by the electronic signal box and the analysis of the need to include these nonconformities in the category of the unacceptable nonconformities. 2. Romanian Railway Safety Authority take care that the railway passenger undertaking SNTFC „CFR Călători” SA shall take measures for the performance of a risk analysis for the danger represented by: - the drivers did not comply with all the obligations for train dispatching and the analysis of the need to include these nonconformities in the category of unacceptable nonconformities.				

		Recommendations implemented (closed)	2	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendations, issued following the investigation of this incident, that they were analyzed, the measures to be taken were identified and implemented. <i>The risk analysis no.3/5/2/146/2020.</i> <i>The dangers, represented by the inobservance by the drivers of all job tasks at the train dispatching, were identified.</i> <i>The "Register of dangers" shall be updated, introducing the dangers represented by the inobservance of all job obligations at the train dispatching by the drivers.</i>					
49.	80324	freight	<b>Toplița - Gheorgheni</b>	26.04.2020	08:25	20.05.2020	<b>incident</b>	Hit of the installations by a locomotive	
		In the railway county Brașov, between the railway stations Toplița and Gheorgheni, the inductor afferent to the exit signal Y III of the railway station Toplița and of other 7 inductors situated between the railway stations Toplița and Gheorgheni, were hit by parts of the subassemblies of the locomotive EA nr.185, hauling the freight train no.80324, got by the railway undertaking SC Grup Feroviar Român SA.							
		Recommendations issued	1	1. Romanian Railway Safety Authority shall ask and track that Grup Feroviar Român SA and CNCF „CFR” SA shall take measures for the revision of the own procedures / instructions afferent to those two activities, in order to be sure that the operation staff will be able, in its activity, identify the possible parts detached from the railway vehicles.					
		Recommendations implemented (closed)	1	Romanian Railway Safety Authority, through the answer formulated in the paper no.2310/568/2021, sent on the 9 <sup>th</sup> August 2021, notified on the safety recommendation, issued following the investigation of this incident, that it was analyzed, the measures to be taken were identified and implemented. <i>During the safety traffic analysis there were discussed with the operation staff, the obligation to inspect visually the train in running. During the train manning, made by control staff/its duty, it is especially tracked this activity. The risk control is made by applying the practice codes.</i>					

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

Investigations completed in	Number of the issued recommendations	Number of the implemented recommendations	Number of the recommendations in implementation process	Number of the recommendations closed not-implemented	Number of the recommendations in analysis process
2016	27	0	0	27	8
2017	31	1	0	30	29
2018	42	31	6	5	0
2019	60	26	17	17	9
<b>2020</b>	<b>111</b>	<b>63</b>	<b>41</b>	<b>9</b>	<b>0</b>
<b>TOTAL</b>	<b>271</b>	<b>121</b>	<b>64</b>	<b>42</b>	<b>46</b>

**General Manager**  
Mircea NICOLESCU