MINISTERUL TRANSPORTURILOR ŞI INFRASTRUCTURII

AGENŢIA DE INVESTIGARE FEROVIARĂ ROMÂNĂ - AGIFER

ROMANIAN RAILWAY INVESTIGATION AGENCY
- AGIFER –

ANNUAL REPORT
2021

INTRODUCTION

This is the Annual Report of Romanian Railway Investigation Agency - AGIFER (hereinafter referred to as AGIFER) for 2021. It meets with the requirement of the Directive 2016/798/EC of European Parliament and Council, transposed into Romanian legislation by the Emergency Ordinance no.73/2019 *for railway safety.*

This reference legislation is uploaded also on AGIFER site www.agifer.ro

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1 PRESENTATION

1.1 Foreword of AGIFER general manager

The year that elapsed indicated an increase of about 25% of the number of investigations open by AGIFER, against the previous year, among these being also an accident consisting in the taking over of a freight train by another one, accident that had damages over 1 million de euro.

From these 30 accidents whose investigation was completed along the period of time analyzed, 21 were derailments and 8 fires into rolling stock (7 into locomotives and a case into railway car). The direct cause (causal factors) for 11 cases from those 21 derailments, consisted in nonconformities at the track condition, and especially the improper condition of the wooden sleepers, for 3 cases in nonconformities both at the track condition and at the rolling stock one, for 3 cases in irregular loading of the wagons, and 4 cases in human errors.

Forwards, it is very high the share of the accidents for which the investigations revealed that the resources allocated for the maintenance and investments are not enough, so, in many situations the deadlines for repairs at the rolling stock and railway infrastructure are not complied with, and the specialized human resources insufficient influence the way the activity is carried out.

In 2021 AGIFER completed the investigation of a serious accident, happened in the running of passenger train Regio no.3535, got by the railway passenger undertaking SNTFC „CFR Călători" SA. The accident happened on the 5th April 2020, in the railway county Brașov, track section Brașov – Sighișoara (electrified double-track line), between the railway stations Augustin and Racoș, consisting in a fire into the car no.50532049202-6 and, further, its extension at the car no.50531954009-0, these cars being in the composition of the train. After the fire at those two cars was extinguished, in the car no.50532049202-6 (the first in fire), there was found a victim, a male, burned. Through the investigation report, there were established the factors that generated the serious accident, respectively there were issued three safety recommendations.

In case of the investigations open for the accidents after the 1st June 2020, the structure of the report changed in accordance with the provisions of Regulation EU 572/2020, AGIFER investigators adapting very good at the new requirements.

So, through the survey got last year, by own means, with the participation of the railway undertakings and infrastructure administrator, AGIFER activity was quoted by 88% from the respondents, as follows:

- „AGIFER investigations contribute seriously at the railway safety development";
- „AGIFER investigations are important for my organization";
- „AGIFER identifies safety critical factors, interacts with the actors and other interested parties during the investigations and proofs experience in the investigations".

Regarding the cooperation with other investigation bodies within |NIB network, AGIFER continued its active participation in the next working groups:

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

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

The cooperation with the railway economic operators within the investigations, although the conclusions of the investigation reports are not always comfortable for them, was based on the understanding of the common purpose of railway safety improvement, considering the lessons to be learned.

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

AGIFER General Manager
DUMITRU Laurențiu-Cornel

1.2 Role and purpose

Role of Romanian Railway Investigation Agency-AGIFER

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

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

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

AGIFER purpose

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

1.3 General data about AGIFER

Employees at the end of 2021

At the end of 2021, AGIFER had 39 employees, that is:

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

Budget

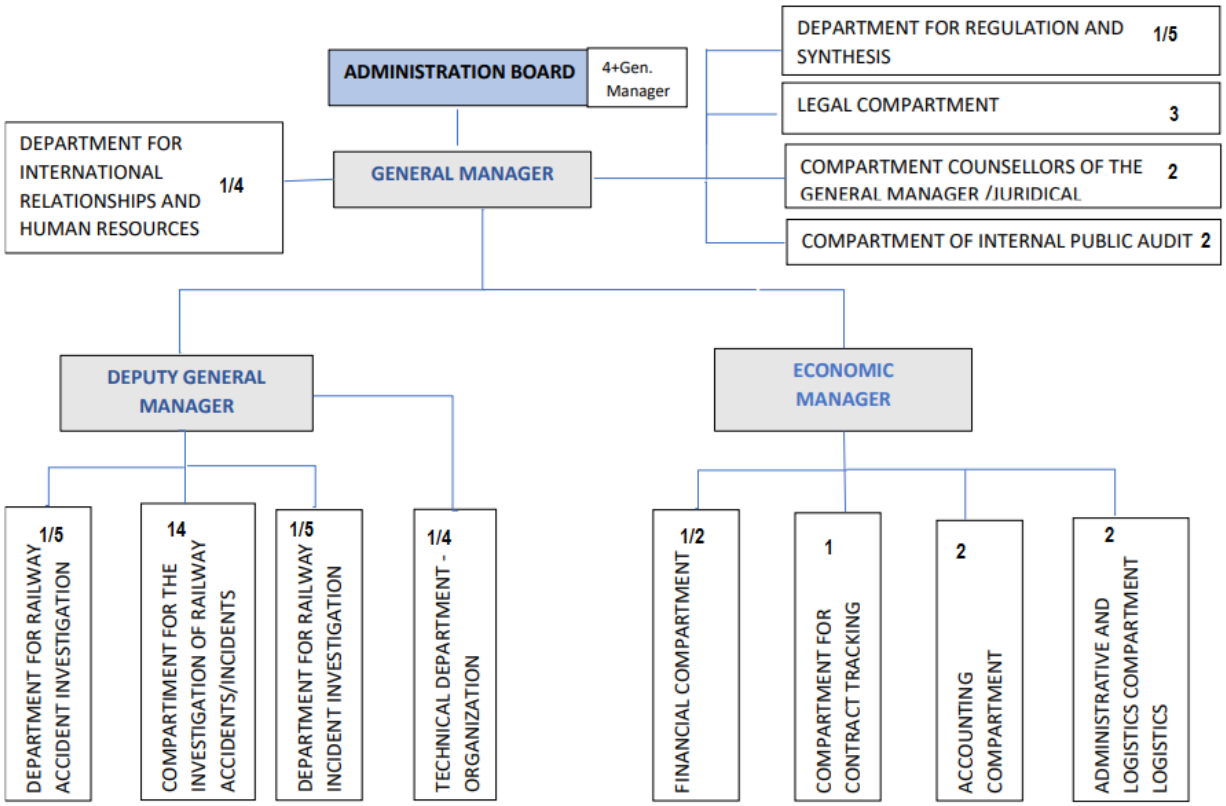
For its activity in 2021, AGIFER had a budget of 5.811.739 RON, that is 1.174.450 EUR (considering an exchange rate at the 31st December 20211 € = 4,9481 lei).

1.4 Organization

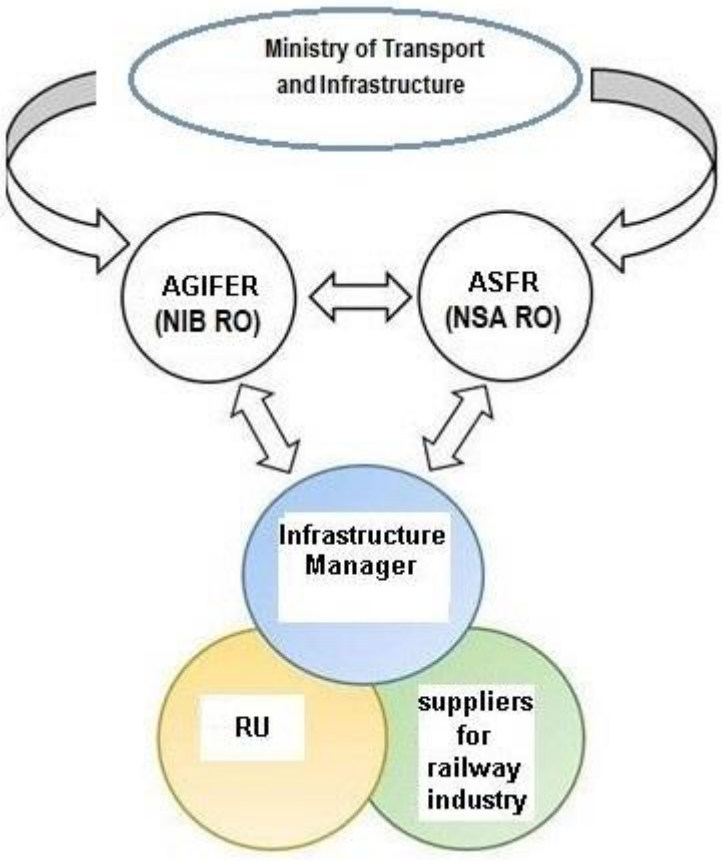
In 2018, through the Order of Minister of Transports no.1171/11.07.2018 the organization chart of Romanian Railway Investigation Agency – AGIFER was approved, it being presented below:

Romanian Railway Investigation Agency-AGIFER

Total number of employees 50
Leading positions 9



1.5 Organization diagram



2 INVESTIGATION PROCESS

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

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

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

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

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

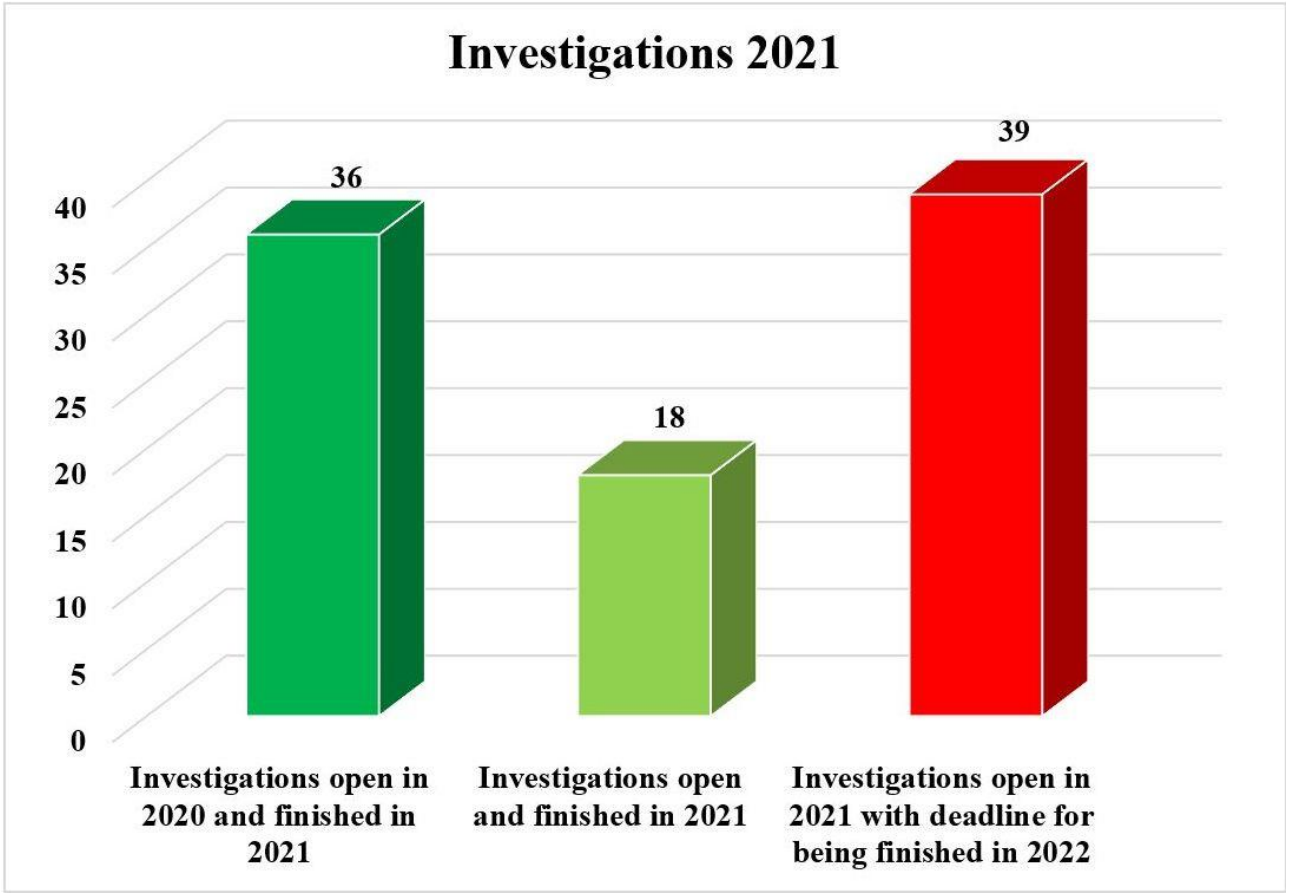
2.1 Cases investigated

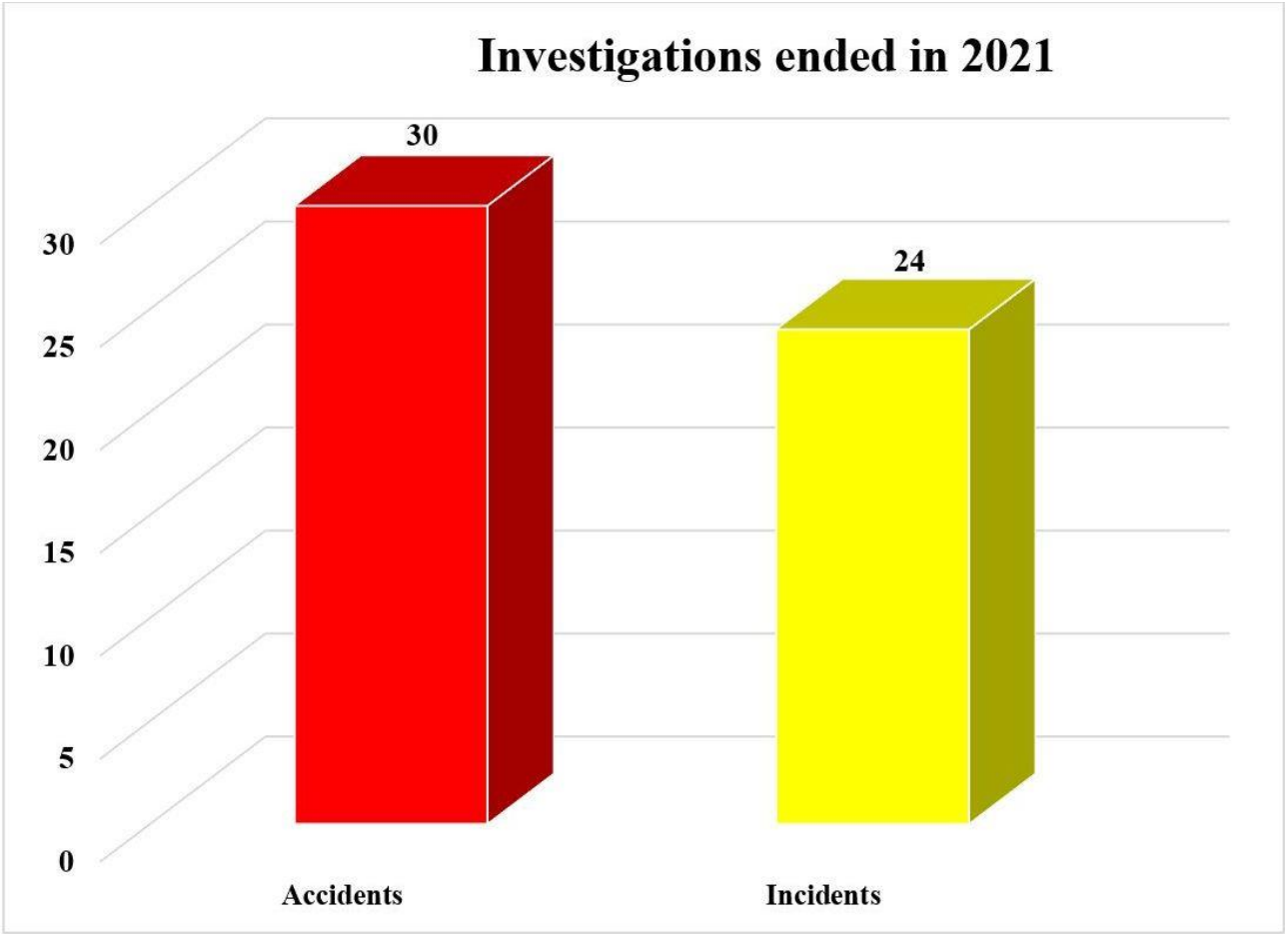
In 2021, AGIFER staff investigated **93** accidents/incidents, according to the provisions of *the Emergency Ordinance no. 73/2019* and of *the Regulation for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety,* approved by the *Government Decision 117/2010* – hereinafter referred to as *Investigation Regulation*. From those **93** investigations, **36** were open in 2020, and the other ones of **57** were open in 2021.

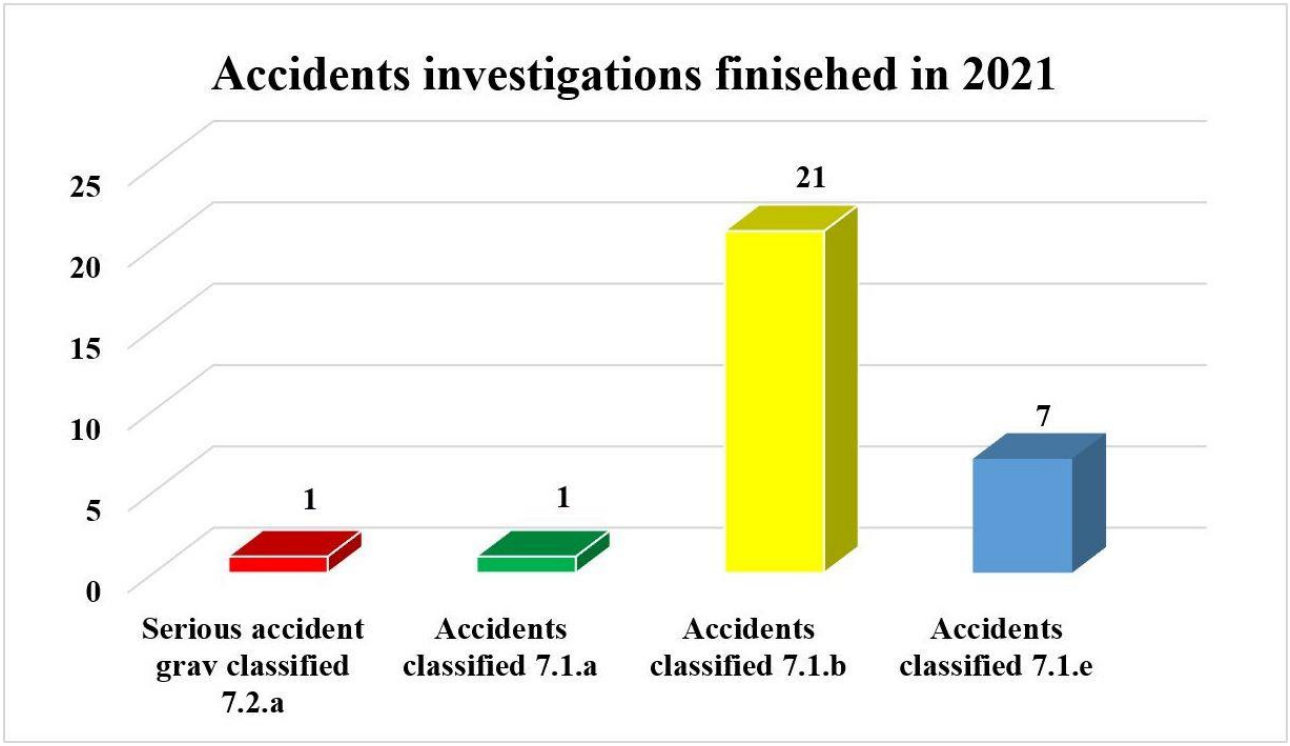
In 2021, one also completed and closed **54** investigations, respectively:

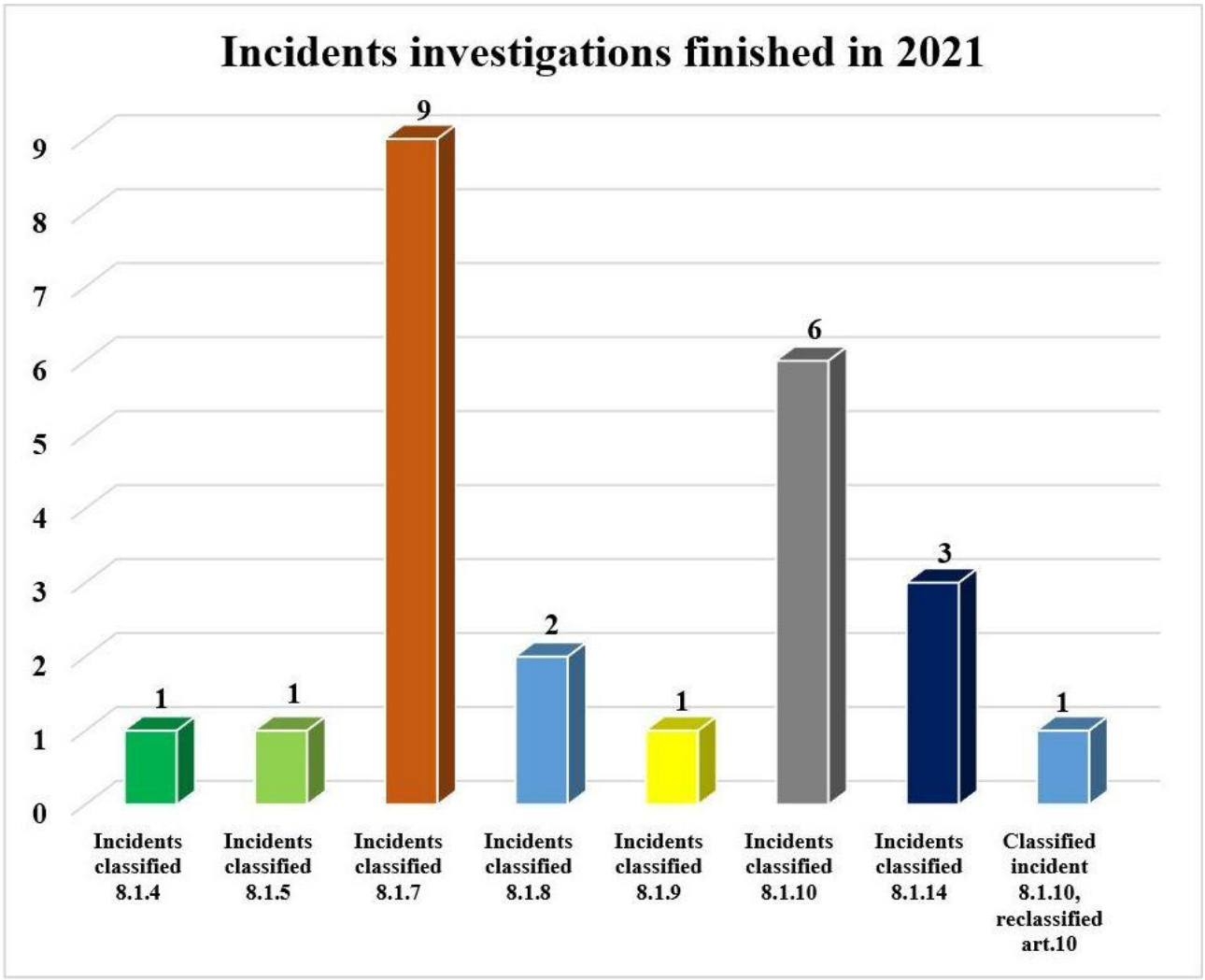
- **30 railway accidents, from which one serious accident;**

- **24 railway incidents**, classified according to the provisions of art.8.1 group A from the *Investigation Regulation,* for which Romanian Railway Investigation Agency ensured the investigator in charge, from these, for 1 case, following the investigation, it was considered that it was not railway incident according to the provisions of the *Investigation Regulation*;


Investigations 2021
40
35
30
25
20
15
10
5
0
36
18
39
Investigations open in 2020 and finished in 2021
Investigations open and finished in 2021
Investigations open in 2021 with deadline for being finished in 2022


Investigations ended in 2021
30
25
20
15
10
5
0
30
24
Accidents
Incidents


Accidents investigations finisehed in 2021
25
20
15
10
5
0
1
1
21
7
Serious accident grav classified 7.2.a
Accidents classified 7.1.a
Accidents classified 7.1.b
Accidents classified 7.1.e


Incidents investigations finished in 2021
9
8
7
6
5
4
3
2
1
0
1
1
9
2
1
6
3
1
Incidents classified 8.1.4
Incidents classified 8.1.5
Incidents classified 8.1.7
Incidents classified 8.1.8
Incidents classified 8.1.9
Incidents classified 8.1.10
Incidents classified 8.1.14
Classified incident 8.1.10, reclassified art.10

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

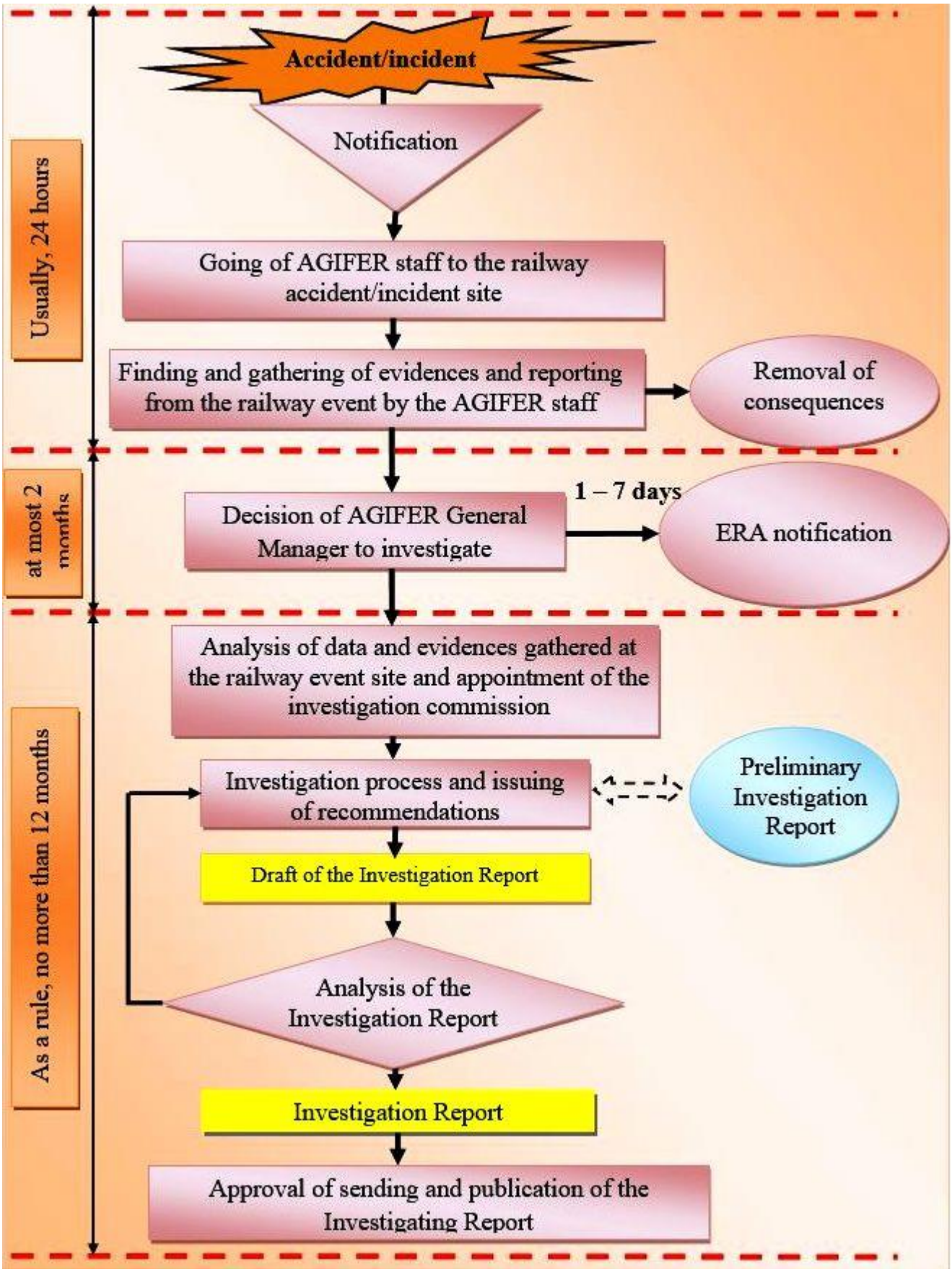
	Number of the investigations open			Number of the investigations completed		
	Accidents	Incidents	**TOTAL**	Accidents	Accidents	**TOTAL**
2017	28	13	**41**	31	17	**48**
2018	32	26	**58**	25	12	**37**
2019	45	24	**69**	32	31	**63**
2020	29	17	**46**	42	25	**67**
2021	32	25	**57**	30	24	**54**

2.3 Institutions involved in the investigation (currently or exceptionally)

From its setting up to the present, 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 2021 there was no case of appointment specialists outside AGIFER within the commissions for the investigation of the railway accidents

2.4 Diagram of the investigation process



3 INVESTIGATIONS

3.1 Overview on the investigations completed in 2021 as against to 2020, identification of the main tendencies

Type of the accidents investigated in 2021(1)	Number of accidents	Number of victims		Damages (lei)	Damages (€)	Tendency of the accident number, as against to 2020 (difference between the number of cases and percentage)
		Deaths	Seriously injured			
Trains collisions	**1**	**-**	**-**	**137.406,10**	**28.188,76**	**-1 (-50%)**
Trains derailments	**22**	**-**	**-**	**4.217.696,76**	**861.250,80**	**-9 (-29,03%)**
Road vehicles hits at the level crossings	**0**	**-**	**-**	**-**	**-**	**0 (0%)**
Fires in the rolling stock	**8**	**1**	**-**	**17.959.679,45**	**3.655.874,55**	**-1 (-11,11%)**
Total	**30**	**1**	**0**	**22.314.782,31**	**4.545.314,11 €**	**-12 (-28,57%)**

(1 one took into account the year of the investigation completion;

3.2. Investigations completed and started in 2021

In 2021 Romanian Railway Investigation Agency (AGIFER) completed and closed **54** investigations (from which **36** investigations open in 2020) and started the investigation in **57** cases from which 18 investigations were completed and closed 2021, and 39 ones are going to be completed and closed in 2022.

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 2021

No	Date of occurrence	Presentation	Legal basis of the investigation (1)	Date of completion
1	24.01.2020	In the railway county București, in **București Triaj railway station**, Post 17, in the running of the freight train no.30744 (got by the railway undertaking SC DB Cargo România SRL), the first axle of the locomotive LE-MA 014, in the train running direction derailed.	**i**	07.01.2021
2	25.01.2020	In the railway county Timișoara, track section Simeria – Livezeni (electrified double-track line), **between Merișor and Bănița railway stations**, on the track II, km.66+000, a fire burst into the electric locomotive EA 1012, hauling the freight train no.80460 (got by the railway undertaking Grup Feroviar Român SA).	**i**	22.01.2021

3	29.01.2020	In the railway county Craiova, **in Goleşti railway station**, in the running of the freight train no.83212 (got by the railway undertaking SNTFM „CFR Marfă" SA), hauled with the locomotive DA 877, on the switch no.26, on the entry route to the diverging track no. 6 from the running line Ştefăneşti – Goleşti (not-electrified single-track line), the wagon no.21533318009-3 (the 27th one of the train) derailed.	**i**	28.01.2021
4	29.01.2020	In the railway county Craiova, track section Băbeni – Alunu (not-electrified single-track line), **between Berbeşti and Popeşti Vâlcea railway stations**, km.25+610, in the running of the freight train no. 23690 (got by the railway undertaking SNTFM „CFR Marfă" SA), the first bogie of the 21st wagon (in the running direction) derailed.	**i**	11.01.2021
5	02.02.2020	In the railway county Bucureşti, **in Bucureşti Triaj railway station**, Unit 17, on the switch no.23, 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 EA 014 derailed in the train running direction.	**i**	27.01.2021
6	08.02.2020	In the railway county Braşov, track section Sibiu - Vinţu de Jos (not electrified single-track line), **between Sălişte and Apoldu de Sus railway stations,** km 33+237, in the running of passenger train IR no.74-1 (got by the railway undertaking SNTFC „CFR Călători" SA), the first bogie of the locomotive EGM 925-9 derailed.	**i**	03.02.2021
7	12.02.2020	In the railway county Craiova, track section Roşiori Nord-Caracal, **in Mihăeşti railway station**, in the running of the freight train no.20270-1 (got by the railway undertaking Rail Cargo Carrier România SRL), on the switch no.3, on the entry route to the line IV, direct line of track II, from the running line Măldăeni-Mihăeşti track I (electrified double-track line), the first 3 wagons of the train derailed	i	09.02.2021
8	17.02.2020	In the railway county Craiova, track section Caracal - Roşiori Nord (electrified double-track line), on the running line track II, between **Fărcaşele and Drăgăneşti Olt railway stations**, km 142+400, in the running of the freight train no.34372 (got by the railway undertaking SC Constantin Grup SRL), 13 wagons of the train derailed, the 7th one, respectively from the 9th one to the 20th one. From those 13 wagons derailed, 9 wagons overturned (the 9th wagon, tthe 10th wagon and from the 12th one to the 18th one).	**i**	15.02.2021
9	17.02.2020	In the railway county Timişoara, non-interoperable track section Mintia - Păuliş Technical Group (not-electrified single-track line managed by RC-CF TRANS SRL Braşov), in **Mintia railway station**, km.0+150, in the running of the freight train	**i**	08.02.2021

		no.30648 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL), the axles no. 1 and 4 of the locomotive DA 1680 derailed.		
10	25.02.2020	In the railway county Craiova, **in Balota railway station**, in the running of the freight train no.60274 (got by the railway undertaking LTE-Rail România SRL), hauled with the locomotive DA 909 EURORUNER, before the last joint of the switch no.11, on the exit route from the line no.5 to the running line Balota-Gîrnița (electrified single-track line), the first two wagons of the train were bumped by the locomotives EA 640 and EA 691 (got by the railway undertaking SC Grup Feroviar Roman SA).	**i**	23.02.2021
11	27.02.2020	In the railway county Craiova, track section Piatra Olt – Craiova, not-electrified single-track line, **railway station CF Plaiu Vulcănești**, the freight train no.80510-1 (got by the railway undertaking SC Grup Feroviar Român SA) started to run, passing by the fouling mark of the line no.3 with the locomotive and one wagon and entered the dead end siding track of the end Y of the railway station, then the train stopping without problems.	**iii**	05.02.2021
12	27.02.2020	In the railway county Cluj, on the 27th February 2020, at about 03:15, in the railway county Cluj, track section Cluj Napoca - Oradea (not-electrified double-track line), **between Aghireș and Stana railway stations**, km.534+175, a fire burst into the locomotive DA 1072, hauling the freight train no.41121A, got by the railway undertaking SNTFM„CFR Marfă" SA.	**i**	16.02.2021
13	23.03.2020	In the railway county Timișoara, track section Arad – Oradea (not-electrified double-track line), **between Utvinișu Nou and Sântana railway stations**, track I, km.17+600, in the running of passenger train no.3111, (got by the railway undertaking SNTFC „CFR Călători" SA) a fire burst into the diesel multiple unit no.1017 (the second one in the composition of the first train set from those two sets of the train).	**i**	22.03.2021
14	05.04.2020	In the railway county Brașov, track section Brașov – Sighișoara, **between Augustin and Racoș railway stations**, a fire burst into the car no.50532049202-6, afterwards, the fire extended also into the car no.50531954009-0, these cars composing the passenger train Regio nr.3535.	**i**	01.04.2021
15	17.04.2020	In the railway county Iași, in **Vatra Dornei railway station**, in the running of freight train no.80489 (locomotive running solo - EA 426 got by the railway undertaking SC Grup Feroviar Român SA), when it ran on the switch no.24, the first axle of the first bogie from the locomotive derailed, in the running direction.	**i**	15.04.2021

16	29.04.2020	In the railway county Cluj, **in Șintereag railway station**, switch no.2, in the running of the passenger train no.15836, consisting in the diesel multiple unit DW 525 (got by the railway undertaking SC Inter Regional Călători SRL - IRC), the second bogie of the multiple unit, the last one in the running direction of the train, derailed.	**i**	27.04.2021
17	04.06.2020	In the railway county Constanţa, on the non-interoperable track section P1 Capu Midia – Sitorman, managed by SC Grup Feroviar Român SA (not-electrified single-track line), between **Luminița and Post 1 Cap Midia railway stations,** km 0+500, in the running of freight train no.89158, (got by the railway undertaking SC Grup Feroviar Român SA), four wagons derailed	**i**	17.05.2021
18	11.06.2020	In the railway county Timișoara, track section Simeria – Petroșani (electrified double-track line), **between Baru Mare and Crivadia railway stations**, track I, km.54+370, in the running of freight train no.30536 (got by the railway undertaking SC DB Cargo România SRL), the second axle of the 15th wagon (two axled wagon) derailed.	**i**	08.06.2021
19	26.06.2020	In the railway county Craiova, track section Strehaia - Orșova (electrified single-track line), **in Balota railway station,** on the line no.5, km 344+059, in the running of the freight train nr.30548 (got by the railway undertaking SC Deutsche Bahn Cargo Romania), both axles of the wagon no.248743637790, the 9th one after the locomotive, derailed and reclined.	**i**	23.06.2021
20	26.06.2020	In the railway county Iași, in the running of freight train no.80657, got by SC Grup Feroviar Român SA, the exit signal was passed by and the locomotive running through switch no.7 from **Valea Seacă railway station.**	**iii**	03.06.2021
21	10.07.2020	In the railway county București, track section Pantelimon-Ciulnița (electrified double-track line, managed by CNCF „CFR" SA), **between Fundulea and Sărulești railway stations**, track II, km 47+737, in the running of freight train no.30688-1 (got by railway undertaking SC Deutsche Bahn Cargo Romania SRL), the first bogie of the locomotive DA 010, a dead one, derailed in the running direction.	**i**	07.07.2021
22	05.08.2020	In the railway county Craiova, track section Băbeni - Alunu (not-electrified single-track line), **between Popești Vâlcea and Berbești railway stations**, km.24+570, in the running of the freight train no.23689 (got by the railway undertaking SNTFM„CFR Marfă" SA), both bogies of the 11th wagon derailed.	**i**	04.08.2021
23		In the railway county **Brașov**, track section Brașov	**i**	

	24.08.2020	– Ploiești Vest (electrified double-track line), **between Timișu de Sus and Predeal railway stations**, track II, km 144+763, in the running of freight train no.50492 (got by UNICOM TRANZIT SA), hauled with the locomotive EA 531 and banking one EA 089, fire burst into the banking locomotive of the train.		19.08.2021
24	13.09.2020	In the railway county București, when the passenger train R.8023 (got by the railway undertaking SNTFC „CFR Călători" SA), hauled with the locomotive EA 363, left **București Obor railway station** and after passing over the last joint of the common crossing from the double diamond crossing no.4/5, the first bogie from the first car of the train derailed.	**i**	07.09.2021
25	13.09.2020	In the railway county Timișoara, track section Reșița – Caransebeș (electrified single-track line), between **Brebu and Cornuțel Banat railway stations**, km.11+278, 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 (one of them overturned).	**i**	07.09.2021
26	22.09.2020	In the railway county **București**, track section Chiajna – Videle (electrified double-track line), between **Grădinari and Vadu Lat railway sations**, the track I, km 34+700, a fire burst into the locomotive DHC 746, hauling the freight train no.34304-1 (got by the railway undertaking SC Constantin Grup SRL).	**i**	01.09.2021
27	23.09.2020	In the railway county Craiova, in **Gura Motrului railway station**, on the connection line R2, km 291+010, in the running of freight train no.20914, got by the railway freight undertaking SC Cargo Trans Vagon SA, the light exit signal of the branch line YRT was passed on danger, being on „STOP without pass the signal in stop position! *Day and night* – a light red unit to the train". After passing the signal on danger, the train continued to run and entered the dead end siding track. Then the first bogie of the locomotive derailed in the running direction.	**iii**	13.09.2021
28	08.10.2020	In the railway county Timișoara, track section Simeria - Livezeni (electrified double-track line), direct track III of **Bănița railway station**, a fire burst into the locomotive EA 647, hauling the freight train no.90478 (got by the railway undertaking SC VEST TRANS RAIL SA).	i	07.10.2021
29	10.10.2020	In the railway county Timișoara, in **Ilia railway station**, the freight train no.71701 (hauled with the locomotive no.ED-019), got by the railway freight undertaking SNTFM „CFR Marfă" SA, passed by the exit signal XII, that was without any indication.	**iii**	14.05.2021
30		In the railway county Craiova, track section Băbeni	**i**	

	16.10.2020	- Alunu (not-electrified single-track line used exclusively for the freight train running), at the entry in **Berbești railway station,** in the running of freight train no. 23680 (got by the railway undertaking SNTFM „CFR Marfă" SA), the first bogie of 10th wagon derailed.		30.09.2021
31	17.10.2020	In the railway county Craiova, track section Videle – Roșiori Nord (electrified double-track line), in the running of freight train no.21153 (got by the railway undertaking SNTFM „CFR Marfă" SA), when it was stabling on the line no.1 of **the railway station Atârnați**, km 91+100, the 7th wagon from the locomotive derailed	**i**	14.10.2021
32	22.10.2020	In the railway county Iași, in the running of freight train no.50476, got by SC Unicom Tranzit SA, some parts of the interlocking system were hit, **between Berchișești – Câmpulung Moldovenesc**.	**iii**	27.07.2021
33	25.10.2020	In the railway county București, track section București – Ciulnița (electrified double-track line), between **Fundulea and Brănești**,**railway stations** track II, km.35+200, in the running of freight train no.80522 (got by the railway undertaking SC Grup Feroviar Român SA), a fire burst into the hauling locomotive DA 1523.	**i**	09.09.2021
34	03.11.2020	In the railway county Craiova, track section Strehaia – Drobeta Turnu Severin, **in Gârnița railway station**, in the running of the train no.98473, consisting in the tower wagon - DVMP 977, having entry order on the direct line no. II, with the exit signal XII on stop position and the switch no.4 operated on (-) to dead end siding track, the exit signal was passed on danger, entering the dead end siding track and the both axles derailing.	**iii**	21.10.2021
35	27.11.2020	In the railway county București, in **București Triaj railway station**, Post 17, in the running of the freight train no.30744 (got by the railway undertaking SC DB Cargo România SRL), the first axle of the locomotive LE-MA 014, in the train running direction derailed.	**iii**	10.11.2021
36	28.12.2020	In the railway county Constanta, on the non-interoperable track section **Dorobanțu – (Romcim) Medgidia PC2** (managed by CNCF CFR SA), not-electrified single-track line, km 4+870, in the running of freight train no.89170 (got by the railway undertaking SC Grup Feroviar Român SA), two wagons derailed (the first bogie from the16th wagon and the second bogie from the 17th one)	**i**	22.12.2021
37	18.01.2021	In the railway county Brașov, in **the railway station Dumbrăvioara**, in the running of freight train no.29652, got by SC CER Fersped SA, the stabling limit signal and the exit semaphore of the set of tracks B were passed by, the train running	**i**	18.02.2021

		through the switch no.3.		
38	11.02.2021	In the railway county Craiova, track section Goleşti - Argesel (not-electrified single-track line), **in Goleşti railway station**, in the running of the freight train no.95523 (got by the railway freight undertaking SC SNTFM „CFR Marfă" SA), two wagons derailed (the 33rd and 34th ones)	**i**	21.12.2021
39	15.02.2021	In the railway county Galaţi, in **Comăneşti railway station**, the cover of the auxiliary device for the operation of switch no.5 was hit by the brake slack adjuster type RL2-350 from the axle no.3 of the locomotive EA 028, hauling the passenger train no.1541/1541-2 (got by the railway undertaking SC SNTFC „CFR Călători" SA).	**iii**	21.04.2021
40	12.03.2021	In the railway county Braşov, track section Braşov - Sighişoara, electrified double-track line, **Târnava railway station**, in the running of freight train no.21892, got by the railway undertaking SNTFM „CFR Marfă" SA, the inductor of INDUSI equipment, from the hauling locomotive, was hit by a plate for the fastening of the rail, being into the structure clearance.	**i**	19.04.2021
41	13.03.2021	In the railway county Iaşi, **between Iacobeni – Larion**, in the running of freight train no.50406-1 (got by the railway undertaking SC Unicom Tranzit SA), the maximum speed accepted by the running order was exceeded.	**iii**	13.09.2021
42	14.03.2021	In the railway county Iaşi, **between Lunca Ilvei and Leşul Ilvei railway stations**, track section Suceava – Ilva Mică, in the running of freight train no.90759 (light locomotive EA 1083 got by the railway undertaking SC MMV Rail România SA), a suspended part of the locomotive detached and hit 21 track magnets.	**iii**	20.07.2021
43	12.04.2021	In the railway county Bucureşti, **in the railway station Stăneşti**, the exit signal XI was passed past by the the train no. 34153 (light locomotive DA 797 got by the railway undertaking SC SNTFM „CFR Marfă" SA).	**iii**	19.05.2021
44	09.05.2021	In the railway county Galaţi, track section Buzău - Focşani, **in the railway station Buzău and between the railway stations Buzău and Boboc**, a hydraulic damper detached and fallen from the locomotive EA829, hauling the passenger train no.1754 (got by the railway undertaking SC SNTFC „CFR Călători" SA) hit 6 track inductors.	**iii**	08.05.2021
45	12.05.2021	In the activity area of SC TMB „METROREX" SA Bucureşti, in **1 Mai metro station**, in the running of the metro train no.5211, a metallic panel, fallen from the station celling into the structure clearance, on the line, was hit.	**ii**	11.06.2021
46	17.05.2021	In the railway county Braşov, in **Valea Lungă railway station**, in the running of freight train	**iii**	07.06.2021

		no.90939, got by the railway undertaking Rail Force SRL, some parts of the railway infrastructure were hit by an open door of a train wagon.		
47	07.06.2021	In the railway county Cluj, track section Dej–Jibou (not-electrified single-track line), in **Cuciulat** railway station, the locomotive DA 001, hauling the freight train no.50456 (got by SC UNICOM TRANZIT SA) passed the signal „X3" on danger, it being on „STOP without pass the signal in stop position".	**iii**	12.07.2021
48	22.06.2021	In the railway county Iași, **between Coșna and Leșul Ilvei railway stations**, in the running of passenger train no.1765 (got by the railway undertaking SNTFC „CFR Călători" SA), a suspended part of the hauling locomotive EA 546 detached and hit 13 track inductors.	**iii**	04.11.2021
49	08.07.2021	In the activity area of SC TMB „METROREX" SA București, in **Eroilor metro station**, the metro train no.1304 was dispatched to Politehnica instead Grozăvești, as it was stipulated in the train working timetable.	**iii**	06.09.2021
50	11.07.2021	In the railway county București, in **Toporu railway station**, the freight train no.20574-1 (got by the railway undertaking SC CER – FERSPED) passed by the exit signal X2.	**iii**	06.08.2021
51	01.09.2021	In the activity area of SC TMB „METROREX" SA București, Main line II, track 2, **station Piața Romană**, during the stabling of the metro train no.212, a metallic part (a masking sheet) detached and hit a third rail collector shoe of the train, respectively from the half train set 1306 – car 2 MP1, on the right side of the train, in its running direction, opposite the third rail.	**ii**	24.11.2021
52	08.09.2021	In the railway county Brașov, in **Rupea railway station**, in the running of freight train no.21844, got by the railway undertaking SNTFM „CFR Marfă" SA, the box of the cover from DAM device and the operation rod of the switch no.6 were hit by the brake holder support of the brake rigging from a train wagon.	**iii**	28.10.2021
53	19.09.2021	In the railway county Galați, track section Buzău – Mărășești (electrified double-track line), in **Pufești railway station**, the locomotive EA 741, hauling the train nr.5054 (got by the railway undertaking SNTFC „CFR Călători" S.A.) passed the entry signal „Y" on danger, commanding „STOP without pass the signal in stop position".	**iii**	19.10.2021
54	06.10.2021	In the railway county Constanța, track section Constanța-Medgidia, a wagon ran away from the lines **of Palas railway station** and occupied the track II of the running line between the railway stations Palas and Valul lui Traian.	**iii**	26.10.2021

(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).

Investigations open in 2021 that are going to be completed in 2022

No	Date of occurrence	Presentation	Legal basis of the investigation(1)	Date of completion
1	04.02.2021	In the railway county Timișoara, track section Orșova – Caransebeș (electrified single-track line), **between Domașnea Cornea and Poarta railway stations**, km 435+100, in the running of the freight train no.60516-1 (got by the railway undertaking SC Tim Rail Cargo SRL), a fire burst into the banking locomotive EA 1084.	**i**	03.02.2022
2	16.02.2021	In the railway county București, track section București Nord - Videle (electrified double-track line), in **Bucureștii Noi railway station**, on the connecting track between the switches no.6C and no.30 („Governmental line"), km 0+230, two axles (first from each bogie in the running direction) of the locomotive EA 2002, running solo, running like train no.39512 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL) derailed	**i**	27.01.2022
3	26.03.2021	In the railway county Brașov, track section Brașov - Sighișoara, **Augustin railway station**, in the running of the freight train no.80599-2 (got by the railway undertaking SC Grup Feroviar Român SA), both axles from the first bogie of the 9th wagon derailed in the running direction.	**i**	24.03.2022
4	29.03.2021	In the activity area of SC TMB „METROREX" SA București, **between Piața Victoriei 1 and Aviatorilor metro stations**, in the running of metro train set no.18, path 15, the train consisting in the electric train set (TEM) no.1324-2324, the anti-roll bar and the left third line collector shoe, in the running direction, of the bogie no.1 of the unit M2 of the half-train set no.2324 and they hit the tunnel installations.	**ii**	22.02.2022
5	30.03.2021	In the railway county București, track section București Nord - Videle (electrified double-track line), in **Vadu Lat railway station**, at the exit of the freight train 20574-1 from the diverging track no.2 on the track I to Zăvestreni, having route on the switches no.14 and 10, two wagons (the 11th and the 12th ones) derailed and overturned.	**i**	09.02.2022
6	06.04.2021	In the railway county Brașov, track section Brașov - Sighișoara (electrified double-track line), at the exit of the passenger train R.3528 (got by the railway undertaking SNTFC „CFR Călători" SA from **Sighișoara railway station**, the first two cars of the train derailed (the derailment of all axles from the first car and the first axle of the	**i**	03.03.2022

		second car).		
7	09.04.2021	In the railway county Constanța, non-interoperable track section Năvodari - Dorobanțu (not-electrified single-track line, managed by SC Grup Feroviar Român SA) **between Năvodari and Nazarcea railway stations**, km. 22+400, in the running of freight train no.89576, got by the railway undertaking SC Grup Feroviar Român SA, three wagons derailed, the 3rd, the 6th and the 11th ones of the train.	**i**	23.02.2022
8	11.04.2021	In the railway county Constanța, non-interoperable track section Palas – Năvodari (railway infrastructure manager SC Grup Feroviar Român SA), between **Palas and Constanța Mărfuri railway stations**, not-electrified single-track line, km 1+330, in the running of freight train no.80639 (got by the railway undertaking SC Grup Feroviar Român SA), two wagons of the train derailed (the 32nd and 33rd ones).	**i**	06.04.2022
9	01.06.2021	In the railway county Craiova, track section Titu - Golești (not-electrified double-track line), in the **railway station Golești**, in the running of passenger train no.1897 (got by the railway undertaking SNTFC „CFR Călători" SA), the signals XIC, XPIII, and XIII were passed on danger, being on „*STOP, without passing the signal in stop position!*", followed by the running through the switch no.15 and the train stop on the insulated track section no.50/56.	**iii**	31.06.2022
10	06.06.2021	In the railway county Timișoara, track section Caransebeș - Orșova (electrified single-track line), in **Poarta railway station,** after the stabling of freight train no.81690 (got by the railway undertaking SNTFM „CFR Marfă" SA), a fire burst into the hauling locomotive EA 071.	**i**	30.05.2022
11	15.06.2021	In the railway county Cluj, track section Deda – Dej Calatori (electrified double-track line), in **Dej Triaj railway station,** on the switch no.6A, in the running of freight train no.48375, hauled with the locomotive DA 897 (got by the railway undertaking SNTFM „CFR Marfă" SA), consisting in 14 wagons type Faccpps (got by the railway infrastructure administrator CNCF „CFR" SA) two wagons derailed (the 3rd and the 4th ones of the train).	**i**	Investigation in process
12	26.06.2021	In the railway county Brașov, track section Brașov - Sighișoara (electrified double-track line), on the switch no.8 from the end Y of **Vânători railway station**, the axle no.6, first in the running direction, of the locomotive EA 317, hauling the freight train no.21817-2 (got by the railway undertaking SNTFM „CFR Marfă" SA), derailed.	**i**	Investigation in process
13	28.06.2021	In the railway county Craiova, track section	**iii**	Investigation

		Craiova – Piatra Olt (not-electrified single-track section), in **Robănești railway station**, in the running of passenger train Interregio no.9036 (got by the railway undertaking SNTFC „CFR Călători" SA), having order for passing on the direct track II, the entry semaphore signal D1/2 on the position „FREE on the direct line", the train entered the diverging track no. 3.		in process
14	08.07.2021	In the railway county Cluj, track section Războieni - Apahida (electrified double-track line), when the train left **Câmpia Turzii railway station**, on the track section 022, afferent to the track I Câmpia Turzii-Valea Florilor, km 452+255, in the running of passenger train no.3081 (got by the railway undertaking SNTFC „CFR Călători" SA), the last car of the train derailed.	**i**	Investigation in process
15	08.07.2021	In the railway county București, track section Ploiești – Brașov (electrified double-track line), between **the railway stations Bușteni and Azuga**, track I, km.133+800, in the running of freight train no.80498-1 (got by the railway undertaking SC Grup Feroviar Român SA), a fire burst into the first wagon after the locomotive, loaded with oil (gas).	**i**	02.06.2022
16	12.07.2021	In the railway county Brașov, track section Vânători – Brașov (electrified double-track line), in **Beia railway station**, direct line II, km.263+407, in the running of freight train no.99514 (got by the railway undertaking SC VEST TRANSRAIL SRL), a fire lighted at the load of logs of the first wagon.	**i**	Investigation in process
17	12.07.2021	In the railway county Craiova, track section Filiași – Turceni, in **Filiași railway station**, the speed of 30km/h was exceeded when the freight train no.80230-1 (got by the railway undertaking SC Grup Feroviar Român SA) ran on the deflecting section, on the switches no.4 and 8.	**iii**	Investigation in process
18	15.07.2021	In the railway county **București**, track section București Nord - Videle (electrified double-track line), in **Bucureștii Noi railway station**, on switch no.12 C, km 0+550, in the running of freight train no.83548G-1 (got by the railway undertaking SNTFM „CFR Marfă" SA), the first three axles of the hauling locomotive ED 002 derailed in the running direction.	**i**	Investigation in process
19	18.07.2021	In the railway county Constanța, track section Fetești – Ciulnița (electrified double-track line), at the end X of **Jegălia railway station**, in the running of passenger train no.8008 (got by the railway undertaking SNTFC „CFR Călători" SA), a fire burst at the traction engine no. 2 (diesel one) of the diesel multiple unit AMD no.2084.	**i**	Investigation in process

20	20.07.2021	In the railway county Constanța, track section Palas - Medgidia (electrified double-track line), in **Dorobanțu railway station**, on switch no.22, in the running of freight train no.50830-1 (got by the railway undertaking SC EXPRESS FORWARDING SRL), all axles of the 33rd wagon derailed.	**i**	Investigation in process
21	21.07.2021	In the railway county **Constanța**, track section București - Constanța (electrified double-track line), in **Fetești railway station**, end X, in the running of freight train no.64288 (got by the railway undertaking SC ROFERSPED SA), three wagons derailed (the 8th, 9th and 15th ones in the train composition).	**i**	Investigation in process
22	28.07.2021	In the railway county **Constanța**, track section București - Constanța (electrified double-track line), in **the railway station Fetești**, end X, direct line II, track I, the freight train no.60514-1 (got by the railway undertaking SC TIM RAIL CARGO SRL) overtook and collied the freight train no. 50790-1 (got by the railway undertaking SC EXPRESS Forwarding SRL).	**i**	Investigation in process
23	01.08.2021	In the railway county Constanța, industrial branch **Antestație ROMCIM Medgidia**, when the freight train no.30658-1 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL) was stabled, the first wagon of the train derailed.	**i**	Investigation in process
24	05.08.2021	In the railway county Constanța, **in Medgidia railway station**, in the running of freight train no.20934 (got by the railway undertaking SC Cargo Trans Vagon SA), all axles of 4th wagon derailed.	**i**	Investigation in process
25	07.08.2021	In the railway county Craiova, track section Caracal – Piatra Olt (not-electrified single-track line), between **Vlăduleni and Piatra Olt railway stations**, km 206+850, in the running of the freight train no.20536-1 (got by the railway undertaking SC CER - FERSPED SA), the first bogie of the 13th wagon derailed in the running direction.	**i**	Investigation in process
26	19.08.2021	In the railway county Timișoara, track section Simeria – Arad (electrified double-track line), track II of the running line, between **Mintia and Brănișca railway stations**, km 492+680, the 13th wagon of the freight train no.50783, (got by the railway undertaking SC Express Forwarding SRL) derailed.	**i**	Investigation in process
27	23.08.2021	In the railway county Timișoara, track section Timișoara - Arad (electrified single-track line), between **Șag and Vinga railway stations**, km.36+400, a fire burst into the locomotive EA 251, hauling the passenger train no.2602 (got by	**i**	Investigation in process

		the railway undertaking SNTFC „CFR Călători" SA).		
28	23.08.2021	In the railway county Craiova, track section Strehaia – Orșova (electrified single-track line), between **Valea Albă and Balota**,**railway stations** km.345+460, in the running of freight train no.29114 (got by the railway undertaking SC Rail Cargo Carrier Romania SRL), the 12th wagon derailed.	**i**	Investigation in process
29	24.08.2021	In the railway county Craiova, track section Filiași – Craiova, between **Coțofeni and Răcari**,**railway stations** the shunt signal M2 and two pegs from insulated track sections were hit by the freight train no.23052-1 (got by the railway undertaking SNTFM CFR „Marfă" SA)	**iii**	31.05.2022
30	27.08.2021	In the railway county București, track section Titu – Târgoviște (not-electrified double-track line), when the freight train no.59401 (got by the railway undertaking SC UNICOM TRANZIT SA) was stabled on the diverging track 5 in **Nucet railway station**, 6 wagons derailed (from the 9th wagon to the 14th one of the train)	**i**	Investigation in process
31	03.09.2021	In the railway county Brașov, track section Brașov - Sibiu (not-electrified single-track line), in **Făgăraș railway station**, when the freight train no.99974 (got by the railway undertaking SC Rail Force SR) left the line 8, the first bogie from the 10th wagon derailed in the running direction.	**i**	Investigation in process
32	20.09.2021	In the railway county Craiova, track section Filiași – Strehaia, in **Gura Motrului railway station**, the freight train no.93759 (got by the railway undertaking SNTFM CFR „Marfă" SA) was dispatched to another direction than the stipulated one, running through the switch that gives access to hat direction.	**iii**	28.02.2022
33	03.11.2021	In the railway county Craiova**,** track section Berbești - Alunu (not-electrified single-track line)**,** between **Berbești and Popești Vâlcea railway stations**, km. 25+300, the first bogie of the 19th wagon of the freight train no.23686 (got by the railway undertaking SNTFM „CFR Marfă" SA) derailed.	**i**	Investigation in process
34	10.11.2021	In the railway county Iași, track section Suceava – Ilva Mică, in **Câmpulung Moldovenesc**,**railway station** the freight train no.80672, hauled with the locomotive EA 1004 (got by the railway undertaking SC Grup Feroviar Român SA) passed the entry signal Y on danger.	**iii**	Investigation in process
35	24.11.2021	In the railway county Craiova, track section Caransebeș-Strehaia, in **Balota railway station**, a group of 14 wagons ran away and overtook a shunting rake of wagons, leading to the collision with it and the derailment of 5 wagons (they being	**iii**	Investigation in process

		got by the railway freight undertaking SC CER FERSPED SA).		
36	28.11.2021	In the railway county Brașov, track section Luduș-Măgheruș Șieu (non-interoperable track section managed by RC-CF Trans SRL Brașov), in the running of passenger train no.16301 (got by the railway undertaking SC Regio Călători SRL Brașov), between **Luduș and Sărmășel railway stations**, km 6+757, two bogies of the trailer of the multiple unit AMX 1600 derailed.	**i**	Investigation in process
37	29.11.2021	In the railway county Craiova, track section Drăgotești-Turceni (electrified single-track line), when the freight train no.23644 entered **Turceni railway station**, on switch no.6, two wagons derailed (the 15th and 16th ones in the train composition).	**i**	Investigation in process
38	06.12.2021	In the railway county Galati, track section Mărășești - Barboși (electrified double-track line), in **Barboși Triaj railway station**, line 1D, the first wagon of freight train no.30630-1 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL) derailed.	**i**	Investigation in process
39	27.12.2021	In the railway county București, track section București Nord - Videle (electrified double-track line), in **Chiajna railway station**, when the freight train no.67400 (got by the railway undertaking SC TIM RAIL CARGO SRL) was dispatched from the line 2, the 25th wagon of the train derailed.	**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 2021
Surveys ordered in 2020 and completed in 2021

Order date	Study name (classification type, localization)	Legal basis of the investigation(1)	Complementary data
20.07.2020	The testing report no.3011-4, worked out following the chemical and metallography analysis of the samples taken from the roof of the car no.50532049202-6. The expertise made during the investigation of the serious accident happened in the running of passenger train Regio no.3535, got by the railway passenger undertaking SNTFC „CFR Călători" SA. The accident happened on the 5th April 2020, in the railway county Brașov, track section Brașov – Sighișoara (electrified double-track line), between Augustin and Racoș railway stations, consisted in a fire burst into the car no.50532049202-6 and, further, its spreading to the car no.50531954009-0, the cars forming the train.	**i**	Completed on the 18th January 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).

Surveys ordered in 2021 and completed in 2021

Order date	Study name (classification type, localization)	Legal basis of the investigation(1)	Complementary data
14.09.2021	The report of technical assessment of the anti-roll bar from the derailed bogie of the car no.50538483005-3, broken transversely. The expertise performed during the investigation of the accident happened in the running of the passenger train Regio no.3081, got by railway undertaking SNTFC „CFR Călători" SA. The accident happened on the 8th July 2021, in the railway county Cluj, in the railway station Câmpia Turzii, consisted in the derailment of last two axles of the car no.5053 8483 005-3.		14.09.2021

Surveys ordered in 2021 rested in working process

Order date	Study name (classification type, localization)	Legal basis of the investigation(1)	Complementary data

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

3.4. Summary of the investigations completed and closed in 2021

Within 2021 there was completed and closed a number of **54** investigations, from which 36 open in 2020, the rest of 18 being open in 2021.

Forwards, it is presented the synthetical situation of **54** investigation reports completed and closed in 2021.

3.4.1. The railway accident happened on the 24th January 2020, at 19:05 o'clock, in the railway county București, in București Triaj railway station, Post 17, in the running of the freight train no.30744 (got by the railway undertaking DB Cargo România SRL), consisted in derailment of first axle of the locomotive LE-MA 014, in the train running direction, derailed.
The investigation report was completed on the 7th January 2021.

Causes and contributing factors
Direct cause of the accident is the flange of the right wheel of the axle no. 6 of the locomotive LE-MA 014 (in the running direction) overclimbed the gauge face of the curved point of the switch no.31, following the increase of the ratio between the guiding force and the load acting on this wheel, so exceeding the derailment stability limit.
Contributing factors:

- failures existing at the gauge, cross level and direction of the track at the accident site;
- low number of the staff in the Line District București Triaj, involved in the track maintenance, corroborated with the lack of a proper technical endowment;
- insufficient quantities of materials sent to the Line District București Triaj for the track maintenance and repair;
- unequal distribution of the loads on the wheels of the leading axle of the locomotive LE-MA 014.

The investigation commission also stipulates that the accident happened following the cumulation of the effect of those factors, not being possible the setting of their weight in the derailment occurrence.
Underlying causes
1. Inobservance of the provisions of art.19.2 from *Instruction of norms and tolerances for the track construction and maintenance – tracks with standard gauge - no.314/1989,* regarding the tolerances accepted against the prescribed gauge for the switches;
2. Inobservance of the provisions of art.19.6 from Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge - no.314/1989, regarding the tolerances accepted for the cross level;
3. Inobservance of the draft provisions no.283-0 (APCAROM) regarding the values of the versine of the curved point of the switch and of the switch ordinates;
4. Inobservance of the provisions of point 4.1. from the 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 norm of manpower and current manual work maintenance;

5. Inobservance of the provisions of the Railway Technical Norm no.67-003 approved by Order of Minister of Transports no.366/2008 from the 18th March 2008, regarding the keeping of the load on wheel between ±4% from the average weight on the wheel.

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 time of the track 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 a nonconformity was identified, it having no relevance for the accident causes, that is:

As reference to the crew of the locomotive LE-MA 014, got by the railway undertaking SC DB Cargo România SRL, from the 20th/21st January 2020 (route sheets series 1E no.0701 and series 1E no.0702) it did not meet with the provisions of the Order of Minister of Transports no.256 from the 29th March 2013, regarding the maximum continuous duty accepted for the locomotive.

Safety recommendations

On the 24th January 2020, at 19:05 o'clock, in the railway county București, in the railway station București Triaj, Post 17, in the running of the freight train no.30744 (got by the railway undertaking DB Cargo România SRL), on the switch no.31, operated on „diverging track", the axle no.6 of the locomotive LE-MA 014, the first one in the train running direction, derailed.

During the investigation, one found that the failures existing at the gauge, the cross level and the track direction, at the accident site, contributed at the accident occurrence, and they were generated by the fact that the maintenance of the track superstructure was not made in accordance with the provisions of the practice codes.

Considering that the improper maintenance of the track was generated by the low number of staff of Line District București Triaj, by the lack of proper technical endowments and the insufficient materials necessary for the performance of the track maintenance and repair, in order to prevent some accidents similar to those presented in this report, according to the provisions of art.26, paragraph (2) of the Government Emergency Ordinance no.73/2019 for railway safety, the investigation commission considers timely to address the next safety recommendation:

Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator CNCF „CFR" SA shall reassess the risks associated to the dangers consisting in:

- failure in the assignment of a number of workers according to the subunits sizing;
- failure in the proper provision with the materials necessary for the performance of the track maintenance and repair, so they be kept under control.

3.4.2. The railway accident happened on the 25th January 2020, in the railway county Timișoara, track section Simeria – Livezeni (electrified double-track line), between Merișor and Bănița railway stations, track II, km.66+000, consisted in a fire burst into the electric locomotive EA-1012, hauling the freight train no.80460 (got by the railway undertaking Grup Feroviar Român SA)

The investigation report was completed on the 22nd January 2021.

Causes and contributing factors

Direct cause of the fire was a short-circuit at the insulators of the brush-holders from the engine no.4, this short circuit generated the ignition of the cover of the power circuit cables of the engine, cables that were already overheated following the defective working of the locomotive.

Contributing factors

1. overcharging of the locomotive EA 1012, that hauled the train, consisting in empty wagons with the tonnage of 958 tons on the track section Merișor-Bănița (tonnage over that of 700 tons that can be hauled with the electric locomotive, calculated and written down in the working timetable), following the insulation of MET no.5, it leading to the exceeding the parameters accepted for the locomotive working in unlimited time condition and in limited time condition;

2. the driving way of the locomotive by repeated attempts to move the train in the conditions the tonnage was exceeded, a traction engine insulated and the line with a gradient of 20,8 ‰, and inobservance of the specific regulations in this case (asking for the assisting locomotive or hauling the train splitted);
3. keeping in operation of the locomotive EA-1012, with the limits of km and time of operation exceeded for the performance of the planned repair, when the cables with life time exceeded had to be replaced and the failures at the electric cables had to be checked by disassembly.

Underlying causes:

1. failure in the observance of the obligations that result from the criterion with code L and L1 of the Annex II of the Regulation 1158/2010, for the identification and implementation of the safety requirements established by the technical standards in force, because one used services of repair of MET that did not comply with the safety requirements from the technical standards in force for the electric engines;
2. non-compliance with the provisions for the removal of the failures, made in accordance with the guides stipulated at art. 47(1) and 143 (3) from the Instruction 201, corroborated with the provisions from the „Guide for operation and removal of the failures at the electric locomotive 060-EA and 060-EA1 – 5100 KW", edition II, 1991, approved by the Direction Traction București under the no.17 RLh/180 column 1990, page 141, regarding the calculation of the tonnage that can be carried forwards in case of insulation a MET;
3. failure in the compliance with the provisions for the withdrawal the locomotive from running, when it reached the norms of time/km for planned repairs, according to the disposition from point 3.1. of the railway norm NF 67-006:2011;
4. failure in the compliance with the provisions of art.3(3) from the REGULATION EU no. 1158/2010, according which the suppliers had to get certifications in accordance with the certification systems established upon the EU legislation, because MET were repaired by suppliers that did not meet with the conditions above mentioned.

Root causes:

1. failure in the identification of the danger to haul some trains with tonnages over those that ensure the working of the electric locomotive in unlimited time conditions and at most 5 minutes in limited time condition, danger that generates the risk of fire at the electric locomotives;
2. failure in the identification of the danger represented by the use within the repairs of MET, of some services that do not comply with the relevant safety requirements of the technical standards in force, danger that generates the risk of fire at the electric locomotives;
3. failure in the identification of the danger represented by the use within the repairs of MET, of some suppliers that do not comply with the conditions for the certification, danger that generate the risk of fire at the electric locomotives;
4. failure in the identification of the danger represented by the use in operation of the locomotive EA-1012, without making the planned repair with the norm of time and km run exceeded, danger that generates the risk of fire at the electric locomotives;
5. lack of regulation regarding the editing and interpretation of the information about the tonnages of the trains from the working timetables;
6. lack of regulation regarding the activities of calculation the tonnage and of testing for the increase of the tonnage.

Safety recommendations

The investigation commission found that the fire was generated by the hauling of a train with a tonnage too big, that led to the overcharging of MET of the locomotive EA 1012, it leading to the growth of the current amperage over the values for unlimited time, so being created the conditions of breakdown of the traction electric motors and of the fire start. Regarding the train tonnage, the investigation commission found that there are deficiencies about the tonnage calculation, testing for the increase of the tonnage and the way to write down this tonnage in the working timetable.

The investigation commission found also that the fire developed following the technical condition of MET, whose repair was made upon other requirements than those of the standard in force and

the repairs were made by suppliers that had no certification in accordance with the certification systems established by the legislation.
Also, the investigation commission found that the fire developed following the keeping in operation of the electric cables, not being keep under control the compliance with their life time and the requirements for behaviour at fire, stipulated by the standards in force (standard SR EN 45545-2:2013+A1:2016) for these cables were not adopted.
Considering the issues presented, for reducing the risks of similar accidents, the investigation commission recommends Romanian Railway Safety Authority – ASFR:
Safety recommendation no.1:
to ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the hauling of some tonnages bigger than those that ensure a working of the electric locomotive in continuous mode conditions and at most 5 minutes in limited time conditions.
Safety recommendation no.2:
to ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the use within the repairs at MET, of some services that do not comply with the relevant safety requirements from the technical standards in force.
Safety recommendation no.3:
to ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the use within the repairs at MET, of some suppliers that comply with the conditions for certification.
Safety recommendation no.4:
to ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the use in the operation of the hauling vehicles without the planned repair made, having exceeded the norm of time and the norm of km run, or having the electric cables with the life time exceeded.
Safety recommendation no.5:
to analyse together CNCFR and OTF the way to establish (calculation and testing) and to record the information regarding the tonnages of the trains in the working timetables, without eliminating from the analysis the possibility to update the national regulation framework or the implementation of some procedures of SMS of SMS of CNCFR and OTF.

3.4.3. The railway accident happened, in the railway county Craiova, in the railway station Golești, in the running of the freight train no.83212 (got by the railway undertaking SNTFM „CFR Marfă" SA), on the switch no.26, on the entry route to the diverging track 6 from the running line Ștefănești – Golești (not-electrified single-track line), consisted in the derailment of the wagon no.21533318009-3 (the 27th one of the train).
The investigation report was completed on the 28t January 2021.

Causes and contributing factors:
Direct cause of the accident is the fall between the rails of the right wheel of the first axle from the 27th wagon of the train, because the track gauge did not meet with the tolerances accepted in operation.
Contributing factors:
existence of 9 special sleepers improper, in turn, at the derailment site, these sleepers were not ensuring the fastening of the rail and were allowing the radial movement of the unit rail-metallic plate to the direction of the gauge increase, under the dynamic action of the rolling stock.
Underlying causes
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 wooden sleepers, respectively the fact that improper sleepers are not accepted within the track, in certain conditions.
Root causes

failure in the 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 the safety management system of the public railway infrastructure administrator CNCF „CFR" SA, regarding the performance of maintenance and periodical repairs of the lines.

Measures taken

Soon after the accident, one took measures for the replacement of some special wooden sleepers within the switch no.26 (second hand ones sent from the Line District Câmpulung), for the traffic resuming

Safety recommendations

The investigation commission found that the management of the infrastructure administrator, at central and regional level, did not managed properly the risks generated by the danger of lack of maintenance at the track (in this case the failure in the replacement of the improper wooden sleepers within the switches) and which were in the operation, in order to dispose consequently viable solutions and measures for keeping them under control. In the „*Register of risks – synoptic table -2019*", of the railway county Craiova, the danger represented by the failure in the replacement of the improper wooden sleepers is not mentioned, consequently the measures for keeping under control the risks associated to this danger not being analysed and disposed.

For the prevention of some similar accidents in the future, according to the provisions of art.26(2) from the Emergency Government Ordinance no.73/2019 for the railway safety, the investigation commission issues the next recommendation:

1. Romanian Railway Safety Authority – ASFR shall ask the public railway infrastructure administrator CNCF „CFR" SA the re-assessment of the „Register of risks – synoptic table - 2019" of the railway county Craiova regarding the analysis of the danger represented by the failure in the replacement of the improper wooden sleepers and setting of concrete measures for the management of the risks associated to this danger.

3.4.4. The railway accident happened on the 29th January 2020, in the railway county Craiova, track section Băbeni – Alunu (not-electrified single-track line), between Berbești and Popești Vâlcea railway stations, km.25+610, the first bogie from the 21st wagon of the freight train no. 23690, got by the railway freight undertaking SNTFM „CFR Marfă" SA, derailed in the running direction.

The investigation report was completed on the 27th January 2021.

Causes and contributing factors

Direct cause of the accident is the fall between the rails, on a curve with right deviation, in the train running direction, of the right wheel from the leading axle of the first bogie of the wagon no.81536652095-6, the 21st of the freight train no.23690. It happened following the exceeding of the maximum tolerances accepted in operation for the track geometry parameters, under the action of the dynamic forces transmitted to the track by the rolling stock running.

Contributing factors:

- keeping within the track of improper wooden sleepers from the point „0" (point of fall between the rails of the right wheel from the leading axle), that did not ensure the fastening of the rails, allowing the movement of the unit rail – metallic plate along the sleepers;

Underlying causes

- non removal, at the deadlines stipulated in the practice codes, of the failures levels 5 and 6 found during the inspection of the running line, at the accident site;
- failure in the provision of the Line District no.7 Popești with normal wooden sleepers necessary for the track maintenance and repair;
- under-sizing of the number of workers existing in the Line District no.7 Popești, staff in charge with the maintenance of the railway superstructure at the accident site.

Root cause of the accident was the failure in the application 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 the lines in maintenance process", part of safety management system of CNCF „CFR" SA, regarding the performance of maintenance and periodical repairs at the lines.

Safety recommendations

According to the provisions of art.26(2) from the Emergency Government Decision n.73/2019 for the railway safety, 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.

Although the public railway infrastructure administrator had, according to the provisions of the Regulation (EU) no.1169/2010, *„procedures that guarantee the safe management and operation of the infrastructure, considering the number, type and size of the railway undertaking that render services using the respective network, including all the necessary interactions that depend on the complexity of the operations"*, these are not completely observed and the consequences in the activity of the infrastructure administrator are getting worse.

The provisions of some of the practice codes, regarding the maintenance cannot be applied in their entirety, because the material and human resources considered when the practice codes (instructions) were drafted are no more met

The investigation commission found that the infrastructure administrator identified the risk generated by the not taking the safety measures for the removal of the failures of levels 5 and 6 found during the inspection at the running and direct line, using the track recording car, but this risk was not properly managed.

Also, after the removal of these failures, there was necessary the replacement in turn of the improper wooden sleepers. Keeping in operation of improper wooden sleepers, that have to be immediately replaced (emergency I) is not mentioned in the *Register of risks*, drafted by the territorial structure of the public railway infrastructure administrator (railway county Craiova), although the danger of non-performance of this type of works has serious consequences for the traffic safety, it being very frequent in the last years.

For the improvement of the railway safety and prevention of some similar events, following the unsuitable technical condition of the railway infrastructure, the investigation commission considers timely to address the next safety recommendations:

Safety recommendation no.1

CNCF „CFR" SA – railway county Craiova shall analyse the risk generated by the failure in the removal, at the stipulated deadlines, of the failure's levels 5 found during the inspection of the running and direct lines in the railway stations, made with the track recording car and shall dispose effective measures for keeping it under control.

Safety recommendation no.2

CNCF „CFR" SA – railway county Craiova shall revise the identification of the own risks generated by keeping in operation the unsuitable normal wooden sleepers, that have to be replaced immediately (emergency I)**,** on the curves with radius under 350 m and shall establish the measures necessary for the improvement of the railway safety.

3.4.5. The railway accident happened on the 2nd February 2020, in the railway county București, in București Triaj railway station, Unit 17, in the runnig of the freight train no.30616-1 (got by the railway undertaking DB Cargo Romania SRL), consisted in the derailment of the first bogie of the locomotive EA 014 derailed in the train running direction, on the switch no.23.

The investigation report was completed on the 3rd February 2021.

Causes and contributing factors

Direct cause of the accident is the flange of the right wheel of the axle no. 6 (the first one in the running direction) from the locomotive LE-MA 014 climbed the gauge face rail of the closure exterior rail of the switch no.23, following the exceeding of the derailment stability limit. This exceeding happened following the increase of the guiding force respectively the decrease of the load acting on the guiding wheel.

Contributing factors:

- failures existing at the gauge at the accident site;
- linear changes of the gauge over the maximum accepted value of 2 mm/m of the track length situated between the switches no.31 and no.23;
- irregular distribution of the loads on the wheels of the leading axle from the locomotive LE-MA 014.

The investigation commission stipulates that the accident happened following the cumulation of the effects of these factors, not being possible the establishment of their share in the derailment occurrence.

Underlying causes

- failure in the provision of the Line District no.4 București Triaj with normal wooden sleepers, or concrete sleepers T13, necessary for the performance of the works for the rectification of the gauge of the track length situated between the switches no.31 and no.23.
- under-sizing of the staff number existing at the Line District no.4 București Triaj, staff in charge with the maintenance of the railway infrastructure from the accident site.
- keeping of the speed restriction of 5 km/h, on the track length situated between the switches no.23 and no.31, from the 17th November 2008 until the accident occurrence, without taking the measures necessary for the rehabilitation of the track geometry and removal of the speed restriction.
- exceeding of the ratio accepted for the load on the wheel, established by the Railway Technical Norm no.67-003, approved by Order of Minister of Transports no.366/2008 from the 18th March 2008.

Root cause

Failure in the application of the provisions of the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and requirements relevant for the whole life time of the lines in the maintenance process", part of the safety management system CNCF „CFR" SA, regarding the performance of the maintenance and periodical repairs at lines.

Additional remarks

During the investigation, one identified nonconformity without relevance for the accident causes, as follows:

Infrastructure administrator CNCF „CFR" SA

The investigation commission found that, when the accident happened, in the railway station București Triaj Group A2 there were 13 speed restrictions, from which 9 were of 5 km/h, and 4 were of 10 km/h.

Railway freight undertaking SC DB Cargo România SRL

The staff of the railway undertaking SC DB Cargo România SRL that drived the locomotive LE-MA 014 on the 1st/2nd February 2020, (the route sheets series 1E no.0707 and series 1E no.0708) did not observe the provisions of the Minister of Transports' Order no.256 from the 29th March 2013, regarding the maximum continuous duty accepted for the locomotive.

Economic operator Company of Maintenance and Repair of Locomotives and Trains CFR IRLU

The reprofiling of the running surfaces of the wheels from the locomotive LE-MA 014 made on the 31st January 2020 was made without meeting with the provisions of the Technical Specification ST-OM -1/0/2018 „Repair of the wheelset at the railway vehicles", respectively of the Measurements Sheet code: FM OM 11 „Measurements at the running surfaces of the wheelset in operation LE 6000 kW – LEMA", enclosed to this specification, that stipulates that the maximum accepted difference between the running diameters of the axles fitted on the same bogie is 2 mm and the difference accepted between the running diameters of the axles fitted at the same vehicles is 10 mm.

Safety recommendations

Although the public railway infrastructure administrator had, according to the provisions of the Regulation (UE) no.1169/2010, *„procedures that guarantee the safe management and operation of the infrastructure, considering the number, type and size of the railway undertaking that render*

services using the respective network, including all the necessary interactions that depend on the complexity of the operations", these are not completely observed.
The provisions of some of the practice codes, regarding the maintenance can not be applied in their entirety, because the material and human resources considered when the practice codes (instructions) were drafted are no more met.
The investigation commission found that the infrastructure administrator assessed the risk generated by the failure in the ensuring of the gauge prescribed for the lines and failure in the compliance with the tolerances for the gauge, but it was not properly managed. For the compliance with the tolerances it was necessary the replacement, in turn, of all unsuitable normal wooden sleepers, in the track length situated between the switches no.23 and no.31, with wooden sleepers or concrete ones T13 (new or second hand). For this reason, on the 17th November 2008, the staff in charge with the maintenance of the line introduced the speed restriction of 5 km/h. The speed restriction of 5 km/h was established by the staff authorized for the traffic safety, having like support for analysis the professional experience of him.
The investigation commission considers that the keeping of this speed restriction of 5 km/h, from the 17th November 2008 up to the accident occurrence, without taking the measures necessary for the rehabilitation of the track geometry and the removal of the speed restriction, is a danger for the railway safety, the danger not being identified and managed by the infrastructure administrator.
Therewith, the investigation commission found that one of the factors contributing to the accident occurrence was the irregular distribution of the loads on the wheels of the guiding axle from the locomotive LE-MA 014.
This irregular distribution was generated by the using in operation of the locomotive with the clearances between the axle boxes and the bogie frames at the axles no.1, no.3, no.4 and no.6 with \ values at the limits of the tolerances accepted or very close to them and which, under the action of the dynamic forces generated by the oscillations of the suspended equipment, by the action of the centrifugal forces, by the action of the inertia forces at the start and braking, by the vertical and cross nonconformities of the track and its discontinuities, had changes over the accepted tolerances.
Considering these above mentioned, for the improvement of the railway safety and prevention of similar events, according to the provisions of art.26(2) of the Emergency Government Ordinance no.73/2019 for railway safety, the investigation commission considers timely to address Romanian Railway Safety Authority - ASFR the next safety recommendations:
Safety recommendation no.1
CNCF „CFR" SA – railway county București shall assess the danger generated by the keeping for a long time of the speed restrictions of 5 km/h and 10 km/h on the lines and switches of the railway station București Triaj, on which the trains run, so it can be controlled.
Safety recommendation no.2
The railway freight undertaking SC DB Cargo Romania SRL, together with the economic operator SC Softronic SRL Craiova shall make an assessment of the risk associated to the danger represented by the using in operation of rolling stock with values of the mechanical clearances at the limit of the of the tolerances accepted and which shorter can be exceeded and, so, can lead to a irregular distribution of the loads on the locomotive axles.

3.4.6. The railway accident happened on the 08.02.2020, in the railway county Brașov, track section Sibiu - Vințu de Jos (not-electrified single-track line), between Sălișteand Apoldu de Sus railway stations, km 33+237, in the running of the passenger train IR nr.74-1 (got by the railway undertaking SNTFC „CFR Călători" SA), consisted in the derailment of first bogie of the locomotive EGM 925-9.
The investigation report was completed on the 3rd February 2021.

Causes and contributing factors
Direct cause of the accident is the guiding wheel (being on the left side in the running direction) of the hauling locomotive overclimbed the gauge face of the exterior rail of the curve, following

the exceeding of the derailment stability limit, by the load transfer of the left wheel of the leading axle and increase of the lateral force (guiding one) on this wheel, following the existence of some nonconformities at the track superstructure and at the wheels of the axle derailed.

Contributing factors:

- superelevation existing at the derailment site, it leading to the negative lateral accelerations.
- exceeding of the tolerances in operation for the values of the close versines and between the maximum and minimum versines for curve, it enhancing the lateral dynamic movements of the railway vehicles;
- keeping in operation of a superstructure whose broken stone bed does not meet with the shape and sizes stipulated by the practice codes, so the stability of the unit rail-sleeper was not ensured;
- improper recording and removal of their failures from the track geometry, following the controls made with the testing and recording car;
- exceeding of the maximum value accepted for the difference between the diameters of the running treads of the wheels from the same axle, found at all axles of the bogie no.II (first one in the locomotive running direction).

Underlying causes of the accident consisted the inobservance of some provisions of the instructions in force, that is:

1. *Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge no.314/1989, art.7B, point 1,* regarding the tolerances of the track position in plan, both for the values of the close versines, and between the maximum and minimum deflections for the curve;
2. *Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge no.314/1989, art.14, points 2, 4, 8,* regarding the shape and sizes of the broken stone bad, single-track line, in curve with superelevation, non-welded track, superstructure with wooden sleepers;
3. *Instruction for the maintenance of lines no. 300/1982, art.2.9* – regarding the compliance with the deadlines for the performance of the periodical repairs with complete cleaning of the ballast bed;
4. *Instruction for the use of the testing and recording cars no.329/1995, art.3.2 and art.3.3* regarding the recording and calculation of the points for the assessment of the line quality;
5. *Instruction for the repair of the pair of wheels of the railway vehicles no.931/1986, TABLE I, point 26.1,* regarding the limit quota accepted in operation for the difference between the diameters of the running treads of the wheels from the same axle at the locomotives type LDE 2100 CP.

Root causes:

1. failure in the 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 maintenance and periodical repairs at the lines;
2. the infrastructure administrator did not identify the danger that, following the control of the track geometry with the testing and track recording car, at the failures recorded the deviation level not be established and not be included in the report of failures found, for being scheduled and removed;
3. the railway undertaking did not identify the danger that, in operation, the differences of the diameters of the running treads from the same axle not be according to the values stipulated in the Instruction no.931/1986 or the operation guide for the operation of the type of the locomotive with the same bogies like the locomotive involved in the accident.

Additional remarks

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

1.inspector of the bridge district of the Track Section L4 Sibiu carried out activities with responsibilities in the railway safety without being authorized according to the specific regulations, for the job inspector of bridge district/LA.
2. at the locomotive involved in the accident, on the frame of the bogie, between those two rubber parts of the suspension HALF HOURGLASS, on the upper plate for their support, there were found two reinforces welded at the ends, with old welds (see chapter C.5.4.2). This measure was taken following some cracks appeared in the operation of the upper plates, but without influence on the running of the bogie on the curve (it could not be considered construction change), the hit traces being generated following the shocks sent from the track.
3.the device for greasing the flange of wheel at the locomotive involved in the accident, was uncoupled, not being in service, in accordance with the paper no.10/32/g/2551/10.12.2007 of SNTFC „CFR Călători" SA. Through the paper above mentioned, one disposed the evacuation of the oil from the wheel flange lubrication system, for „removing the future possibilities of oil leakages on the bogies of the locomotives LDE updated General Motors" in order to prevent the appearance of some possible fire beginnings at this type of locomotives. It is mentioned that from the last reprofiling of the running surfaces and up to the accident, the locomotive ***EGM*** ran 31.167 km, that should lead to some wears stabilized on the wheel profiles, so the lack of lubrication of the active flange of wheel for the decrease of the wears and of the friction coefficient, it should not have influenced the accident occurrence.
4.when the accident happened, at the locomotive involved, the axle no.5 was mechanically engaged, but the traction engine was not working following the di-electric strength with value „0", and the axle no.6 was not mechanically engaged following the traction electric engine that was electrically insulated (without pinion for the axle engagement, roller bearing with seizure tendency).This situation was from the last planned inspection, performed on the 12th November 2019, being generated by the fact that the railway undertaking, the keeper of the locomotive, did not supply the parts.

Safety recommendations

Safety recommendations associated to the accident causes

Considering the nonconformities identified at the railway infrastructure at the accident site, as it is mentioned at chapter *C.5.2. Safety management system,* the investigation commission considers that:

- inobservance of the provisions of the Instruction of norms and tolerances for the construction and maintenance of track – lines with standard gauge no.314/1989 and of the Instruction for the line maintenance no.300/1982, documents associated to 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", through:
  - failure in keeping the track geometry between the limits of the operation tolerances, as well as the failure in ensuring in operation a railway superstructure whose broken stone bed meets with the shape and sizes stipulated;
  - failure in the performance of all maintenance, periodical repairs and overhauls, as well as the lack of provision with human and material resources for the removal of the nonconformities that led to the appearance of the dangerous points;
- unsuitable application of the provisions of the system procedure PS SMS 0–6.10 „Management of the safety risks" part of the safety management system of CNCF „CFR" SA, as follows:
  - dangers represented by „inobservance of the safety provisions for the maintenance of the areas with unsuitable track beds" and „failure in ensuring the sizes corresponding to the broken stone bed", were identified and mentioned in the SMS danger record at point 15, respectively point 43, but the measures for their keeping under control were not effective;
  - one did not identify the danger that following the control of the track geometry with the testing and recording car, for the dangers recorded not be established the deviation level of the failures and not be recorded in the report with the failures found, for the schedule and removal;

- generated an unsuitable maintenance of the track superstructure at the derailment site.

Recommendation no.1
Romanian Railway Safety Authority– ASFR shall ask the public railway infrastructure administrator - CNCF „CFR" SA to perform a risk analysis for the danger represented by the failure in the setting of the deviation level of the failures recorded and the failure in their recording in the report of failures found, following the control of the track geometry with the track testing and recording car, for its schedule and removal.
The railway county Brașov, during the identification and assessment of the risks associated to the railway operations, made in accordance with the provisions of the Regulation (EU) no.1158/2010, did not identify the danger as, in operation, the differences of the diameters of the running treads of the wheels from the same axle not be between the limits stipulated by the Instruction no.931/1986 or by the Guide for the operation of the type of locomotive with bogies identical to the bogies of the locomotive involved in the accident.
Recommendation no.2
Romanian Railway Safety Authority– ASFR shall ask the railway county Brașov to revise the identification of the risks associated to the railway operations regarding „failure in the compliance with the technical conditions that the wheelsets of the railway vehicles have to meet with, in order to be accepted for running" and to add to SMS procedures the own safety measures or from the practice codes in force, in order to ensure that the wheelsets of the locomotives work upon the conditions regulated, in complete safety.
Safety recommendation associated to the additional remarks
The device for the lubrication of the flange of wheel from the locomotive involved in the accident was uncoupled, not working, for the removal of the possibilities of leakages of oil on the locomotive bogies, in order to prevent the appearance of some beginning of fire at this type of locomotive.
Lack of lubrication of the flange of wheel, for the diminution of the wears and of the friction coefficient, can favour the climbing of the active shoulder of the rails up to the stabilisation of the wheel profile after reprofiling.
Recommendation no.3
Romanian Railway Safety Authority– ASFR shall ask the railway undertaking SNTFC „CFR Călători" SA to analyse again the conditions basis for the issuing of the paper that disposed the uncoupling of the equipment for the lubrication of the flange of wheel, so the lubrication of the running surfaces of the wheelsets be made, at least until the appearance of some wears stabilized at these.

3.4.7. The railway accident happened on 12th February 2020, in the railway county Craiova, track section Roșiori Nord-Caracal, in Mihăești railway station, in the running of the freight train no.20270-1 (got by the railway undertaking Rail Cargo Carrier România SRL), on the switch no.3, on the entry route to the line IV, direct line of the track II, from the running line Măldăeni-Mihăești track I (electrified double-track line), consisted in the derailment of 3 wagons of the train.
The investigation report was completed on the 9th February 2021.

Causes and contributing factors:
Direct cause of the accident is the fall of the right wheel from the first axle of the second bogie from the first wagon, of the right wheel from the first axle of the first bogie of the second wagon and of the right wheel from the first axle of the first bogie from the 3rd wagon of the train between the rails, the track gauge being out of the tolerances accepted for operation.
Contributing factors:
Existence of 11 consecutives improper special sleepers, at the derailment site, these did not ensure the effective fastening of the rail and allowed the radial movement of the unit rail – metallic plate, generating the increase of the track gauge value, under the dynamic action of the rolling stock.

Underlying causes - inobservance of the provisions of art.25, points 2 and 4 of „*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 fact that improper sleepers are not accepted in the track, in some conditions.
Root causes-failure in application all 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 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 lines.
Measures taken
Soon after the accident, there were taken measures for the replacement of some special wooden sleepers within the switch no. 3 for resuming the traffic.
Safety recommendations
The investigation commission found that the infrastructure administrator identified but did not manage the risks generated by the failure in the performance of the maintenance at the lines, in order to be able to impose consequently the solutions and measures viable for keeping under control the derailment danger.
So, if the own procedures of the safety management system had been applied, in their entirety, as well as the provisions of the practice codes, part of infrastructure administrator 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.
Because these issues were found and presented also in the investigation of other similar accidents (ex: accident from the 30th June 2018 in the railway station Roșiori Nord, accident from the 20th December 2019 in the railway station Drăgotești or the accident from the 12th February 2020 in the railway station Golești), for which safety recommendations were issued, on considered that is no more necessary to issue other identical recommendations.

3.4.8. The railway accident happened on the17th February 2020, in the railway county Craiova, track section Caracal – Roșiori Nord (electrified double-track line), on the running line track II, between Fărcașele and Drăgănești Olt railway stations, km 142+400, in the running of the freight train no.34372 (got by the railway undertaking SC Constantin Grup SRL), consisted in the derailment of 13 wagons of the train, respectively the 7th one, from the 9th one to the 20th one. From those 13 wagons, 9 wagons overturned (the 9th wagon, the 10th wagon and the wagons from the 12th to the 18th ones)
The investigation report was completed on the 15th February 2021.

Causes and contributing factors
Probable direct cause of the accident was the multiple and complete breakage of the right rail in the running direction of the train (exterior rail of the curve), at the end X of the lower passage with the centre at km 142+378, the breakage happened under the action of the dynamic forces transmitted to the track by the rolling stock in running.
The accident causes were presented as probable one considering the damages at lines after the accident, the damages limited the checking and findings on site.
Contributing factors:
- well-worn and fatigue at the exterior rail of the curve, at the derailment site;
- the failures existing at the track, recorded following the measurements with the testing and recording car (VMC), that led to the appearance of some additional stresses, in dynamic conditions, at the exterior rail of the curve.

Underlying causes of the accident are represented by the inobservance of some provisions of instructions and technical provisions in force, respectively:
- art.22, point 2 – to see the table 25 of „Instruction of norms and tolerances for the track construction and maintenance, for lines with standard gauge no.314/1989", respectively of the provisions from 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 at the rails, that impose their replacement;

- art.3, point a) from the „Instructions for the overhauls at lines – no.303/2003", regarding the schedule and performance of overhauls when: „number of parts - rails, sleepers, fastening, track bed – well worn, out of service or depreciated, following the traffic since they have been fitted within the track, exceeded the intervention capacity in points during the maintenances";
- art.6.7 of Instruction for the use of the testing and recording cars no.329/1995 regarding the schedule of the removal of the failures recorded with the testing and recording car, respectively the compliance with the deadlines for the failure removal.

Root causes:

- failure in the 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 lines in maintenance process", part of safety management system (SMS) of the public railway infrastructure administrator CNCF „CFR" SA, regarding the performance of maintenances and periodical repairs at lines.

Safety recommendations

The investigation commission established that the lack, since 1984, of overhauls type RK, as they are stipulated in *„Instructions for overhauls at lines – no.303/2003"* as well as of all maintenances stipulated in „*Instruction 300-Maintenance of lines/2003"*, led to a well-worn and fatigue of the rails at the accident site. It, cumulated with some failures existing in operation, failures recorded following the measurements with the track testing and recording car (VMC), that led to additional stresses, in dynamic conditions, of the exterior rail of the curve, influenced its breakage when the rolling stock passed over, respectively the derailment of 13 wagons of the train.

In case of this accident, the investigation commission found that, the infrastructure administrator identified, but did not manage the risks generated by the lack of maintenance at the lines, in order to dispose consequently solutions and measures viable for keeping under control the dangers that lead to the derailment.

Considering these presented in the chapters *C.5.2. Safety management system*, *C.5.4.1. Data found about the lines,* C.*7.1. – Conclusions about the technical condition of the track superstructure* and *C.7.3.- Analysis of the accident occurrence*, for the prevention of some similar accidents or incidents in the future, according to the provisions of art.26, paragraph (2) of the Emergency Government Decision no.73/2019 for the railway safety, the investigation commission issues the next recommendations:

1. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator will assess the risk associated to the danger of failure to perform, in good time, the overhauls at infrastructure, imposed by the practice codes and will establish the measures for keeping it under control;

2. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator will assess the risk associated to the danger of keeping within the curves the rails well-worn at the head of the rail and will set measures for keeping it under control.

3. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator will assess again the risk associated to the danger to keep within the track the rails with surface failures and will set up measures for keeping it under control.

4. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator will assess the risk associated to the danger to keep within the track the failures found following the measurements with the testing and recoding car and will establish measures for keeping it under control.

3.4.9. The railway accident happened on the 17th February 2020, in the railway county Timișoara, non-interoperable track section Mintia - Păuliș Technical Set of Tracks (not-electrified

single-track line managed by SC RC-CF TRANS SRL Brașov), in Mintia railway station, km 0+150, in the running of freight train no.30648 (got by the railway undertaking SC Deutsche Bahn Cargo Romania SRL), consisted in the derailment of axles no. 1 and 4 of the hauling locomotive DA 1680

The investigation report was completed on the 8th February 2021.

Causes and contributing factors

The direct cause of the accident is the fall of the right wheel from the first axle of the first bogie of the locomotive (having like reference the train running direction) between the rails, on a curve with right deviation. It happened because the technical condition of the wooden sleepers at the accident site was improper, 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 running, forces enhanced by the improper geometry of the track.

Contributing factors:

- there were 3 improper consecutives wooden sleepers, in turn, in the point „0", on a track section where, from a total of 15 sleepers (sleepers numbered from „-1" to „13"), 14 ones were improper;
- there was in the point „0" a failure at the horizontal track position (elbow), whose value exceeds the tolerances accepted for the horizontal track position, it leading to the enhancing of the dynamic forces generated by the rolling stock in running.

Underlying causes of the accident were the inobservances of some provisions from the instructions in force, that is:

- Instruction of norms and tolerances for the track construction and maintenance for line with standard gauge - n.314/1989, art.25, points 2 and 4, regarding the failures that impose the replacement of the wooden sleepers, respectively, condition for the not keeping within the track the improper sleepers;
- Instruction of norms and tolerances for the track construction and maintenance - no.314/1989, art.7 letter B, regarding the keeping within the track a failure at the horizontal track position (elbow).

Root cause was the failure in the complete application of the provisions regarding the identification of the failures at the track geometry, included in the system procedure code PS-61 „Risk management", revision 0, part of safety management system of the noninteroperable railway infrastructure manager SC RC - CF Trans SRL Brașov.

Safety recommendations

In case of the accident investigated, one found that the derailment was generated by the improper condition of some parts of the railway infrastructure.

When the accident happened, the maintenance of the railway infrastructure on the noninteroperabe track section Mintia - Păuliș Lunca Technical Sidings was ensured by the noninteroperable railway infrastructure manager SC RC-CF Trans SRL Brașov. Before the completion of the investigation report, the noninteroperable track section Mintia - Păuliș Lunca Technical Sidings was given to the public infrastructure administrator SNCFR „CFR" SA, this track section not being written down in the annex of the Safety Authorization Part B no.AS20003, got by SC RC-CF Trans SRL Brașov from th 25th August 2020. In th annex of the Safety Authorization no.AS20003 there are written down many track sections situated in the railway counties București, Timișoara, Brașov and Iași, these sections are managed by SC RC-CF Trans SRL Brașov.

On the track sections managed by SC RC - CF Trans SRL Brașov, situated in the railway cunty Timișoara, in 2019, there were other two accidents, with causes and factors similar to this investigated in this report, as follows:

- on the 21st April 2019, on the not electrified single-track line, between the railway stations Vasiova and Reșița Nord, km 57+235, 2 wagons of the freight train no.69492-1 (got by the railway freight undertaking Tim Rail Cargo SRL) derailed;

- on the 1st June 2019, on the not electrified single-track line, between the railway stations Vasiova and Reșița Nord, km.53+900, the multiple unit AMX 572-7, being in the composition of the passenger train no.16104 (got by the railway passenger undertaking Regio Călători SRL Brașov) derailed.

Considering the fact that, following the investigation, one found that this accident happened following the existence of some nonconformities at the technical condition of the railway superstructure, appeared following the non-full application of the provisions of some procedures of the safety management system got by the noninteroperable infrastructure manager SC RC - CF Trans SRL Brașov, and taking into account that the continuous activity for surveillance of the railway superstructure and infrastructure is one of the main task of the staff in charge with the track maintenance, and the safety levels that have to be got are expressed by criterion for the risk acceptance, defined like common safety objectives, the investigation commission considers necessary to issue the next safety recommendation:

Romanian Railway Safety Authority – ASFR shall take care that the manager of the noninteroperable railway infrastructure SC RC – CF Trans SRL Brașov has the resources and capability to meet with the requirements for the maintenance of the railway infrastructure, that were basis for the granting of the safety authorization.

3.4.10. The railway accident happened on the 25th February 2020, in the railway county Craiova, in Balota railway station, in the running of the freight train no.60274 (got by the railway undertaking LTE-Rail România SRL), hauled with the locomotive DA 909, before the last joint of the switch no.11, on the exit route from the line no.5 to the running line Balota-Gîrnița (electrified single-track line), consisted in the side collision of the first two wagons of the train no.60274 by the set of locomotives EA 691 and EA 640 (got by the railway undertaking SC Grup Feroviar Roman SA).

The investigation report was completed on the 23rd February 2021.

Causes and contributing factors

Direct cause of the accident is the passing on danger the light exit signal Y4, from the line no.4, in the railway station Balota, being on „**Stop without overrun the signal**" by the rake of locomotives EA 691 and EA 640, following its uncontrol running, it leading to the side collision of the freight train no.60274 and the derailment of first two wagons.

Contributing factors

- the driver left the driving cab without taking the corresponding measures for keeping stopped the locomotive;
- the release of the direct braking of the locomotive EA 691, following the interaction between the driver seat and the lever of the cock FD1.

Underlying cause - inobservance of the provisions of art.13, paragraph (1) letter b) from the Instructions for the activity of the locomotive crew no.201/2007, where it is stipulated that the locomotive crew can run checking/interventions inside the locomotive only after taking the measures for keeping stopped the locomotive

Root cause

- failure in the identification of the danger represented by the fitting inside the locomotive of seats whose size and movement liberty level can interfere with the direct brake of the locomotive, leading to the change of the position of the cock FD1from braking application to the braking release.

Additional remarks

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

Railway freight undertaking SC Grup Feroviar Român SA

- inobservance of the provisions of art.19, paragraph (1) letter d, Chapter III of the Annex I of the Instructions for the activity of the locomotive crew no.201/2007, regarding the fact that the

crews of the locomotives EA 691 and EA 640, on the 25th February 2020, did not write down in the route sheet the train stop at 07:22 o'clock;

- inobservance of the provisions of art.193, paragraph (1) letter c) and a 1 paragraph 1 of the Instructions for the activity of the locomotive crew no.201/2007 and of the provisions of Sheet no.29 from the Operation Technical Plan PTE of the railway station Balota, that is the staff driving the locomotive EA 691, on the 25th February 2020, after uncoupling the locomotives from the train, started to move without receiving the corresponding signals from the foreman shunter;
- inobservance of 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 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, that is the locomotive EA 691 was submitted on the 31st October 2013 to a planned repair type RR, instead repair type RG as the legal paper above mentioned stipulates;
- inobservance of provisions of the Railway Norm NF 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 by Order of Minister of Transports and Infrastructure no.315/2011, amended by Order of Minister of Transports and Infrastructure no.1359/2012, respectively of chapter 3 – Norms for the performance of planned inspections and repairs at the railway vehicles and their cycle, subpoint 3.1, that is the locomotive EA 691 was not withdrawn from traffic when it reached the norm of time stipulated for the performance of planned repairs.

Railway freight undertaking SC LTE-Rail România SRL

- inobservance of the provisions of art.9, paragraph (1) letter o, art.37, paragraph (3) letter j and of art.46, paragraph (5) letter l from the Instructions for the activity of the locomotive crew no.201/2007, it leading to the driving of the locomotive DA 909 EURORUNER, period of time 24th-25th February 2020 with to equipment for the automatic control and recording of the speed type PZB taken out of service;
- inobservance of the provisions of Chapter III, art.7/art.8 of the Annex of Minister of Transports' Order no.256/2013 for the approval of Norms for the maximum continuous duty accepted for the locomotive, for the locomotive crew in Romanian railway system, regarding the rest that must be between two consecutive shifts, the crew of the locomotive DA 909 EURORUNER on the 24th/25th February 2020.

Economic operator SC MEXIMPEX SRL

- inobservance of the provisions of Annex at the Railway Technical Agreement series AT No.430/2019, as well as of the Technical Specification code MEX 12/2019 „Ergonomics seats for the locomotives and multiple units", that is reference technical document basis for the granting of the agreement, regarding the fact that the products are not supplied/having in annex the Conformity Statement CE;
- both the Technical Specification code MEX 12/2019 „Ergonomics seats for the locomotives and multiple units" and The Guide for the use and maintenance of the driver seat type HR 310, (including the manufacturing drawing) do not contain information about the sizes set for the armrests of the seats.

Measures taken

On the 17th August 2020, the locomotive EA 691was submitted to planned repair type RR at SC RELOC SA, that was completed on the 29th January 2021.

Safety recommendations

On the 25th February 2020, at 10:35 o'clock, in the railway county Craiova, in the railway station Balota, in the running of the freight train no.60274 (got by the railway undertaking LTE-Rail România SRL), hauled with the locomotive DA 909 EURORUNER, before the last joint of the

switch no.11,on the exit route from the line no.5 to the running line Balota-Gîrnița (electrified single-track line), the first two wagons of the train were bumped by the set of locomotives EA 691 and EA 640 (got by the railway undertaking SC Grup Feroviar Roman SA), that started to move from the line no.4, without having the permissive order.
Following the investigation, the commission established:

- leaving of the driving cab of the locomotive EA 601 without taking the measures corresponding to keep stopped it was a factor that contributed to the accident occurrence. This factor is a danger, that was not identified by the railway freight undertaking SC Grup Feroviar Român SA, but it was not properly managed.
- release of the direct brake of the locomotive EA 691, following the interaction between the driver seat and the lever of the brake cock FD1 was a factor that contributed to the accident occurrence. This factor is a danger that was not identified by the railway freight undertaking SC Grup Feroviar Român SA, during the risk analysis.

Considering these above mentioned, for the prevention of some similar accidents or incidents in the future, according to the provisions of art.26, paragraph (2) of the Emergency Government Decision no.73/2019 for the railway safety, the investigation commission issues the next recommendations:
1.Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking SC Grup Feroviar Român SA will assess again the risk associated to the danger represented by leaving the working place by the staff in charge with the traffic safety, without meeting with the specific regulations and shall establish effective measures for keeping it under control.
2.Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking SC Grup Feroviar Român SA will assess again the risk associated to the danger represented by the release of the direct brake of the locomotive, following the interaction between the driver seat and the lever of the cock FD1, and shall establish measures for keeping it under control.

3.4.11. The railway incident happened on the 27th February 2020, in the railway county Craiova, track section Piatra Olt – Craiova, not-electrified single-track line, the freight train no.80510-1 started to run, it entered the avoiding line from the end Y of the railway station Plaiu Vulcănești and passed by the stabling limit signal of the line no.3 with the locomotive and one wagon, then the train stopped without consequences.
The investigation report was completed on the 05th February 2021.

Causes and contributing factors
Direct cause - Inobservance of the position of the line indicator of the set exit signal Xup.
Contributing factors - the train movement without the driver's assistant be in the front driving cab of the locomotive, in the train running direction, and without a mutual communication about the position of the exit signal.
Underlying causes of the incident consisted in the inobservance of some provisions from the instructions in force, respectively:

- Instructions for the activity of the railway locomotive crew no.201/2007, art.92, paragraph (1), letter b) regarding the regulations for the occupation of a running line;
- Instructions for the activity of the railway locomotive crew no.201/2007, art.119 paragraphs (1), (2) and (3) regarding the obligations of the locomotive crew for the running line occupation;
- Signalling Regulation no. 004/2006, art.122 paragraphs (1), (2) and (3) regarding the position of the line indicator of the exit line Xup from the set of tracks;
- Regulation for the train running and vehicle shunting, no.005/2005, art.197 paragraph (5), point b, regarding the departure order for the running line occupation.

Root causes
None.
Additional remarks
During the investigation there were not identified any other deficiencies, without relevance for the incident causes.

Measures taken
Following the incident, up to the investigation report completion, there were taken no measures by the parties involved.
Safety recommendations
None.

3.4.12. The railway accident happened on the 27th February 2020, in the railway county Cluj, track section Cluj Napoca - Oradea (not electrified double-track line), between the railway stations Aghireș and Stana, km.534+175, consisted in a fire burst into the locomotive DA 1072, hauling the freight train no.41121A, got by the railway undertaking SNTFM „CFR Marfă" SA.
The investigation was completed on the 16th February 2021.

Causes and contributing factors
Direct cause -was the ignition of the textile chamber, penetrated by oils from the electric traction engine - MET 4, with the incandescent particles ejected by pronounced electric arc, appeared between the brushes and the collector MET 4.
The pronounced a electric arc appeared following the supercurrent generated by the short-circuit developed in an auxiliary pole of MET 4, the short-circuit being generated by the loss of the dielectric properties of the electrical insulating varnish existing between the cupper bars of the auxiliary pole.
Contributing factors
- loss of the dielectric capacities of the electrical insulating material that covers the bars from the winding of the auxiliary pole;
- keeping in traffic of the locomotive DA 1072, with a technical condition that did not comply with the safety conditions, after exceeding the norms of time imposed for the performance of planned repair.

Underlying cause - inobservance of the provisions regarding *the withdrawal of the locomotive from traffic,* when it exceeds the norm of time for repair, norm established according to the dispositions of point 3.1. for the norm *NF 67-06:2011*.
Root causes - SNTFM did not comply, like entity in charge with the maintenance - ERI for the locomotive involved in the accident, with the requirement code III.4 from the Annex III of *EU Regulation UE 445/2011*, regarding the drafting of procedures for the activities for the *management of the withdrawal from operation of the locomotives for being submitted to maintenance*.
Safety recommendations
The accident occurrence is based on causes and factors generated both by the deficiencies existing in the system for the vehicle maintenance of SNTFM, like entity in charge with the maintenance ERI, and by the deviations from the practice codes.
In the exercise of the job of *management of the rolling stock sheet maintenance*, SNTFM had to draft *a procedure that shall ensure the withdrawal from operation the locomotives for their submission to maintenance,* but SNTFM did not do it.
Lack *of the procedure that shall ensure the withdrawal from operation the locomotives for being submitted to maintenance*, was analyzed by AGIFER, within the *Investigation Report* for the railway incident happened on the 27th September 2019, in the railway county Cluj, between the railway stations Oradea and Oșorhei, consisting in the hit of some parts of the railway installations by a component detached from the locomotive DA 926, hauling the freight train no.83256C.
In order to prevent accidents caused by the *lack of a procedure that shall ensure the withdrawal from operation of the locomotives for being submitted to the maintenance*, in the case before mentioned, whose investigation was completed during the investigation of the present case, one issued a safety recommendation, for this reason one does not more issue a safety recommendation for this investigation. So, the safety recommendation addressed to Romanian Railway Safety Authority – ASFR was *to ask railway undertaking SNTFM the implementation of a procedure that shall ensure the withdrawal from operation of the locomotives in order to be submitted to*

*maintenance, according to the requirement with code III.4 from the ANNEX III of the Regulation 445/2011***.**

3.4.13. The railway accident happened on the 23rd March 2020, in the railway county Timișoare, track section Arad – Oradea (not-electrified double-track line), between the railway stations Utvinișu Nou and Sântana, track I, km.17+600, in the running of passenger train no.3111, (got by the railway undertaking SNTFC „CFR Călători" SA), consisted in a fire burst into the diesel multiple unit no.1017, (being the second one in the composition of the first couple from those two forming the train).
The investigation was completed on the 22nd March 2021.

Causes and contributing factors
Considering that, through the investigation, there was found out that area the most affected by the fire was the fuse wire panel of the inactive driving cab, correlated with the statements of the railway staff on duty in the respective train, the investigation commission considers like ***direct cause (probable)*** of the fire, appearance of a short-circuit between the electric conductors of the electric panel.
Contributing factors of the accident was the keeping in traffic of the multiple unit no.1017, with a technical condition that did not ensure the safety conditions, after exceeding the norms of time imposed for the planned repair.
Underlying causes
Inobservance of the compulsory repairs at the multiple units, according to the Railway Norm N.F.67-006:2011 „Railway vehicles. Types of inspections and planned repairs. Norms of time or norms of km run for the performance of the inspections and planned 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, of chapter 3, that is, if the multiple unit diesel, series 1000 no.1017, there were not observed the maximum norms of time and km run, stipulated for the performance of planned repairs, norm of time being exceeded with 4 (four) years and 3 (three) months;
- table 3.1 letter A, position no.7, that is the cycle of planned repairs for the multiple unit diesel series 1000 no.1017 was not met with.

Root causes
The operational procedure PO-0-8.1-15 – *Planning of inspections and repairs at the locomotives, diesel multiple units and electric train sets got by SNTFC „CFR Călători" SA,* part of SMS applied by SNTFC, like railway undertaking, does not contain duties and responsibilities for the withdrawal from traffic of the multiple units, when they reach the norms of time/km for the performance of planned repairs, in accordance with the regulations in force.
Safety recommendations
In accordance with the provisions of art.26, paragraph (2) of the Emergency Government Decision no.73/2019 and of the Directive (EC) no.798/2016 for the railway safety, the safety recommendations are addressed to Romanian Railway Safety Authority - ASFR, that shall ask and track their implementation by the part identified in the recommendation
The multiple unit diesel, series 1000, no.1017, was submitted to the last repair – type RG, on the 22nd November 2011, at SC RELOC Craiova SA, its system for command and diagnosis being also modernized, the work being assigned, upon the contract, to the repairing society SC TEHMIN - BRAȘOV SRL.
The deadline for the same type repair was the 22nd December 2015, following the extension of the time for keeping in function, in the railway transport, got by the Technical Approval series AT no.1220/2014, issued by Romanian Railway Authority – AFER. So, when the accident happened, the multiple units had exceeded the deadline for withdrawal from the railway transport activity, for being submitted to repair type RG, with 4 (four) years and 3 (three) months. The investigation commission appreciates that the responsibility for keeping in operation, over the limits stipulated by the norms in force (of time/km.), and the extensions given by the authorities competent, is in charge of the vehicle owner.

Considering these above mentioned, in accordance with the provisions of art.26, paragraph (2) from the Emergency Government Decision no.73/2019 for the railway safety, the investigation commission recommends Romanian Railway Safety Authority:

1. shall ask the railway passenger undertaking SNTFC „CFR Călători" SA the revision of the procedure regarding *„Planning of the inspections and repairs at the locomotives, multiple units and electric train sets got by SNTFC „CFR Călători" SA,* that is the add-in duties and responsibilities regarding the withdrawal from traffic of the multiple units, when they reach the norms of time/km for the performance of planned repairs, in accordance with the regulations in force.
2. shall ask the railway passenger undertaking SNTFC „CFR Călători" SA to make again the identification and assessment of the risks associated to the railway operations, for the risk of keeping in service of the motorized rolling stock (locomotives, multiple units, electric train sets) with the norm of time/km for the performance of planned repairs exceeded, considering that, regarding this accident, these risks were very serious.

3.4.14. The railway serious accident happened on the 5th April 2020, in the railway county Brașov, track section Brașov – Sighișoara, between the railway stations Augustin and Racoș, consisted in a fire burst into the car no.50532049202-6 that, then, extended at the car no.50531954009-0, these cars composing the passenger train Regio no.3535.
The investigation was completed on the 1st April 2021.

Causes and contributing factors

Direct cause of the accident was the appearance of an electric arc between the roof of the car no.50532049202-6, the second one of the passenger train Regio no.3535 and the contact wire.

Contributing factor of the accident was the presence of a foreign body on the contact wire elements.

Underlying causes - there were not identified.

Root causes - there were not identified.

Additional remarks

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

1.CNCF „CFR" SA has no action plan agreed with the corresponding public authorities, for a fire in a railway vehicle from the composition of a train in running on an electrified line.

2.During the action for the identification of risks associated to the railway operations, SNTFC „CFR Călători" SA did not identify the next dangers:

- danger of an electric arc outside the car during its running on an electrified line, because of the contact wire;
- danger of failure in working of the equipment CCTV of the car;
- danger generated by the lack of some warning systems in the cars, that lead to a quick identification of a smoke release, as well as to the identification of the site where it happens.

1. Order of operations that the locomotive and train crew, got by SNTFC „CFR Călători" SA, has to be performed in case of a fire in a passenger train, in running, stipulates the insulation of the car where the fire burst, before removing the travellers from the car affected, the priority should be their protection.
2. Although the hauling locomotive of the train (EA nr.028*)* has been due for planned repair type RR since 2004 and had to be withdrawn from operation, according to the Railway Norm „Railway vehicles. Types of planned inspections and repairs. Norms of time or of km run for the performance of the planned inspections and repairs", OTF continued to use this locomotive.

Safety recommendations

According to the provisions of art.26, paragraph (2) of the Emergency Government Decision 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.

Safety recommendations associated to the accident occurrence

There were no safety recommendations associated to the causes and factors contributing to the accident occurrence.

Safety recommendations associated to the additional remarks

CNCF „CFR" SA did not draft a plan of actions, agreed with the corresponding public authorities, for the case of fire in a railway vehicle from the composition of a train in running on an electrified line.

Recommendation no.1

ASFR shall ask CNCF „CFR" SA to draft a plan of actions with the corresponding public authorities, for the case of fires in the railway vehicles from the composition of a train in running, on an electrified line, plan that meets with all the requirements stipulated at the criterion R of the Annex II of EU Regulation no.1169/2010.

If there were warning systems inside the car, that provide operatively information about the fire occurrence, the intervention could be faster triggered.

Recommendation no.2

ASFR shall ask SNTFC „CFR Călători" SA to make an analysis about the opportunity to incorporate the equipment CCTV of the car and, where appropriate, of other warning systems, into a monitoring system that shall provide operative information in case of some railway failures/incidents/accidents.

Order of operations that the locomotive and train crew, got by SNTFC „CFR Călători" SA has to perform in case of a fire in a passenger train in running, stipulates the insulation of the car where the fire burst, before removing the travellers from the car affected.

Recommendation no.3

ASFR shall ask SNTFC „CFR Călători" SA the revision of the action in case of fire into a passenger train in running, so the actions for removing the travellers in safety be a priority.

3.4.15. The railway accident happened on the 17th April 2020, in the railway county Iași, in Vatra Dornei railway station, in the running of freight train no.80489 (light locomotive EA 426 got by the railway undertaking SC GFR SA), that moved on the dispatching route from the diverging track no.7 to the running line Vatra Dornei-Ilva Mică, when it ran on the switch no.24, consisted in the derailment of the first axle of the first bogie of the locomotive (in the running direction).

The investigation was completed on the 15th April 2021.

Causes and contributing factors

Direct cause of the accident is the overclimbing of the gauge face of the closure rail from the exterior rail of the curve of the switch no.24 by the flange of left wheel from the axle no.6 (first axle in the running direction) of the locomotive EA 426, following the exceeding of the derailment stability limit. Exceeding of the derailment stability limit happened following the decrease of the load acting on the wheels of the leading axle.

Contributing factor was the irregular distribution of the loads on axles no.5 and 6, rested active after the suspension of axle no.4.

Underlying causes of the accident was the inobservance of the provisions from point 3 of *Order no.17 RLa/1502 column 1987* of the Department for Traction and Wagons within the Ministry of Transports and Telecommunications, by the intervention staff of Grup Feroviar Român SA, that the welding between the front beam of the bogie and the body beam was not made and the primary suspension from the axles no.5 and 6 was not completely blocked

Root cause of the accident was the incomplete assessment of the risks from the risk area „maintenance of the railway vehicles", respectively the non-identification of the dangers generated by the putting into operation of a railway motorised vehicle with failures that impose the suspension of an axle.

Safety recommendations

The railway accident happened on the 17th April 2020, at 16:25 o'clock, in the running of freight train no.80489, consisting in the derailment of first axle from the first bogie, in the running direction of the locomotive EA 426, was generated by the improper suspension of the blocked

axle, leading to the load transfer of the axle no.6 and the exceeding of the derailment stability limit.
Considering the causes and the contributing factors, for the prevention of similar accidents, the investigation commission issues the next safety recommendation:
1.Romanian Railway Safety Authority – ASFR shall ensure that the railway undertaking SC Grup Feroviar Român SA re-assesses the risks form the activity field „maintenance of the railway vehicles", considering the dangers generated by the putting into operation of a railway motorised vehicle with failures that impose the suspension of an axle.

3.4.16. The railway accident happened on the 29th April 2020, in the railway county Cluj, in Șintereag railway station, switch no.2, in the running of the passenger train no.15836, consisting in the diesel multiple unit DW 525 (got by the railway undertaking SC Inter Regional Călători SRL - IRC), the second bogie of the multiple units, the last one in the running direction of the train, derailed
The investigation was completed on the 27th April 2021.

Causes and contributing factors
Direct cause of the accident is the fall of the right wheel from the first axle of the last bogie of the multiple unit DW 525, against the running direction, between the curved blade and the right blade of the switch no.2 (facing point movement), when the train no.15836 entered Șintereag railway station.
It happened because of a half-open between the point and the stock rail, it leading to the running of the flange of wheel between the right point and the curved stock rail.
Contributing factors
1. failure in the application of the operational procedure that stipulates how to perform the traffic and the shunting on a centralised switch that signals on the command panel „without control";
2. failure in the application of the own working instructions, for the intervention at a fishplate switch.
Underlying causes of the accident were the inobservance of some provisions from the practice codes in force, that is:
1. *Instruction for the technical maintenance and repair of the interlocking equipment (SCB) no.351*":
- art.21 that stipulates „ SCB staff has not to intervene, in any form, in the performance of the movements;
- art.26 that stipulates that the electromechanic that goes to resume the working of SCB installations out of order, has to notify SCB district inspector, and until the interruption solving, he has to take all the safety measures necessary and to establish the traffic conditions, notifying the movements inspector by their writing down in the register for the inspection of the traffic safety installations;
- art.320, that stipulates „it is forbidden to perform maintenances, interventions, changes, movements, checking and replacement of SCB installations and devices, as well as other works that should generate the temporary taking out of service, without the approval of the movements inspector, by his signing for taking note and without to register the operations in the Register for the Inspection of the Lines, Installations for the Traffic Safety - RRLISC"
- Annex 11, paragraph D, point 1, a), that stipulates the conditions where „control seals can be removed by the staff of movements and track maintenance"

2. Paper no.44/A/202/2005 of the Division of Installations in Cluj, regarding the own regulations for ensuring the unlocking and unfishplating of the switches during the performance of the periodical inspections;
3. *Instruction for the operation of the* installations, annex of the Operation Technical Plan, railway station Șintereag:

- art.43 that stipulates „the control seals that can be removed by the movements inspector and the conditions for the operation of the respective buttons", that is „before to push the button for the calling signal, the movements inspector has to check if the switches along the route of the train are on the corresponding position, each switch having control";
- art.46, regarding the „interruption at one or many switches" that stipulates „if a Installations for Electrodynamic Centralization-CED switch has no control on the light panel, for one or both positions, IDM has to stop soon any movement on this switch, to record the failure in RRLISC and notify in writing SCB electromechanic of the railway station and the station manager. After the reception of the notification, the SCB staff has to go soon at the respective switch, including that one eventually conjugated (operated in the same time) and in accordance with the findings, to establish the running conditions that shall be sent to the movements inspector";
- art. 42, that stipulates „when a failure at the installation CED, BLA (Automatic Section Block), SAT (Installations for the Automatic Signalling of the Level Crossings), INDUSI, is found, IDM has to notify as soon as possible SCB staff about the failure found and to record it in RRLISC, the date, hour and name of SCB staff notified";
- art.29, paragraph 3, that stipulates „before making a route, the movements inspector has to make sure that the switches of the route and the derailing ones are on normal position and there is the control of the joining of the points on the stock rails, lighting continuously the cell of the position of the switch required by the route";

4. *Regulation for the running of the trains and shunting of the railway vehicles no.005/2005:*

- art.32, paragraph 1, that stipulates „in case of failure or taking out of service of the installations SCB, TC (Telecommunications) and IFTE (Installations of Electric Force and Traction), the movements inspector has to notify the station manager, that shall take measures for the organization ad surveillance of the train running and shunting of the railway vehicles*";*
- art.32, paragraph 2, that stipulates „it is forbidden to perform changes, movements, repairs, checking or replacements of the installations SCB, TC and IFTE, as well as of other works that could generate their temporary taking out of service, before recording the respective operations in RRLISC and without the approval of the disposing station movements inspector";

5. *Order RSC no. 41/28/1986:*

- *procedure for the reception and dispatching the trains with switches without control, point.2,* that stipulates „when the movements inspector finds that the point machine has no control on the light panel, on one or on both positions, he has to stop immediately any movement on it, to record soon the failure in RRLISC, to notify in writing the SCB electromechanic, the station manager and operator of the Traffic Controller";
- *making and checking of the running and shunting routes for these switches, letter a)* that stipulates„ the switches out of order shall be operated on site, with the crank, by the movements inspector that goes to the site, then he informs RC operator, he locks the office of the movements inspector and checks:
  - right position of the route switch;
  - perfect joint of the point on the stock rail;
  - move of the detached point from the stock rail at least 125 mm;
  - integrity of the traction and control bar;
  - locking of the switch;
  - when the switch is negotiated, it is ensured the blade jointed and a fastening hook".

***Root causes*:**

1. failure in the identification, in the activity Traffic, of the danger resulted from the *operation of the safety installations being interrupted*;
2. failure in the identification, in the activity Traffic, of the danger resulted from the *reception of the train in the railway station, without meeting with the instruction provisions*.

Additional remarks:

During the investigation, there were findings about some deficiencies and gaps, without relevance for the conclusions on the accident causes.
On the 29th April 2020, in the railway station Șintereag, there were scheduled the joint performance of the biannual inspection of the point machines, checking of the locking and checking of the hidden parts of the switch no.2.
Upon the minute written down by SCB district inspector, together with the line district inspector and the station manager, section CT2 Dej drafted „*The program of biannual inspections of the point machines and the checking of the hidden parts of the switches from the railway station Șintereag*", upon the paper no.318/2020.
According to the paper no.318/2020 and the telegram for the approval of the joint works, the staff SCB, L and Traffic, in charge with the performance of the works and railway safety, appointed were the SCB district inspector Beclean pe Someș, L district inspector Bistrița and the station manager Beclean pe Someș.
SCB district inspector and the station manager were not on the 29th April 2020 in the railway station Șintereag, for the surveillance of the works, invoking the compliance with the monthly programs drafted.
The investigation commission found that for the drafting of the monthly activity program of those two subunit heads, the program for the biannual inspection of the point machines and the checking of the hidden parts of the switches, for the half-year I 2020 in the railway station Șintereag (no.318/2020), where they were appointed like SC responsibles, was not considered.
For the district inspector there was also drafted an annual program for the biannual inspections in the railway station Șintereag no.376/2019, approved by the Section Head CT2 Dej, that was conflicted with the program no.318/2020. According to the provisions of the program 376/2019, the SCB district inspector was appointed to participate in the biannual inspection at the switch 2/6, only on the 30th September 2020.
The investigation commission found that there were simultaneously two programs containing conflicting provisions regarding the participation of SCB district inspector in the biannual inspection of the switch no.2/6 in the railway station Șintereag - the program no.376/2019 established the presence only on the 30th September 2020, and the program no.318/2020 set up the presence only on the 29th April 2020.
For the drafting of the monthly activity programs there were violated the provisions of the Order 56/A/1982 of the Traffic Safety Inspectorate, the measures disposed by the D.G.I. through the papers no.114/39/344/04.08.1997, 114/4/4118/1998 and reference prescriptions I.B/984/05.07.2017 Operation Division, that stipulate that the performance of the biannual inspections, at the point machines of the running lines and the direct ones, is made only under the direct surveillance of SCB district inspector, of his deputy, appointed by decision of CT section head, or other technical staff (engineer or technician) established by the management of the Section CT, the running being made under the direct surveillance of the station manager or of other staff from Traffic Department (engineer or trainer) established by the station management.
Finally, it is concluded that the monthly programs of the subunit heads (station manager, SCB district inspector), were not corelated with the programs for the biannual inspection of the point machines and the checking of the hidden parts of the switches in the railway station Șintereag, inspections for which they were appointed like SC responsible.
Safety recommendations:
Following the investigation, there was found that, at the accident occurrence contributed both the inobservance of the practice codes, and the fact that the infrastructure administrator had not identified some dangers in the movement activity. During the investigation, the public railway infrastructure administrator took measures to update the record of the dangers appeared in the accident occurrence. Considering the measures for the updating of the dangers, took by the infrastructure administrator, the investigation commission considers that there is no longer need to issue safety recommendations for it.

3.4.17. The railway accident happened on the 4th June 2020, in the railway county Constanţa, on the non-interoperable track section P1 Capu Midia – Sitorman, managed by SC Grup Feroviar

Român SA (not-electrified single-track line), between the railway stations Luminița and Post 1 Cap Midia, km.0+500, in the running of the freight train no.89158 (got by the railway undertaking SC Grup Feroviar Român SA), consisted in the derailment of 4 wagons.
The investigation was completed on the 17th May 2021.

Identified factors

Causal factors

- existence of a group of consecutives wooden sleepers unsuitable, that led finally to the growth of the gauge, over the limits accepted for operation, under the dynamic action of the rolling stock.

Contributing factors

- exceeding of the maximum load accepted on the axle at all the train wagons;
- weighing of the wagons without the participation of undertaking delegate;
- not knowing by the staff belonging to SC CRH Ciment SA and to the undertaking how there are interpreted and processed the outcomes of the wagons weighing.

Systemic factors

- lack of an action plan for the monitoring by the infrastructure manager of the supplier of repairs and maintenance of the line LOG FER, generated by the faulty gathering and analysis of the information;
- lack of an action plan for the removal of the speed restrictions kept a long time;
- non provision with the staff necessary for ensuring the checking, repairs and maintenance of the line;
- not updating of the internal framework for the regulation of the wagon weighing

Measures taken after the accident

For re-opening the line and resuming the traffic on 4th June 2020, 91 wooden sleepers were replaced.
Starting with 10th August 2020, the parties signed and came into force the Additional Paper no.1, enclosed to the Contract for Supplying Services no. G.3.7/3071/01.04.2019, where there are stipulations on the change of relevant information regarding the performance of track maintenance. Through these contract provisions, the process for monitoring, by collecting and analyzing the information, was begun.

Safety recommendations

Until the occurrence of this accident, on the non-interoperable running lines managed by GI, there were many accidents, with similar causes.
Appearance of the failures at the track geometry, that exceed be tolerances accepted and keeping them for long times led to the increase of the risk of derailment.
On 27th November 2008, at the accident site there was introduced a speed restriction of 15 km/h, following the sleepers improper.
The commission found that there were not identified the own risks generated by keeping for a long time the speed restrictions, established following the existence of some failures at the track geometry.
The unsuitable maintenance of the lines, that was not made in accordance with the provisions of the practice codes, did not make possible keeping of the track geometry between the tolerances accepted.
The investigation commission found that, the derailment happened following the improper condition of the track superstructure, considering the existence of a group of normal wooden sleepers improper, that led to the exceeding of the maximum accepted value of the gauge in operation.
The investigation commission also concluded also that, the existence of some nonconformities, regarding the checking of the operations of weighing and interpretation of the results got, led to the running of the wagons of the train no.89158, with the maximum accepted load on the axles exceeded, it increasing the horizontal component of the guiding force.

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

Safety recommendations no.1

ASFR shall take care that SC GFR SA will identify the own risks generated by the keeping for a long time the speed restrictions established following the existence of some failures at the track geometry.

Safety recommendation no.2

ASFR shall take care that SC GFR SA will reassess the risk associated to the danger of keeping within the track the sleepers improper.

Safety recommendation no.3

ASFR shall take care that SC GFR SA, like undertaking, will identify the own risks generated by the danger of coupling into the trains wagons with the maximum load on axle exceeded.

3.4.18. The railway accident happened on 11th June 2020, in the railway county Timișoara, track section Simeria – Petroșani (electrified double-track line), between the railway stations Baru Mare and Crivadia, track I, km.54+370, in the running of freight train no.30536 (got by the railway undertaking DB CARGO ROMÂNIA SRL), consisted in the derailment of the second axle from the 15th wagon (two axled wagon) derailed in the running direction, on a curve.
The investigation was completed on the 8th June 2021.

Identified factors

Causal factors

There was, at the accident site, a group of improper wooden sleepers (that could no longer ensure the right fastening of the exterior rail, respectively the interior rail of the curve and keeping of the track gauge between the tolerances accepted in operation). This deficiency generated, under the dynamic effect of the rolling stock running, the exceeding of the maximum limit of track gauge accepted in operation (1470 mm) and, finally, it led to the loss of the support and guiding capacity of the exterior rail of the curve, then the fall of the right wheel of the second axle from the wagon no.21802475015-8 between the rails

Contributing factors

Following the conditions from the beginning of Coronavirus pandemic and the psychosocial effects it generated on the human resources of the infrastructure administrator, the track controls and inspections, performed before the accident (that supposed taking all additional measures specific to the pandemic) were done in atypical conditions and without the estimated effectiveness.

Systemic factors

1. Ineffective management of the risks associated to the danger generated by keeping in operation, within a small radius curve, two or more improper normal wooden sleepers in turn, that had to be replaced;
2. Non-ensurance the staff necessary for the performance of line repairs and maintenances;
3. Non ensurance of the minimum necessary stock of normal wooden sleepers.

Measures taken after the accident

On the curve where the accident happened (total length L_{tot} = 695 m), in June 2020, there were replaced 96 improper normal wooden sleepers, and on the 26th August 2020, there were performed slewing and mechanical packing of sleepers with a railway vehicle type Plasser.

Safety recommendations

The railway accident happened on the 11th June 2020, between the railway stations Baru Mare and Crivadia was caused by the improper technical condition of the railway infrastructure.
During the investigation, there was found that the improper technical condition of the track was generated by the unsuitable maintenance, that was not made in accordance with the provisions of the practice codes (reference/associated documents of the procedures from the safety management system of the infrastructure administrator).

The investigation commission found that the infrastructure administrator identified but did not effectively manage the risks generated by the lack of line maintenance, in order to be able to dispose consequently viable safety measures for the decrease of these risks.
Applying the own procedures of the safety management system - SMS, completely, 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 geometry between the limits of tolerances imposed by the railway safety and, in a such way, it could have been able to avoid the accident occurrence.
Considering the railway events happened between the years 2019÷2020, in the railway county Timișoara, presented within Chapter 4.e „*Previous similar accidents/incidents"* and taking into account the lessons that can be learnt from this accident, for the improvement of the railway safety and the prevention of similar events, AGIFER considers timely to address Romanian Railway Safety Authority-ASFR the next *safety recommendation:*
ASFR shall ensure that the public railway infrastructure administrator CNCF „CFR" SA re-assesses the risks associated to the danger generated by the keeping in operation improper wooden sleepers within the curves and it establishes viable safety measures for keeping under control these risks.

3.4.19. The railway accident happened on the 26th June 2020, in the railway county Craiova, track section Strehaia - Orșova (electrified single-track line), in the railway station Balota, line 5, km 344+059, in the running of freight train nr.30548 (got by the railway undertaking Deutsche Bahn Cargo Romania), consisted in the derailment of both axles of the wagon no.248743637790, the 9th one after the locomotive, and it reclining
The investigation was completed on the 23rd June 2021.

Identified factors
Causal factors
1. the drag shoe from the first right wheel, in the running direction of the wagon no.24874363779-0 (the 9th one of the train) was not removed, before the train dispatching.
2. the removal of the drag shoe from the first right wheel, in the running of the wagon no.24874363779-0 (the 9th one of the train) was not checked, before the train dispatching.
3. one did not check the existence of all drag shoes on the stand, according to the records from the special register, created in accordance with the "Plan of complementary measures for the railway county SRCF Craiova, for the limitation of the situations generated by coronavirus infection".

Contributing factors
1. wrong record in the special register, created in accordance with the "Plan of complementary measures for the railway county SRCF Craiova, for the limitation of the situations generated by coronavirus infection", that both drag shoes were removed and put on the stand, although on this special device there were put just the drag shoe no.3;
2. the visual inspection of the train, when it was dispatched from the railway station, was not made in accordance with the provisions stipulated in the Operation Technical Plan - PTE, both by the staff of the infrastructure administrator and by that of the railway undertaking.

Systemic factors
1. the Sheet PTE no. 25 of the railway station Balota was not updated with the new conditions of recording in the special register, existing in the movements office, created especially for it, in order to ensure the distance conditions following Covid-19 pandemic;
2. ineffective management of the risks associated to the danger generated by the lack of staff in operation, as well as by the fact that the existing staff, sometimes overloaded and not trained for the new conditions of work, imposed by the pandemic, did not carry out its duties properly;
3. the infrastructure administrator and the railway undertaking did not identify the danger represented by the ,,non removal of the drag shoe when a train is dispatched", for the risk factor identified ,,derailment".

The investigation commission concludes that the accident happened following the appearance of the identified factors that led to the start of train running with the drag shoe at the wheel, provided that the practice codes and the procedures for the railway vehicle ensuring against runaway were not met

Additional remarks

The commission also found a series of failures, that had no direct connection with the accident occurrence or appeared after its occurrence, as follows:

- the shunting plan was neither asked nor drafted for the re-parking of the freight train no.39914from the line 2 on the line 5; according to the sheets PTE, the shunting in the railway station is asked by the foreman shunter to the movements inspector;
- after the derailment of the train no.30548, the movements inspector on duty deleted with correction fluid the records about the routing of this train in the Unified Register of Free Commands and Movement, filling in with records about the running of another train.

Safety recommendations

The investigation commission concludes that the accident happened in the conditions of the factors identified, that led to the train running with a drag shoe at the wheel, provided that the staff of the infrastructure administrator and of the railway undertaking did not meet with its duties, duties established in the practice codes and in the job descriptions, the reference documents not being updated or missing. It generated the non removal of a drag shoe from the wheel (first right wheel in the running direction of the wagon no. 24874363779-0), when the train started to run, leading to the wagon derailment.

Considering the nonconformities found during this accident investigation, for the prevention of some accidents with similar causes, the investigation commission considers necessary to issue some *safety recommendations:*

1. Romanian Railway Safety Authority – ASFR shall make sure that CNCF „CFR" SA, like infrastructure administrator, will take the measures necessary so, the changes of working routines disposed for ensuring the health safety, following the pandemic Covid-19, not affect the activity process, especially in the subunits directly involved in the operation activity;

2. Romanian Railway Safety Authority – ASFR shall make sure that DBCR, like railway undertaking, will make a analysis of the risk associated to the danger of not carrying the duties by the own staff, provided that 3 employees of the company did not simultaneously meet with their duties

3.4.20. The railway incident happened on the 26th June 2020, in the railway county Iași, in the running of freight train no.80657, got by SC Grup Feroviar Român SA, consisted in passing by the exit signal YIII and going through of the switch no.7 in the railway station Valea Seacă.

The investigation was completed on the 3rd June 2021.

Causes and contributing factors

Direct cause of the incident was the train running reversely the running direction, without meeting with the operational procedures that organize the operation activity.

Contributing factors:

- the movements inspector switched a shunting route for the locomotive EA no.212 stopped on the line 5, before the train no.80657 ran the entry route, it leading to the operation of switch no.7 soon after clearing the insulated section containing this switch.
- the movements inspector asked the driver of train no.80657 to run back the train on the line III of the railway station;

Underlying causes of the incident consisted in the inobservance of some provisions from the instructions in force, respectively:

1. *Signalling Regulation no.004/2006, art.21, art.23* regarding the positions of the entry and exit signals;
2. *Instructions for the activity of the locomotive crew no.201/2006, art.97,* regarding the continuation of the train running when the train stopped into the station.

3. *Instructions for the activity of the locomotive crew no.201/2006, art.193, 194 and 198* regarding the obligations of the of the locomotive crew at the shunting.
4. *Regulation for the train running and railway vehicle shunting no.005/2005, art.189 and Instructions for the activity of locomotive crew nr.201/2006, art.136 (1,2),* regarding the communication between the movements inspector and the driver of the entry/exit conditions.

Root causes -None

Safety recommendations

Considering the factors contributing to the incident occurrence, factors based on underlying causes, that are deviations from the codes of practice and for keeping under control the railway safety risks, without these be generated by deficiencies within the management of safety management system or by the general regulation framework, the investigation commission considered that it is not necessary to issue safety recommendations.

3.4.21. The railway accident happened on the 10th July 2020, in the railway county București, track section Pantelimon-Ciulnița (electrified double-track line), between the railway stations Fundulea and Sărulești, track II, km 47+737, in the running of freight train no.30688-1 (got by railway undertaking SC Deutsche Bahn Cargo Romania SRL), the first bogie of the locomotive DA 010, a dead one in the train composition, derailed in the running direction

The investigation was completed on the 7th July 2021.

Identified factors

Causal factors

- breakage of the toothed wheel from the axle no.5 of the locomotive DA 010, provided that the structure of the material it was made off was improper.

Contributing factors

- lack of an operative notification that the axle no.5 of the locomotive DA 010 makes an abnormal noise;
- defective coordination of the mobile intervention team;
- omission to record in the „Register for the evidence of planned inspections and accidental repairs at the locomotive" that the axle no.5 of the locomotive DA 010 made an abnormal noise;
- use in operation of the locomotive DA 010 without removing the existing failures;
- putting into operation of the locomotive DA 010 by the locomotive crew without removing the failures existing.

Systemic factors:

- the existing gaps in the working out of the procedure code: PA.04 „Locomotive maintenance", revision 2.

Measures taken after the accident

Following the accident SC Deutsche Bahn Cargo România SRL disposed the next measures:

- starting with August 2020, within the maintenance department, there was made a service team that ensure the continuity of the accidental repair process during the night;
- it began the re-analysing of the procedure code: PA.04 „Locomotive maintenance".

Safety recommendations

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

Preamble recommendation no.1

Detachment of the half-casing of the support bearing from the axle no.5 of the locomotive DA 010 that led to the entry of it between the wheel of the axle and the rail, the derailment was generated by the breakage of the toothed crown of axle no.5 from the locomotive DA 010, provided that the structure of the material it was made off was improper.

Safety recommendation no.1

Romanian Railway Safety Authority – ASFR shall ask the railway undertakings to identify the diesel electric locomotives provided with toothed wheel made off material belonging to the burden 82592 and be sure that those dispose measures for keeping under control the risk associated to the danger represented by the breakage of the toothed crown in operation.

Preamble recommendation no.2

During the investigation there were found many deficiencies in the organisation of the activity of the departments for Maintenance and Operations, regarding the coordination, communication, flow of documents and re-putting in operation of the locomotives, after the intervention of the mobile teams.

Safety recommendation no.2

Romanian Railway Safety Authority – ASFR shall be sure that SC Deutsche Bahn Cargo România SRL shall re-assess the management of the maintenance and putting in operation of the locomotives and shall dispose viable measures for keeping under control the risks specific to those activities.

3.4.22. The railway accident happened on the 5th August 2020, in the railway county Craiova, track section Băbeni - Alunu (not-electrified single-track line), between the railway stations Popești and Berbești, 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 derailed.

The investigation was completed on the 4th August 2021.

Identified factors

Causal factors

1. partial downloading of the wagon no.81536666128-9, following which its right – front compartment rested loaded about 7,64 t with coal, leading to the load transfer of the guiding wheel;
2. the condition of the wagon no.81536666128-9 was no checked after the downloading, by the staff with responsibilities in this respect.

Contributing factors - improper condition of the polyamide plates (back, with missing parts) of the wagon no.81536666128-9, it leading to the increase of the stiffness of the unit bogie – wagon body, so generating the increase of the lateral guiding force and implicitly the decrease of the vehicle capacity of curve negotiation.

Systemic factors -None.

Safety recommendations

The investigation commission concludes that the accident happened following the factors identified, that led to putting into operation of the wagon no.81536666128-9, partially downloaded, provided that the duties of SNTFM staff were not met, these duties are established by the practice codes and in the job description.

The commission analysed *„Sheet of measurements for the prevention of SMS risks" code F 432-SMS-2* afferent to the technological process „*Reception of the empty/loaded wagons from the customers*" and found that „*not-checking the conditions imposed* by *Regulation no.005, art.88, point 1, letters a-t"* is identified like risk from the frequency category *unlikely*, presenting a severity level *critical*, being quantified like *tolerable* risk. The safety measure identified in this case for keeping under control the risk *keeping of the professional competences and permanent checking of the regulations application (hierarchical control)*. Because the safety measures set did not achieve the purpose, a wagon partially downloaded being put into operation, for the prevention of some accidents with similar causes, the investigation commission considers necessary to issue the next *safety recommendation:*

1. Romanian Railway Safety Authority – ASFR shall make sure that SNTFM will make an analysis of risk associated to the danger represented by the putting into operation of wagons partially downloaded.

The wagon had also technical problems that influenced the accident occurrence and which could not be found in operation, that contributed to the accident occurrence (improper condition of the polyamide plates). Because this phenomenon was found also during the investigation of other

accidents, and for the accident happened on 20th December 2019, between the railway stations Drobeta Turnu Severin Mărfuri and Valea Albă, a recommendation was issued in this respect (recommendation in analysis process), the commission considers that it is no need to issue another similar recommendation.

3.4.23. The railway accident happened on the 24th August 2020, in the railway county **Brașov**, track section Brașov – Ploiești Vest (electrified double-track line), between the railway stations Timișu de Sus and Predeal, track II, km 144+763, in the running of freight train no.50492 (got by UNICOM TRANZIT SA), hauled with the locomotive EA 531 and banked by the locomotive EA 089, consisted in a fire into the banking locomotive.
The investigation was completed on the 19th August 2021.

Identified factors
Causal factors - there were some improper contacts between the brushes of the traction engine no.1 and its collector, as well as between the contacts type mother and father from the traction engines no.4 and 6.
Contributing factors:
- repeated tentatives to put in motion the train on the track section between the caution signal and the entry one of the railway station Predeal.
- weather conditions represented by the rains.

Safety recommendations
Considering that the repeated tentatives to put in motion the train, on the track section between the caution signal and the entry one of the railway station Predeal, are a danger that can increase the probability of accident and that according to the provisions of art.82 of the Regulation for hauling and braking no.006, the number of these tentatives is not limited, without creating no presumption of guilty or civil liability, in order to prevent the occurrence of similar accidents/incident in the future, in accordance with the provisions of art.26, paragraph (2) of the Government Emergency Ordinance no.73/2019 for the railway safety, the investigation commission issues the next recommendation:
Safety recommendation no.1
Romanian Railway Safety Authority – ASFR shall ask the railway freight undertaking SC Unicom Tranzit SA to make an assessment of the risks generated by the danger generated by the repeated tentatives to put the train in motion, in the situation of some stops that are not stipulated in the timetable for the running line, on the track section Brașov – Predeal.

3.4.24. The railway accident happened on the 13th September 2020, in the railway county București, when the passenger train R.8023 (got by the railway undertaking SNTFC „CFR Călători" SA), hauled with the locomotive EA 363, left the railway station București Obor, ran on the last joint of the common crossing of the diamond crossing with a double slip no.4/5, the first bogie of the first car derailed.
The investigation report was completed on the 7th September 2021.

Identified factors
Causal factor
- keeping within the track, at the accident site, a group of improper normal wooden sleepers, that generated the exceeding of the maximum accepted speed for the track gauge in operation and led to the loss of the support and guiding capacity of the inner rail of the curve, leading to the fall of the left wheels from the axles of the first bogie of the first wagon of the passenger train no.8023, between the rails.

Contributing factor
- performance of the technical inspection by not-authorized staff, it favouring the decrease of this activity efficiency.

Systemic factors

- inefficient management of the risks associated to the danger generated by keeping in operation, within a curve with small radius, two or many improper normal wooden sleepers, in turn, that had to be replaced immediately (emergency I);
- providing insufficient material and human resources, in relation to what is necessary for the corresponding maintenance of the line and keeping the track geometry between the tolerances accepted.

Measures taken after the accident

After the accident, on this curve with a length of 538 m, between the 13th and 17th September 2020, 30 improper wooden sleepers were replaced, the track gauge was rectified, by correcting the fastenings of the plates on the ends of 33 sleepers so get the right track gauge and rectification of the level by hand packing of sleepers.

Safety recommendations

The railway accident, happened on the 13th September 2020, on the exit route from the railway station București Obor, at 5,50 m after passing over the last joint of the common crossing of the double diamond crossing no.4/5, on a curve, was generated by the improper technical condition of the railway infrastructure.

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

Between the 9th and 12th September 2020, before the accident, the technical inspection of the line between the railway stations București Obor and Pantelimon was made with not-authorized staff, it favouring the decrease of the effectiveness of this activity, following the non-identification in good time the deficiencies at the line.

The investigation commission found that the infrastructure administrator identified but did not effectively manage the risks generated by the lack of line maintenance, in order to be able to dispose the viable safety measures for reducing these risks.

By applying the procedures of safety management system, in their entirety, as well as the provisions of the practice codes, part of SMS, the infrastructure administrator should have kept the technical parameters of the track geometry between the limits imposed by the railway safety and, so, it could have avoided the accident occurrence.

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

|*Recommendation no.1*

Romanian Railway Safety Authority – ASFR shall assure that the infrastructure administrator will re-assess the risk associated to the danger represented by keeping within the track the improper wooden sleepers and will establish efficient measures for keeping it under control;

Recommendation no.2

Romanian Railway Safety Authority – ASFR shall assure that the public railway infrastructure administrator will re-assess the risk associated to the danger represented by the performance of the track inspection with not-authorized staff for the traffic safety and will establish efficient measures for keeping it under control.

3.4.25. The railway accident happened on the 13th September 2020, in the railway county Timișoara, track section Reșița – Caransebeș (electrified single-track line), between the railway stations Brebu and Cornuțel Banat, km.11+278, in the running of freight train no.60520 (got by the railway undertaking SC „Tim Rail Cargo" SRL), consisted in the derailment of the first 12 wagons of the train (one of them overturned).

The investigation report was completed on the 7th September 2021.

Identified factors

Causal factors

1. Existence, within the track, at the accident site, improper normal wooden sleepers (that could not assure the right fastening of the rails on the rails from the exterior track, respectively from the

interior one and keeping of the track gauge between the tolerance limits accepted by the regulation framework), sleepers with a high degree of deterioration (physical and chemical), accelerated (unexpectedly) by some hidden failures, unaccepted from technical point of view, being inside, in the core of the wooden, that affected the mechanic resistance and the durability of these sleepers, that were under warranty when the accident happened.

2. The failure existing at the guiding wheel (wheel no.1) of the wagon no.84535304226-8 (the height of the flange of wheel under the limit accepted in operation – 22 mm), this condition generating the increase of the guiding forces this wheel acted on the exterior rail of the line.

Contributing factors

1. Use for the transport of slab billets (steel half-finished – round bars) of some wagons with metallic floors and not with wooden ones, as it is stipulated by UIC regulations. The running of the wagons in derailed condition led to the easy movement of the goods on the wagon floor and breakage of the wagon walls, so, to the increase of their damages.

Systemic factors

1. The infrastructure administrator managed inefficiently the risks associated to the danger generated by keeping in operation, within a curve, two or more improper normal wooden sleepers, in turn, that had to be replaced.
2. Lack in the technical specification, basis for the conclusion of the contract for the line repair, of some clear requirements, so the infrastructure manager can be sure that for these works, the contractor buy and use only products certified in accordance with the certification systems established upon European Union legislation.
3. The railway undertaking did not effectively manage the risks associated to the danger generated by the non-identification of all failures, parts worn out or shortages existing at the wagons.
4. The railway undertaking did not assess the risks associated to the danger generated by the use of some wagons improper for the transport of some type of good.

Measures taken after the accident

On the curve the accident happened (total length L_{tot} = 695 m), in June 2020, a the 96 improper normal wooden sleepers were replaced, and on the 26th August 2020 one performed mechanical lateral displacements and sleepers packing with track vehicle type Plasser.

Safety recommendations

The railway accident happened on the 13th September 2020, between the railway stations Brebu and Cornuțel Banat was caused both by the improper technical condition of the track superstructure, and by the failure found at the 6th wagon of the train

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

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

Preamble recommendation no.1

The investigation commission found that the infrastructure administrator identified but did not efficiently manage the risks generated by the lack of line maintenance, in order to be able to dispose viable safety measures for the decrease of these risks.

Safety recommendation no.1

ASFR shall assure that the infrastructure manager CNCF „CFR" SA will re-assess the risks associated to the danger generated by keeping in operation the improper wooden sleepers within the curves and will establish viable safety measures for keeping under control these risks.

Preamble recommendation no.2
As it is presented at chapter 4.e., in case of the railway accident happened on the 8th March 2019, between the railway stations Telciu and Coșbuc, the investigation commission found out that, at the derailment site the wooden sleepers were under warranty or close to the expiration of the warranty and had inside accelerated damage processes of the wooden, that led to the accident. In the investigation report, worked out for the accident before mentioned, AGIFER recommended ASFR, inter alia, to ask the infrastructure manager, the performance of a risk analysis, for the dangers generated by the wooden sleepers fitted already within the track and that were purchased according other requirements than those from the technical standard in force, or they did not meet with the condition for the certification of the conformity with the technical specification.
Safety recommendation no.2
ASFR shall check how the infrastructure manager CNCF „CFR" SA analyzed and implemented the safety recommendation in case of the railway accident happened on the 8th March 2019, between the railway stations Telciu and Coșbuc and, in accordance with the findings resulted from these checkings, shall ask the infrastructure manager to take the required safety measures.
Preamble recommendation no.3
The investigation commission found out that, the railway undertaking identified, but did not efficiently manage the risks associated to the danger generated by the non-identification of all failures, of the parts worn out or of the shortages at wagons. If the railway undertaking had been applied also other safety measures for keeping under control these risks, it could have prevented keeping in operation the wagons with failures.
Safety recommendation no.3
ASFR shall assure that the railway undertaking Tim Rail Cargo SRL will re-assess the risks associated to the danger generated by the non-identification of all failures, of the parts worn out or of the shortages at wagons and it will establish viable safety measures for keeping under control these risks.
Preamble recommendation no.4
The railway undertaking did not identify and assess the risks associated to the danger generated by the use for the transport of slab billets (steel half-finished – round bars) some wagons with metallic floors, not with wooden ones, as it is stipulated in UIC regulations. If the railway undertaking had been assessed these risks, it would have been able to avoid the use of some wagons unsuitable for the transports of this type of good.
Safety recommendation no.4
ASFR shall assure that the railway undertaking Tim Rail Cargo SRL will assess the risks associated to the danger generated by the use of some improper wagons for the transport of some type of good and will establish the safety measures for keeping under control these risks**.**

3.4.26. The railway accident happened on the 22nd September 2020, in the railway county București, track section Chiajna – Videle (electrified double-track line), between Grădinari and Vadu Lat railway stations, on the track I, km 34+700, the locomotive DHC 746, hauling the freight train no.34304-1 (got by the railway undertaking SC Constantin Grup SRL), burst into flames.
The investigation report was completed on the 01.09.2021.

Identified factor
Causal factors - increase of the current on the circuit for battery charging over the amperage of the operating current and excessive overheating of the whole circuit of the respective battery charging, following the failure of RAT, by blocking the contact sections, electric arcs or cuts of the resistances, it led to the overload of the dynastarter working like direct current generator and overheating of the batteries;
Contributing factors - inobservance of the cycle of periodical inspections at the locomotive;
Systemic factors

- ineffective management of the risks associated to dangers represented by the lack of planned inspections at the locomotives and carrying out of the duty on the locomotives with the inspections exceeded;
- schedule and performance of all planned inspections, against those regulated by the norms in force, so decreasing the level of works within the technological process of inspections.

Measures taken after the accident

The railway undertaking established like safety objective for the locomotive maintenance in 2021, aiming the decrease of the cases of fires in the locomotive, namely: - Working out of the program of planned inspections, according to the Table 3.1 „Norms for the performance of planned inspections and repairs at motorised railway vehicles" from the RAILWAY NORM NF 67-006:2011 „ 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 - OMTI no. 315 from the 4th May 2011, amended by OMTI no.1359/30.08.2012.

This objective is reached by programming the technical inspections at the locomotives and ensuring permanently the interface with the Compartment for the locomotive operation. The Compartment for the locomotive operation and the Department for the current maintenance of the locomotives are responsible for the objective achievement.

Safety recommendations

Following the investigation, the investigation commission established that this accident happened because of:

- increase of the current in the circuit for battery charging over the amperage of the operating current and excessive overheating of the whole circuit of the respective battery charging, following the failure of RAT, by blocking the contact sections, electric arcs or cuts of the resistances it led to the overload of the dynastarter working like direct current generator and overheating of the batteries
- inobservance of the cycle of periodical repairs at the locomotive;

The investigation commission found that the railway undertaking identified but did not efficiently manage the risks associated to the dangers represented by „Lack of inspections at the locomotives when they are put into service or along the route" and „Carrying out the duty on the locomotives with the planned inspections and repairs exceeded", the safety measures viable for the decrease of these risks not being adopted.

The investigation commission found also that the railway undertaking did not identify and assess the risks associated to the dangers represented by the schedule and performance of other types of planned inspections, against those regulated by the norms in force and did not establish safety measures viable for keeping them under control.

Considering these above mentioned, in order to prevent the occurrence of some future accidents and taking into account the lessons learnt from this accident, according to the provisions of art.26, paragraph (2) of the Emergency Government Decision no.73/2019 for the railway safety, the investigation commission considers timely to issue the *next safety recommendations*, addressed to Romanian Railway Safety Authority – ASFR- ASFR shall assure that the railway undertaking getting the rolling stock and being also provider of repairs and inspections for its own rolling stock, will identify and fill in „The list for the risk identification" with the risks associated to the dangers represented by „Schedule and performance of all types of planned inspections, instead those regulated by the norms in force", will re-assess them and establish the safety measures viable for keeping under control these risks.

3.4.27. The railway incident happened on the 23rd September 2020, in the railway county Craiova, in Gura Motrului railway station, on the branch line R2, km 291+010, in the running of freight train no.20914, got by the railway undertaking SC Cargo Trans Vagon SA, consisting in the passing of the branch line exit signal YRT on danger, it was on "STOP without pass the signal in stop position! *Day and night* – a red position to the train.". After passing by the signal, the train

continued to run and entered the dead end siding track, then the first bogie of the locomotive derailed in the running direction.
The investigation report was completed on the 13th September 2021.

Causes and contributing factors

Direct cause - the incident was generated by the improper effect of the braking measures taken during the train stop operation on the sloping track section, in the next conditions,

Contributing factors

- non operation of the compressor converter switch on close after passing by the neutral section;
- not following of the indications given by the equipment for the locomotive control type ICOL regarding the working of the compressor;
- not following of air pressures in the general pipe and the main tank of the locomotive.

Underlying causes

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

- art.59-(4) from the Regulation of railway technical operation no.002/2001, by which it is prohibited the passing of a signal in stop position;
- art.23 paragraph (2) from the Signalling Regulation no.004/2006, regarding the position of branch line exit signal YRT;
- art.9, paragraph (1), letter o) from Instructions for the activity of locomotive crew no.201/2007, regarding the performance of operations stipulated by the specific instructions for the operation of the information systems and for the traffic safety put into the locomotives;
- art.127, point f from Instructions for the activity of locomotive crew no.201/2007, regarding the watching of the measuring devices, indicators, displays equipping the locomotive, in accordance with the operation regulation specific to each type;
- art.79-(1) from the Hauling and braking regulation no.006/2005, letter a, according which the driver had to watch the pressure from the main tank of the locomotive and from the general pipe, so it does not decrease under 7 bar, respectively 5 bar;
- art.79-(1), from the Hauling and braking regulation no.006/2005, letter c, according which the driver had to survey the working of the compressor.

Root causes - none.

Additional remarks

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

- inobservance of the provisions from DRIVER GUIDE FOR THE LOCOMOTIVE OPERATION/1978, art.47, point 1 regarding the compulsoriness of the locomotive crew to switch off the circuit breaker when the locomotive ran on a neutral section;
- inobservance of the provisions from DRIVER GUIDE FOR THE LOCOMOTIVE OPERATION/1978, art.47, point 2, letter a) regarding the compulsoriness of the locomotive crew to switch on the circuit breaker after the locomotive ran pass the neutral section and the connection of the additional services (in this case the ventilation of the traction engines and the converter main air compressor).

Measures taken

For the improvement of the training within the staff courses, one proceeded to the awareness by the staff with responsibilities in the traffic safety, in order to get a better understanding of their role in the watching of the indications given by the control installations and measuring devices regarding the working of the air and braking installations of the locomotive.

Safety recommendations

During the investigation, the commission found that the incident occurrence was generated by a punctual error of the driver, because he did not pay attention, it leading to the complete inobservance of the instruction regulations.
Considering the measures taken up the investigation completion, the commission considered that there is no need to issue safety recommendations.

3.4.28. The railway accident happened on the 8th October 2020, in the railway county Timișoara, from the track section Simeria - Livezeni (electrified double-track line), on the direct line III from the railway station Bănița, consisted in a fire at the locomotive EA 647, hauling the freight train no.90478 (got by the railway undertaking SC VEST TRANS RAIL SA).
The investigation report was completed on the 7th October 2021.

Identified factors
Causal factor
Overheating of the power supply cables from the electric traction engine - MET 6 because the existence of some cracks/breakages in the coupling sleeves of the power supply cables from MET 6;
Contributing factors:
1. lack of *measurement of ohmic resistance of the windings from MET*, prescribed in the *Technical specification overhaul RG/2012*, during the overhaul RG since 2016;
2. increase of the current in the MET of the locomotive EA 647, hauling the freight train no. 90478 with a tonnage of 949 tons, consisting in *empty wagons of same type*, on the track section Pui-Bănița, with a resistance characteristic of a track section 26 daN/t, provided that in the *Working Timetable Timișoara*:
- it was not established the maximum tonnage of a freight train hauled with the locomotive 060-EA and consisting in *empty wagons of same type* for the track section Pui-Bănița;
- it was established a maximum tonnage of 700 t for the trains with empty wagons, different types, mixed, hauled with a single locomotive 060-EA, for the track section Pui-Bănița;
- it was established a tonnage upon experience of 1000 t for a train with wagons of different types, mixed *(bruto economic)*, for the track section Pui-Bănița;

Systemic factors
1. lacks and ambiguities into the *Working Timetable Timișoara*, that is:
- lack in the *Working Timetable Timișoara* of some stipulations that define the equalization/assimilation of the train categories that are not established in the *Working Timetable;*
- use of the phrase *bruto economic* without define it*;*
- writing down in the footnotes the text marked with the symbol „^", at the end of Annex I of the *Working Timetable Timișoara*, did not ensure the conditions for the easy understanding and use of the information;

2. provisions of the Procedure *PO SMS 0-4.19* within the SMS of the railway public infrastructure administrator - CNCFR did not ensure the condition that the safety information from the *Working Timetable Timișoara* shall be accurate, complete, coherent and easy understandable;
3. the railway undertaking VTR did not assign to its own staff the duties so shall ensure that all the trains, requested for schedule, meet with the provisions from the *Working Timetable;*
Additional remarks
regarding the activity of fight against the fires into the railway undertaking VTR, regulated by NP-073-02
Within the norms for the electric locomotive maintenance, it is indicated the legislation for the fight against the fires, applicable to the locomotives, that is the norm *NP-073-02*, as resulted from the point 2.2 of the railway technical norm *NTF 67-003:2008*, and at the art. 3 letter b) from the *NP-073-02* is stipulated that the norm provisions are applicable to operation, maintenance and repair of the transport means.
In chapter 9 of *NP-073-02* there are stipulated, for the transport means, the regulations for:
- identification of the fire risk;
- assessment of the fire risks;
- control of the fire risks.

The investigation commission found out, upon the documents received, that VTR did not implemented for the electric locomotives, the provisions of NP-073-02 for *the identification of the fire risks, assessment of fire risks and control of fire risks*.
The investigation commission considers that the performance by VTR of the activities for *the identification of the fire risks, assessment of fire risks and control of fire risks* could have led to the identification by VTR or some measures that had be written down in the own plan of intervention, for the fight against fires.
regarding the activity of fight against the fires, regulated by the Convention AII/2010
CNCFR and VTR concluded the *Convention AII/2010,* in order to meet with the requirements of art. 10 paragraph (2) of *Law 307/2006.*
At point 2.1. of *Convention AII/2010* it is stipulated that „each signatory has to ensure the compliance with the legal regulations for the fight against the fires, regarding the activity of the own staff, without being in no way possible the transfer of the responsibilities to another party. ..... In case of appearance any new risk factors or dangers, the signatories shall notify each other operatively for the setting and achievement of the additional required security measures."
At point 2.2.8 of the *Convention AII/2010* it is stipulated that CFR" shall stop the activity in case of appearance of a imminent fire danger"
At point 2.4.8. of *Convention AII/2010* it is stipulated that *„*the railway undertaking -OTF has, in case of fire, to intervene with the own means and, if case, according to the own plan of intervention, for the evacuation of the persons, location and extinguishing of fire, limitation of consequences and the notification of the bodies in charge*."*
Regarding the possible indicators of performance, about speed of earth connection of the contact line by IFTE staff, for the firemen intervention, the investigation commission found out that these are not mentioned at point 2.2.8. of *Convention AII/2010*
Regarding the *own intervention plan of VTR* indicated at point 2.4.8 of *Convention AII/2010,* the investigation commission found out that VTR did not get an *own intervention plan* that shall cover the fires on the line section Pui-Bănița.
Upon the data gets by the investigation commission, it appears that the obligations of signatories of the *Convenț*tion *AII/2010* were met with.
regarding the management of the fire interface risks by VTR.
The occurrence of a fire into the locomotive EA 647 was a risk factor inside the railway system managed by VTR and the dangers had be controlled by VTR SMS, because the railway administrator and the railway undertaking cover the safety risks in accordance with the risks assessment that result from their activity, according to the provisions of art.9 paragraph (4) of the *Emergency Government Decision 73/2019*.
But the appearance of a fire on the lines got by CNCFR and the fact that it could be necessary the intervention of CNCFR staff, had the characteristics of an interface risk for VTR.
The actors involved have to cooperate for the joint identification and management of dangers and afferent safety measures that have to be applied to these interfaces, according to the provisions from point 1.2.1 of the Annex 1 at the *Regulation EU 402/2013.*
In these cases, if an actor identifies the need to apply some safety measure that it cannot apply by itself, it transfers the management of the danger afferent to another actor, after getting its agreement, according to the mentions from point 1.2.2 of the Annex 1 at *Regulation EU 402/2013.*
So, the afferent dangers and safety requirements, that cannot be controlled by a single actor, are notified to another relevant actor, in order to find together a right solution. The dangers registered into the record of the actor that transfer them, are considered to be controlled only if another actor makes the assessment of the risks associated to these dangers and if the solution is agreed by all the parties involved, according to point 4.2 from the Annex 1 at the *Regulation EU 402/2013.*
Upon the documents submitted to the investigation commission, it appears that VTR *had not identified the danger of delayed intervention at the locomotive fire happened at the contact line*, like manager of the railway system involved in the incident occurrence. Also, VTR did not notify CNCFR so it shall take the safety measures for the compliance with the safety requirements

linked to the risks afferent to the *danger of delayed intervention at the locomotive fire happened at the contact line*.

The investigation commission found out, upon the documents received, that VTR did not identify and assess the interface risks and dangers, regarding the deterioration of the fire consequences happened in the railway vehicles, following delayed earth connection of the contact line by IFTE staff, for the firemen intervention.

As for the point 2.1 of *Convention AII/2010,* the investigation commission found out, upon the documents received, that CNCFR was not notified about the interface dangers, regarding the exacerbation of the consequences of fires into the railway vehicles, following the delayed earth connection of the contact wire by IFTE staff, for the firemen intervention, because VTR had not identified those dangers and associated risks.

regarding the implementation by VTR of the plans of action, warning and information in emergency situation, agreed with the public competent authorities.

According to the provisions of point 9 paragraph (3) letter j) from the Emergency Government Decision *73/2019,* the railway undertaking SMS involves ensuring some action plans, warning systems and information for emergency situations, agreed with the public competent authorities.

According to the provisions of point 5.5.1. from *Regulation 762/2018*, the railway undertaking identifies the emergency situations and the connection measures that have to be timely taken for being managed and to establish the normal operation conditions in accordance with the *Regulation (EU) 2015/995*.

According provisions point 5.5.2 letter (b) from the Annex I at the *Regulation 762/2018*, the emergency services are supplied with all necessary information, both in good time, for preparing their interventions, and when the emergency happened.

Therewith, it is stipulated that the railway undertaking identifies writes down the roles and responsibilities of all the parties, in accordance with the *Regulation (EU) 2015/995*.

At point 5.5.4. from the Annex I at the *Regulation 762/2018,* it is stipulated that the railway undertaking gets plans of action, warning and information in emergency situation.

Also, at point 5.5.6, it is stipulated that the emergency mechanisms are tested periodically, in cooperation with other interested parties and updated if necessary.

Upon the information got by the investigation commission, it appears that, regarding the incident happened on the line section Pui-Bănița, VTR did not get an action plan agreed by the public competent authorities, did not supply to the emergency services the information in good time, so these be able to prepare their interventions, and did to periodically test the emergency mechanisms in cooperation with other interested parties.

regarding the activities for the management of the emergency situations, stipulated by EU Decision 757/2012

According to the dispositions of point 4.2.3.7 from the *Decision EU 757/2012*, applicable when the accident happened, CNCFR had the obligation to establish, publish and submit the right measures for the management of the emergency situations.

From the documents submitted to the investigation commission, it appears that CNCFR published the documents that contain measures for the management of the emergency situations.

regarding the compliance of the procedures from CNCFR SMS with the requirements of the criteria codes R1, R2, R3, R4, R5 și R7 of the Annex II at Regulation EU no.1169/2010

For the compliance with the requirements of the criterium code R1 of the Annex II at the *Regulation EU no.1169/2010* and with the afferent requirements, for a case of fire into a railway vehicle from the composition of a running train, on an electrified line, CNCF stated that these are met with by the procedure *PO SMS 0-4.44*

The investigation commission considers that the procedure *PO SMS 0-4.44* did not meet with the criterium code R1, because the procedure did not distinctly and explicitly identify the fire happened into railway vehicles, like an emergency situation that needs a specific approach.

In order to meet with the requirements of the criterium code R2 of the Annex II at the *Regulation EU no.1169/2010* and with the afferent requirements, for a case of fire into a railway vehicle in the composition of a running train, on an electrified line, CNCF stated that these are met with by the procedure *PO SMS 0-4.45*

The investigation commission considers that the procedure *PO SMS 0-4.45* does not meet with the requirements of the criterium code R2, because the document did not contain explicitly provisions according which the emergency services are supplied with all the necessary information, *in good time*, *so be able to prepare the interventions*.

For the compliance with the requirements of the criteria codes R3, R4, R5 and R7 of the Annex II at the *Regulation EU no.1169/2010* and with the afferent requirements, for the case of a fire into a railway vehicle from the composition of a running train, on an electrified line, CNCF stated that these are met with by the document *Uniform management of the participants/2007*.

The investigation commission analyzed the document above mentioned and reached a series of conclusions:

- the requirement code R4 is not met with, because the document did not contain plans of action, warming systems and information for IFTE staff for the earth connection of the contact line and operative travel of the intervention gangs and the earth connection of the contact line;
- the requirement code R5 is not met with, because the document does not contain provisions that present how the resources and means were allocated and how the training needs were identified;
- the requirement code R7 is not met with, because the document does not contain procedures for testing the emergency plans in cooperation with other parties, for training the staff, for testing the procedures, for the identification of the weaknesses and for checking how the emergency situations are managed.

In the *Uniform management of the participants/2007*, there are no separate/distinct mentions for fires, and for the railway infrastructure administrator CNCFR, at the intervention stage is mentioned: *„with own specialized staff, one shall act for cutting the power supply of the contact line and its short-circuit by earth connection, the completion of this action being notified to the intervention manager..."*. We mention that CNCFR has no specialized staff to perform these operations, and SC „Electrificare CFR" SA (whose staff is the single one authorized to do it), although it was set up in 2004, it did not sign the document *Uniform management of the participants/2007*.

Because the *Uniform management of the participants/2007* was been drafted 3 years before the coming into force of the *Regulation EU no.1169/2010*, it could not meet with all the requirements of *that Regulation*.

conclusions regarding the earth connection of the contact line

As for this accident, between notification of Department 112 and the beginning of the water intervention of the firemen, there were 2 hours. It happened in the conditions where, between the arrival of the firemen on site and the arrival of IFTE intervention gang for earth connection of the contact line, there were 1 hour and 25 minutes.

It happened in the conditions where:

- DEF Deva was notified about the incident, 18 minutes after the notification of Department 112;
- the tower wagon DP LC2 waited 43 minutes for leaving the depot to the railway station Petroșani, waiting for M (movement) and IFTE staff, that had to ensure the tower wagon running to the railway station Petroșani;

According to the instructions specific to the railway system, branch IFTE, until earth connection of the contact line, the actions for the fire location shall be made only with fire extinguishers with CO_2 or with powder and CO_2 at the fire basis. It did not happen in the investigated case.

We mention that similar situations were found out in some cases of fires into the locomotives on the line section Merișor-Bănița and the military firemen had to wait the arrival of a tower wagon for earth connection of the contact line, the consequence being almost complete burning of the locomotives (investigation reports can be seen on www.agifer.ro)

After the railway accident in an area with contact line, the victims or the rescuers being at the accident site can be put in danger because the position of vehicles in the area of contact line influence, or the firemen can be put in danger during the extinguishing action. According to the legal provisions, it is compulsory to cut the power supply of the contact line and the earth connection of the contact line by IFTE intervention gangs, in order avoid the jeopardizing of the rescuers. So, before the rescue services or the fire extinguishing services shall intervene at the

accidents happened in the area of the contact line, there are necessary the notification of IFTE staff for cutting the power supply of the contact line and for the operative travel of the intervention gangs, and earth connection of the contact line. The earth connection of the contact line is made by the authorized staff of the electric subunits.

From the analysis of the investigation commission results that the very high time between the fire notification at Department 112 and until the beginning of the extinguishing, was favoured by the cumulation of some factors, as follows:

- the notification flow for SC Electrificare, is far from the fast circuit of emergency notification 112, it growing up the reaction times of IFTE intervention gangs. Inclusion of SC Electrificare in the fast circuits of notification should make shorter the intervention times of IFTE gangs;
- the emergency intervention of IFTE gangs is made with tower wagons, without no difference against the situation of usual repairs at contact line in this way, depends on the existence of authorized staff for the tower wagon driving and M authorized staff for the performance of shunting and railway traffic. Especially for the emergency situations, the intervention of IFTE gangs should be made with fast auto intervention mean, that have exclusively staff and minimal endowment necessary for earth connection of the contact line, that should allow the urging of the intervention in emergency situations;
- in the areas where there were repeated fires, one did not adopt *specialized intervention procedures with local geographic specific*, regarding the urging of the transmission of information and the intervention at the train fires. Adoption and testing some *specialized procedures with local geographic specific* could reduce the intervention times in emergency situations.

Safety recommendations

Regarding the information from the *Working Timetable Timișoara,* necessary for the selection/ equalization of the maximum tonnages, the investigation commission found out that these had shortages and ambiguities. So, the criterium code P.1 from the Annex II of the *Regulation 1169/2010* was not met with, so the pertinent information shall be accurate, complete, coherent and easy understandable. This issue was also approached by AGIFER within the *Investigation Report* for the accident happened on 25th January 2020, in the railway county Timișoara, between the railway stations Merișor and Bănița, consisting in a fire into the electric locomotive EA-1012. In the above mentioned investigation report, one issued the *Safety recommendation to Romanian Railway Safety Authority - ASFR, to analyze with CNCFR and the railway undertaking how to establish (calculation and experiment) and record the information about the train tonnages into the Working Timetables, without withdraw from this analysis the possibility of updating the national framework of regulation or of implementing some procedures within the SMS al CNCFR and railway undertaking.*

Because a safety recommendation was already issued in this respect, the investigation commission considers unnecessary to issue another safety recommendation, with the same subject.

Preamble of safety recommendation no.1

Regarding the intervention times for earth connection of the contact line, the investigation commission found out, that in this case, as well as in other investigated ones, repeatedly, these times were very high, although the provisions from the contract concluded between CNCFR and SC Electrificare were met with, but the firemen intervention delayed. The emergency intervention of IFTE gangs is made with the tower wagon, without no difference against the situation of the current interventions for the contact line repair. The investigation revealed that the circuit for the notification of IFTE gangs could be improved and that the intervention times of IFTE gangs could be improved if these intervened in the critical points, without the travelling mean be limited to the tower wagon.

For the decrease of these intervention times, in order to minimize the consequences of the future fires, in accordance with the provisions of art.26, paragraph (2) from *Emergency Government*

Ordinance no.73/2019 for railway safety, the investigation commission issues the next recommendation:

Safety recommendation no.1

ASFR shall ensure that CNCFR, together with Electrificare CFR and, if case, with the railway undertakings, will analyze how to intervene for earth connection of the contact line, for the identification of some ways of reducing the times necessary for the performance of these operations.

Preamble of safety recommendation no.2

During the investigation, one found that the rules and procedures that the staff of the railway undertaking VTR has to meet with, in order to ensure that the trains requested for schedule, comply with the provisions from the *Working Timetable*, were not established and known by the relevant staff. It was allowing that the train schedule shall be made without the relevant staff check the conformity of the trains scheduled with all provisions of *Working Timetable.*

Considering these above mentioned, in accordance with the provisions of art.26, paragraph (2) from the *Emergency Government Decision no.73/2019* for the railway safety, the investigation commission issued the next recommendation:

Safety recommendation no.2

ASFR shall ensure that the railway undertaking VTR will re-assess how the train schedule is managed, for the assignment, to its own staff, of the duties that shall ensure that the trains requested for schedule correspond to all the provisions from *Working Timetable;*

3.4.29. The railway incident happened on 10th October 2020, in the railway county Timișoara, in the railway station Ilia, consisted in the passing on danger the exit signal XII without any position, by the freight train no.71701 (hauled with the locomotive ED-019), got by the railway freight undertaking SNTFM „ CFR Marfă".

The investigation report was completed on the 14th May 2021.

Causes and contributing factors

Direct cause of the incident is a a human error of the locomotive crew, consisting in the wrong perception of the operation environment, it leading to the delay in taking the measures for the safety stop of the train.

Contributing factors:

1. Lack of communication between the driver and the movements inspector, following the technological restriction imposed by the equipment out of order, radio equipment from the locomotive;
2. Lack of position of „red" at the exit signal XII, following the failure at its electric installation;
3. Improper visibility conditions during the night, cloudy sky, being a dark part of the railway station;
4. Improper working of the installation for the automatic control of the train speed and autostop (track magnet 1000/2000Hz), afferent to exit signal XII.

Underlying causes of the incident is the driver did not apply all the knowledge got in the training process – and he broke the provisions of art.125 (5) and art.127 from the practice codes, part of the Safety Management System of the railway freight undertaking SNTFM „ CFR Marfă" SA, Instructions for the activity of locomotive crew" no. 201/2007.

Root causes - None.

Safety recommendations

Considering the direct and underlying causes, the underlying cause being a deviation from the practice codes, used for keeping under control the risks associated to the operation dangers, the nonconformity is not generated by the inobservance of SMS requirements, the investigation commission considers that it is not necessary to issue safety recommendations that shall lead to Romanian railway safety improvement.

3.4.30. The railway accident happened on the 16th October 2020, in the railway county Craiova, track section Băbeni - Alunu (not-electrified single-track line, only for freight transport), at the

entrance in the railway station Berbești, in the running of freight train no.23680 (got by the railway undertaking SNTFM „CFR Marfă" SA), the first bogie of the 10th wagon of the train derailed.
The investigation report was completed on the 30th September 2021.

Factors identified

Causal factor -Existence of a group of consecutives normal wooden sleepers improper, at the derailment site, those sleepers were not ensured the fastening of the rail and allowed the radial movement of the unit rail-metallic plate to the increase of the gauge value, under the dynamic action of the rolling stock.

Contributing factors - None.

Systemic factors

1. Lack of management of the risks associated to the danger generated by the keeping in operation, within the curve with small radius, the improper normal wooden sleepers in turn;
2. Exceeding of the deadlines, stipulated by the applicable legislation, for the performance of the line repairs at the accident site;
3. Insufficient staff for the performance of the line repair and maintenance;
4. Lack of normal wooden sleepers in stock, necessary for the current maintenance of the line.

Additional remarks

The last measurement with the testing and recording car before the accident was made von the 31st March 2020. Along the kilometre area where the accident happened (from km 36+0 to km 37+0) there were found 6 failures level 4 (2 V_4, 2 J_4, 1 C_4 and 1 N_4) and another one of level 4-5 (V_{4-5}, close be to the derailment site, km 36+560). Four of these failures, including that situated close to point „0", were removed after the instruction deadline of 24 hours (stipulated in chapter 6, point 6.7 of *Instruction for the use of the testing and recording cars no. 329/1995*).

Safety recommendations

The railway accident, happened on the 16th October 2020, between the entry signal, to the railway station Alunu, and the switch no.2 of the railway station Berbești, was generated by the improper technical condition of the railway infrastructure.
During the investigation, one found that the improper technical condition of the track was generated by the lack of repairs and by the unsuitable maintenance, that were not performed in accordance with the provisions of the practice codes (reference/associated documents of CNCF SMS procedures).
The investigation commission found that CNCF identified but did not efficiently manage the risks generated by the lack of line repairs and maintenance, in order to dispose consequently the safety measures viable for the risk decrease.
Considering the similar railway events, happened between the years 2019÷2020 in the railway counties Craiova and Timișoara, presented in the chapter 4.e „*Previous similar accidents and incidents"* and taking into account that there were issued safety recommendations in this respect (being analyzed by ASFR), the commission considers unnecessary the issuing of other similar recommendations.

3.4.31. Railway accident happened on the 17th October 2020, in the railway county Craiova, track section Videle – Roșiori Nord (electrified double-track line), on the line 1of the railway station Atârnați (km 92+565), in the running of freight train no.21153, got by the railway undertaking SNTFM„CFR Marfă" SA, consisted in the derailment of the first bogie of the 31st of the train, derailed in the running direction.
The investigation report was completed on the 14th October 2021.

Causal factors

1. Non-uniform distribution of the load of the wagon no.81536652366-1, into those 4 constructive parts of it, leading to the load transfer of the wheel no.2, guiding wheel of the wagon;
2. One did not check how the staff in charge with loading duties made the loading of the wagon no.81536652366-1.

Contributing factors

1. Exceeding of the tolerances, accepted for the track cross level, at the accident site, resulting in the amplifying of the load transfer of the wagon guiding wheel;
2. Breakage, in dynamic conditions, of the support from the lower side bearer, afferent to the wheels 5-7, of the wagon no.81536652366-1, that amplified the load transfer of the wheel no.2, the guiding wheel of the wagon

Systemic factors - None.

Safety recommendations

The derailment of a bogie (first one in the running direction) of the wagon no.81536652366-1 happened mainly following the technical and loading non-conformities.

The commission analyzed *„The sheet of measurements for the risk prevention SMS" code F 432-SMS-2* (issued by SNTFM) afferent to the technological process „*Reception of the empty/loaded wagons from the customers*" and found out that „*failure in checking the conditions imposed by "Instructions for the technical inspection and maintenance of wagons in operation, art.6, paragraph (2), letter c and table no.6, point 21"* and by *"Directive for Loading (Annex II RIV)"* is identified like risk of frequency *unlikely*, having a severity level *critical*, quantified like *tolerable* risk. The safety measure identified in this case, for keeping under control the risk being *keeping the professional competences and permanent checking of the regulations application (hierarchical control)*. This measure did not achieve the proposed goal, being put in operation a wagon irregularly loaded in those 4 compartments, over the accepted tolerances.

Because for a similar accident (that one happened between the railway stations Berbești and Popești, on the 5th August 2020) a safety recommendation was disposed (recommendation in analysis process of Romanian Railway Safety Authority - ASFR), the commission does not consider timely to issue another similar recommendation.

The wagon had also accidental technical problems (breakage in dynamic conditions of the support from the lower side bearer afferent to the wheels 5-7 and its movement) that contributed at the accident occurrence and that could not be found out in operation, the commission considering too unnecessary the issuing of a recommendation in this respect.

The investigation commission found out that the management of the central and regional infrastructure administrator did not completely identify and did not manage properly the risks generated by the lack of maintenance and monitoring of the lines (in this case, the cause of the derailment risk of the railway vehicles in running being the keeping of a cross level of the track over the tolerances accepted), in order to be able to dispose consequently viable solutions and measures for keeping under control the danger generated by it. So, in „*Register of risks – synoptic table*" of the railway county Craiova, last edition, this issue is not stipulated, not being consequently taken all the measures imposing. Because this nonconformity existed also in case of other accidents (Golești – Bradu de Sus from the 13th December 2017 or Iablanița, line 3, on the 30th August 2019), for what safety recommendations were issued, it is considered that it is unnecessary the issuing of other similar recommendations.

3.4.32. The railway incident happened on the 22nd October 2020, in the railway county Iași, in the running of freight train no.50476, got by the railway undertaking SC Unicom Tranzit SA, consisted in the hit of some CED installation, between Berchișești – Câmpulung Moldovenesc.
The investigation report was completed on the 27th July 2021.

Causes and contributing factors

The direct cause of the incident was the taking down of the elements for the good ensuring and their leaving deliberately in suspended position, intentionally, out of structure clearance, by not-identified persons, that intervened on these subunits of the wagons

Contributing factors - None.

Underlying causes - None.

Root causes - None.

Additional remarks

Following the conclusions above mentioned, the investigations commission re-classified this incident according to art.10 from the *Investigation Regulation* (*" Acts of thirds, individuals or legal persons, that endangered the railway safety, that led to the interruptions of the railway transport, destruction and/theft of parts or material, constituents of the railway vehicles")*.

Safety recommendations

Considering the direct cause of the incident, the investigation commission considered that it is necessary to issue some safety recommendation.

3.4.33. The railway accident happened on the 25th October 2020, in the railway county București, track section București – Ciulnița (electrified double-track line), between the railway stations Fundulea and Brănești, track II, km 35+200, in the running of freight train no.80522 (got by the railway undertaking SC Grup Feroviar Român SA), consisted in a fire into the hauling locomotive DA 1523.

The investigation report was completed on the 9th September 2021.

Identified factors

Causal factors - failure at the support roller bearing (blocking), from the part put into the gear of the rotor axis from the electric traction engine no.4, cumulated with the loss of the fastening force of the unit got by shrinking process between the rotor axis and the roller bearing sleeve, at its part put into gear;

Contributing factors - inobservance of the cycle of periodical inspections at the locomotive;

Systemic factors

- lack of some internal mechanisms that prevent the schedule and performance of other types of planned inspections, against those regulated by the norms in force, created the possibility to reduce the level of repairs and inspections carried out;
- risk of fire, due to the leakages of flammable liquids from the locomotive, is not properly managed.

Measures taken after the accident

SC GFR established two safety objectives for the locomotive maintenance system in 2021, that aim the decrease of the fire cases at the locomotives, that is:

1. performance of the program of planned inspections at the locomotives 100%. This objective is ensured by the schedule of the locomotive technical inspections and the permanent ensuring of the interface with the Compartment for the Locomotive Operation. The responsible for this objective achievement are the Compartment for the Locomotive Operation and the Department for the Locomotive Current Maintenance.
2. decrease of fire risk by replacing the force cable with a new one fire resisting at 10 locomotives, these including also the locomotive DA 1523. The responsible for this objective achievement are the Compartment for the Locomotive Operation and the Department for the Locomotive Current Maintenance.

SC GFR SA identified in operation the fact that a series of locomotives had the force cables with diameter of 185 mm, 150 mm, it leading to its replacement with a force cable with diameter 240 mm.

Additional remarks

According to the provisions of Directive (EU) 2016/798, the maintenance system consists in the next functions:

(a) a management function, that supervises and coordinates the maintenance functions stipulated at the letters (b)-(d) and ensures the safety condition of the vehicle in the railway system;

(b) a function of maintenance development, responsible for the management of the documentation regarding the maintenance, including the configuration, upon the design and working data, as well as upon the services and experience got;

(c) a function of management of the whole fleet, that manages the withdrawal of a vehicle, for its maintenance and it re-putting into service after maintenance;
(d) a function of maintenance performance, that ensure the technical maintenance necessary for a vehicle or for some parts of it, including the presentation of the documentation for re-putting in operation.
SC GFR SA, for ensuring these functions, gets the next relevant documents in this case:

- technical specification „Intermediary inspections RI, planned inspections RT, R1, R2, 2R2, R3 and accidental repairs at the diesel-electric locomotives of 1250/2100CP" code G.4.1-II;
- procedure „Planned inspections at the locomotives" code: PO 8.5.4-01;
- contract for services.

The investigation commission found that SC GFR SA does not get information regarding the origin of the electric traction engine series 74495, the date of its manufacturing, when and by who repaired it, and if the life time is exceeded or not
Considering the fact that for carrying out the function of maintenance development, SC GFR SA is responsible for the management of the documentation regarding the maintenance, including the configuration management, upon the design and working data, as well as upon the services and experience got, the investigation commission found that it is not ensured the traceability of the main sub-parts of the locomotive, although this has no relevance for the causes and consequences of the accident occurrence, it could represent a safety critical factor.

Safety recommendations

Following the investigation, the investigation commission established that the accident was possible in the conditions of:

- failure at the roller bearing, part put into gear (blocking of the roller bearing), from the electric traction engine no.4, cumulated with the loss of the fastening force of the unit got by shrinking process between the rotor axis and the roller bearing sleeve, at its part put into gear;
- inobservance of the cycle of periodical inspections at the locomotive;

Existence of oil rests at the electric traction engine no.4 allowed the spreading and increasing of the fire.
Considering the measures disposed by SC GFR SA during the investigation, the investigation commission considered necessary to issue the next safety recommendation that aim the decrease of fire risk, generated by the leakage of flammable liquids:
Safety recommendation
Romanian Railway Safety Authority - ASFR shall ensure that SC GFR SA re-assesses the risks of fire due to the leakages of flammable liquids from the locomotive.

3.4.34. The railway incident happened on the 3rd November 2020, in the railway county Craiova, track section Strehaia – Drobeta Turnu Severin, railway station Gârnița, in the running of freight train no.98473, consisted in the tower wagon - DVMP 977, the train having the entry route on the direct line no. II, with the exit signal XII on stop position and the switch no.4 operated on (-) on the diverging line, consisted in passing on danger the exit signal and entering the dead end siding track where the both axles derailed.
The investigation report was completed on the 21st October 2021.

Causes and contributing factors

Direct cause of the railway incident was a human error appeared into the driving of the tower wagon, consisting in the inobservance of the stop order disposition, sent by the exit signal X II, that was on: „STOP without passing the signal in stop position! *Day and night* – a red light unit to the train".

Contributing factors

- the driver of the tower wagon did not pay attention to the position of the exit signal X II of the railway station Gârnița;
- the brake was not soon applied, the moment of brake application being chosen wrong.

Underlying causes

Inobservance of some provisions from the practice codes as follows:

- art.59-(4), from the Regulation for railway technical operation no.002/2001, that prohibits the passing of the signal in stop position;
- art.23 paragraph (2) from the Signalling Regulation no. 004/2006, regarding the position of the exit signal X II;
- art.92, paragraph (1), letter a) from Instructions for the activity of the locomotive crew no.201/2007, regarding the right to enter the running line;
- art.119, paragraphs (2) and (3), art.121, paragraphs (1) and (2) from Instructions for the activity of the locomotive crew no.201/2007, regarding the obligations of the driver of the train for the entering of the running line;
- art.72, paragraphs (2) and (7) from the Hauling and Braking Regulation no.006/2005, regarding the brake application by the driver;

Root causes

None.

Additional remarks

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

- the tower wagon DVMP 977, up to the incident moment, had 8722 hours of working and 13 years from its putting in operation like new one, so it had the deadline exceeded with 4722 hours of working/9 years for repair type RR and with 722 hours of working/5 ani for overhaul, infringing the point 9 from the table 3.1, sub-chapter 3.1 Norms of time for the performance of the planned inspections and repairs, at the part of railway vehicle, tower wagons and crane, and the sequence of inspections and repairs, chapter 3 NORMS OF TIME FOR THE PERFORMANCE OF PLANNED INSPECTIONS AND REPAIRS AT THE TOWER WAGONS AND CRANE, AND THEIR PERIODICITY (CYCLE) – *Order no. 1141/2019 from the 7th August 2019*.
- when the incident happened, the tower wagon DVMP 977 had the device for the punctual control of speed INDUSI and the device of safety and vigilance DSV out of working (the inductor units and the box INDUSI + DSV dismantled), following some assembling technical problems, appeared in operation, infringing the point 1.15 – IVMS (automatic train protection), *CHAPTER 1: PRESENTATION – EQUIPMENTS from THE MANUAL FOR USE AND MAINTENANCE, VMT 863 C – TOWER WAGON FOR THE CONTACT LINE MAINTENANCE*. Those 12 tower wagons type VMT 863 C, got by SC „ELECTRIFICARE CFR" SA, were imported in 2008, supplier GEISMAR – FRANŢA, not being provided with device for the punctual control of speed INDUSI and device of safety and vigilance DSV. These devices were assembled only at this type of tower wagon by SC SOFTRONIC SA – Craiova, the devices do not now work at any tower wagons, following some assembling technical problems and maintenance ensuring. According to Art.218, *PART IV – RAILWAY VEHICLES, CHAPTER 1 – GENERAL CONDITIONS* from *REGULATION FOR RAILWAY TECHNICAL OPERATION 002/2001*, *„technical conditions and maintenance and operation of the special railway vehicles are established by the technical specification of the manufacturer or specific regulations."*, it is not necessary (compulsory) the assembling of these devices at the tower wagons or special railway vehicles for the track and contact line maintenance.

Measures taken

After the incident and until the investigation report completion, there were performed due repairs at the switch no.4, where there were replaced the special sleepers and new common crossing was assembled.

Safety recommendations

During the investigation, the commission found that the incident was generated by a punctual error of the driver, because he did not pay attention and it led to the infringement of the instruction regulations.

There were not identified any safety recommendations.

3.4.35. The railway incident happened on the 27th November 2020, in the railway county Cluj, in the running of freight train no.71709, got by the railway undertaking SNTFM „CFR Marfă" SA, consisted in the passing the fouling mark and of the exit semaphore of the set of tracks C, respectively passing through the switch no.4 of the railway station Seini.
The investigation report was completed on the 10th November 2021.

Causes, contributing factors
Direct cause of the incident was the late taking of the corresponding braking measures for the train stop, so the fouling mark not be passed in case of exit semaphore of the set of tracks from the railway station Seini.
Contributing factors
- the locomotive crew did the duty, without meeting with the conditions of route reconnoitring;
- the shift manager directed the locomotive crew on a hauling route for what the reconnoitring conditions were not met.

Underlying causes of the incident consisted in the inobservance of the provisions from the instructions in force, respectively:
1. *Instructions for the activity of the locomotive crew no.201/2006, art.7 (6),* regarding the route reconnoitring, after elapsing 6 months in turn, without hauling trains on the respective track section;
2. *Instructions for the activity of the locomotive crew no.201/2006,* ANNEX 3, art.2, letter c2, regarding the fact that the shift manager checks if the staff knows the track section for hauling on which the duty is going to be done;
3. *Regulation for hauling and braking no.006/2005, art.72 (1,2),* regarding the application of a service braking early and with a corresponding decrease of the pressure, so the train stop be made at the established place;
4. *Instructions for the activity of the locomotive crew no.201/2006, art.127 (1),* regarding the watching closely, along the route, the position of the fixed signals;
5. *Signalling Regulation nr.004/2006, art.136, paragraph (1),* regarding the fact that the stabling limit signal limits the area where the railway vehicles can stop on a line, without endangering those that ran on the close line.

Root causes **-** None.
Additional remarks
a) From the diagram of the device for the speed measuring, one can observe that the driver switched off the device INDUSI in the railway station Satu Mare Sud and switched it on again in the railway station Seini, after the incident. The findings made at the locomotive after the incident, showed that the device INDUSI was working normally, the conclusion being that the device was unduly taken out of operation by the driver.
As reference to the automatic braking of the train by the device INDUSI, before running past the stabling limit signal, if the device have worked when the train entered the railway station Seini, the checking should have been identifying these presented below.
The data recorded showed that, when the train ran by the inductor of 1000 Hz of the entry semaphore of the railway station Seini, the train speed was 48-49 km/h, it indicates that the device INDUSI could not automatically brake the train, because the speed was under the control speed V1=50km/h. From construction, the installation scheme of the railway station Seini had not an inductor of 500 Hz at the fouling mark was passed. Because there is not a track inductor of 500 Hz, the device INDUSI of the locomotive should not have been checked the control speed V2=40 km/h and consequently the automatic brake of the train should not have been applied.
Upon these above mentioned, the investigation commission concluded that the incident could not have been prevented by the application of the automatic brake of the train, if the device INDUSI had been working, but this situation is kept like nonconformity.
b) The driver was disciplinary inquired by the employer and the disciplinary fine was applied to hm, the employment contract being closed, before the investigation report being completed.

The shift manager involved was dismissed before the investigation be completed.

Safety recommendations

Considering the factors contributing to the incident occurrence, factors that are based on underlying causes, representing deviations from the practice codes and keeping under control the railway safety risks, without they be generated by deficiencies into the management of the safety management system or into the general regulation framework, the investigation commission did not considered necessary to issue safety recommendations.

3.4.36. The railway accident happened on the 28th December 2020, in the railway county Constanța, noninteroperable track section (managed by CNCF „CFR" SA) Dorobanțu - (Romcim) Medgidia PC2, not-electrified single-track line, km 4+870, in the running of freight train no.89170 (got by the railway undertaking SC Grup Feroviar Român SA), two wagons derailed (the first bogie of the 16th wagon and the second bogie of the17th wagon derailed).

The investigation report was completed on the 22nd December 2021.

Factors identified

Causal factors

- keeping within the track, at the accident site, a group of improper common wooden sleepers, led to the gauge increase, by the movement of the interior rail and fall of the wheel no.7 between the rails;
- combination of these two situations found out at the wagon no.83536651346-2 (exceeding of the limits accepted for operation, the totalized clearance of the side bearer and the unequal distribution of the load) led to the increase of the forces acting the wheel no.7 on the inner rail of the curve.

Contributing factors

- not-ensuring of the optimum conditions for the performance of the technical inspections at the wagons from the train composition, carrying out of the braking tests and checking of the load distribution into the wagon;
- not ensuring of the staff necessary to perform the track repair, maintenance and technical inspection.

Systemic factors

- CNCF has improper procedures for the risk represented by the performance of checking and works at the infrastructure using not enough staff;
- OTF does not get internal regulations to set up procedures for the activities for processing and checking the wagons loaded.

Measures taken after the accident

The railway undertaking GFR SA sent the paper G.12/88/01.02.2020, containing the measures disposed, regarding the checking of the wagon loading at their delivery/reception by/to ROMCIM SA (former CRH CIMENT (ROMÂNIA) SA), in order to keep under control the risk generated by the irregular loading of the wagons, the measures consisting in the re-training of the interested staff and re-processing upon sign, of the regulations in force regarding the checking of the uniform load distribution in the wagons.

Safety recommendations

During the investigation one found out that the improper technical condition of the track was generated by the unsuitable maintenance, that was not run in accordance with the provisions of the practice codes (reference/associated documents of CNCG SMS procedures).

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

Preamble at the safety recommendation no. 1

The investigation commission found out that CNCF identified but did not manage efficiently the risks generated by the lack of line maintenance, in order to be able to dispose monitoring measures for the decrease of these risks.

Safety recommendation no.1

ASFR shall ensure that CNCF „CFR" SA re-assess the risks associated to the danger generated by keeping in operation the improper wooden sleepers within the curves and establishes monitoring measures for keeping under control these risks.

Preamble at the safety recommendation no. 2

The investigation commission found out that CNCF ensured unsuitable human resources against the necessary one, it being generated and caused by the improper line maintenance.

Safety recommendation no.2

ASFR shall ensure that CNCF „CFR" SA re-assesses the risks associate the danger of not ensuring the number of staff necessary for the performance of maintenances according to the practice codes.

Preamble at the safety recommendation no. 3

The investigation commission found out that OTF did not draft, together with CRH, a join regulation for the dispatching-reception the wagons at and from the loading in accordance with the provisions in force.

Safety recommendation no.3

ASFR shall ensure that GFR SA re-assesses the risks associated to the danger generated by the not ensuring of the optimum conditions for checking the distribution of the load in wagons, according to the practice codes and establishes the safety measures necessary for keeping these risks under control.

3.4.37. The railway incident happened on the 18th January 2021, in the railway county Brașov, in the running of freight train no.29652, got by the railway undertaking SC CER Fersped SA, consisted in the passing the fouling mark and the exit semaphore of the set of tracks B, respectively passing through the switch no.3 of Dumbrăvioara railway station.

The investigation report was completed on the 18th February 2021.

Causes, contributing factors

Direct cause of the incident is the late application of brake in relation to the running speed, in order to comply with the positions of fixed signals (the entry and exit semaphores) from the railway station.

Contributing factors:

- the driver did not pay attention during the locomotive driving;
- unsuitable communication, through the radio equipment, between the movements inspector of the railway station Dumbrăvioara and the driver, as reference to the entry/stop conditions in the railway station.

Underlying causes of the incident consisted in the inobservance of some provisions from the instructions in force, respectively:

1. *Regulation for hauling and braking no.006/2005, art.72 (1,2),* regarding the application of the emergency brake early and a pressure decrease corresponding, so the train be stopped at the established site.
2. *Instructions for the activity of locomotive crew no.201/2006, art.127 (1),* regarding the careful watching, along the route, the positions of the fixed signals.
3. *Regulation for the train running and shunting of railway vehicles no.005/2005, art.189 and Instructions for the activity of the locomotive crew no.201/2006, art.136 (1,2),* regarding the communication between the movements inspector and the driver on the entry/stop conditions into the railway station.
4. *Signalling regulation no.004/2006, art.136, paragraph (1),* regarding the fact that the stabling

limit signal limits the track section how far the railway vehicles can stop on a line, without endanger those running on the close line.

Root causes - None.

Additional remarks

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

After stopping the train, the driver, of himself, without having a running order, without having communication, through radio equipment, with the movements, without having portable signals (torch), he moved back the train on a distance of 160 m, against the provisions of Instructions for the activity of locomotive crew no.201/2007 and the *Investigation Regulation.*

Safety recommendations

Considering the factors contributing to the incident occurrence, factors based on the underlying causes, that are deviations from the practice codes and for keeping under control the railway safety risks, without these be generated by the deficiencies within the management of the safety management system or by the general regulation framework, the investigation commission does not consider necessary to issue safety recommendations.

3.4.38. The railway accident happened on the 11th February 2021, in the railway county Craiova, track section Goleşti - Ciumeşti (not-electrified single-track line), in the railway station Goleşti, in the running of the train no.95523 (got by the railway state freight undertaking SNTFM„CFR Marfă" SA) consisted in the derailment of two wagons (al 33rd and 34th ones of the train).

The investigation report was completed on the 21st December 2021.

Identified factors

Causal factor

Keeping a group of consecutives improper special wooden sleepers, at the derailment site, those sleepers did not ensure the fastening of the rail on the metallic plate, allowing the radial movement of the unit rail/check rail – metallic plate, to the direction of the track gauge increase, under the dynamic action of the rolling stock.

Contributing factors -None.

Systemic

1. Lack of a suitable monitoring of the efficiency of the measures established for the risks control, in accordance with the provisions of point A3 from the Annex II of the *Regulation (EU) no.1169/*2010, that realizes and prevents the non-application, by the own staff, of the measures established for keeping under control the risks associated to the danger generated by the keeping in operation (on a switch) of many consecutives improper special wooden sleepers, that had to be replaced urgently (emergency I);
2. Exceeding of the deadlines set up for the performance of the line repairs at the accident site;
3. The minimum stock of materials necessary for the usual maintenance of the switches (special wooden sleepers and switches) was missing.

Safety recommendations

The railway accident happened on the 11th February 2021, on the double diamond crossing no.16/18, got by Goleşti railway station, was generated by the improper technical condition of the railway infrastructure.

During the investigation, there was found that the improper technical condition of the track was generated by the lack of repairs, as well as the improper maintenance, that were not made in accordance with the provisions of the practice codes (CNCF reference/associated documents of SMS procedures).

The investigation commission found that CNCF identified the risks generated by the lack of lines repairs and maintenance, but it did not establish barriers that prevent the non-application, by the own staff, of the measures established for keeping under control these risks.

Applying the measures established in the own procedures of the safety management system, fully, that is the provisions of the practice codes, part of SMS, CNCF could have been able to keep the

technical parameters of the tracks between the limits of the tolerances imposed by the railway safety and, in a such way, could have been able to avoid the railway accident occurrence.
Considering the similar events happened between 2019÷2020 in the railway county Craiova, presented in Chapter 4.e „*Similar previous accidents or incidents"* and seeing that there were issued recommendations in this respect, the commission considers that there is no need for issuing other similar recommendations.

3.4.39. The railway incident happened on the 15th February 2021, in the railway county Galați, in the railway station Comănești, consisted in the hit of the support device for the operation of the switch no.5 (hereinafter referred to as DAM) by the brake slack adjuster type RL2-350 from the axle no.3 of the locomotive EA 028, hauling the passenger train no.1541/1541-2.
The investigation report was completed on the 21st April 2021

Causes and contributing factors
The direct cause of the incident is the detachment of the slack adjuster body RL2-350, afferent to the brake slack adjuster of the axle no.3, from the end threaded joint between the fastening system (ear) and the traction tube, followed by its entrance into „STRUCTURE CLEARANCE FOR THE PARTS OF THE RAILWAY INSTALLATIONS" (Drawing no.4 from Instructions no.328/2008).
Contributing factors
- wear existing, at the fastening of the traction tube into the slank adjuster ear RL2-350, appeared following the working of the brake slank adjuster RL2-350 in vibration conditions, because the locomotive running and under the alternative axial forces for stretch/compression in the braking/braking release process, for a long time, they favoured the detachment of the traction tube from the slank adjuster ear;
- breakage of the ensuring cable.

Underlying cause - inobservance of the provisions from the Railway norm 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 - OMTI no.315/2011, amended by OMTI no.1359/2012, respectively by Order of Minister of Transports no. 1187/2018, regarding keeping in operation the locomotive with the norm of time/km exceeded, for the performance of the planned repairs.
Root cause - non-compliance with the requirements stipulated in the operational procedure PO-0-8.1-15 **„***Scheduling of inspections and repairs at locomotives, multiple units and electric train sets, got by SNTFC "CFR Călători" SA* , that is the requirements from chapter 4.3 – Organization and the scheduling of the planned repairs, point 4.3.2 – Time for the performance of planned repairs is expressed in time units (working months, years) or space units, that are the performance (km run), according to the provisions of OMTI no. 1187/2018 , as well as the requirements of chapter 7 – Flow diagram , part – Repairs, were not met with.
Safety recommendations-None.

3.4.40. The railway incident happened on the 12th March 2021, in the railway county Brașov, on the 12th March 2021, in the running of freight train no.21892 (got by SNTFM „CFR Marfă" SA), in Albești Târnava railway station, consisted in the hit of the inductor of the device INDUSI of the hauling locomotive by a plate for the fastening of the rail, being in the structure clearance.
The investigation report was completed on 19th April 2021.

Causes and contributing factors
Direct cause of the incident is the entrance of a plate, for the rail fastening on the sleepers, into the structure clearance, rested assembled on a rail, stored close to the line no.4 for the running of freight train no.21892.
Contributing factor was the storage of the elements disassembled from the track superstructure, without their selection on types and conditions, close to the line no.4, area that was not a special built store.

Underlying causes consisted in the inobservance of some provisions from the instructions in force, respectively: *Regulation for railway technical operation no.002/2001, art.26 (1)* and *Instruction of norms and tolerances for the track construction and maintenance - lines with standard gauge no.314/1989, art.12, respectively Drawing 1* regarding the prohibition of entrance into the structure clearance of any materials or objects stored along the running line or in station.

Root causes - None**.**

Additional remarks

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

The incident notification, done by the driver, was not in accordance with the provisions from the *Investigation Regulation* by drafting an event report in the railway station Albești Târnava, but by drafting a Note of emergency braking occurred. In this Note, at the motivation of the emergency braking, there was mentioned the presence of a plate into the structure of „the rolling stock", fact that imposed making a finding with the railway station manager or his deputy, it did not happen. The train left the railway station Albești Târnava, without this finding, against the provisions of *Investigation Regulation.*

Safety recommendations

Considering the incident occurrence and the contributing factor, factor based on the underlying causes that are deviations from the practice codes and keeping under control the railway safety risks, without these being generated by deficiencies into the management of the safety management system or by the general regulation framework, the investigation commission did not consider necessary to issue safety recommendations.

3.4.41. The railway incident happened on the 13th March 2021, in the railway county Iași, in the running of freight train no.50406-1, got by the railway undertaking SC Unicom Tranzit SA, consisted in the exceeding of the maximum speed accepted by the running order between Iacobeni –Larion.

The investigation report was completed on the 13th September 2021.

Causes and contributing factors

The direct cause of the incident is the locomotive crew exceeded the train maximum accepted speed, stipulated in the running order.

Contributing factors- None.

Underlying causes of the incident were represented by the inobservance of the provisions „*Instructions for the activity of the locomotive crew no.201/2007*":

Art.125. (1) „*the locomotive crew has to know the timetable of the train hauled and to ensure its running without delay and in safety conditions, meeting strictly the running speeds, the running times, the stops and their long, stipulated in the working timetable or in the timetable drafted when the train was routed*.";

Art.132**. „***When he drives the train, the driver is prohibited:*

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

Root causes - None.

Measures taken

After the incident, the railway undertaking Unicom Tranzit, UTZ issued the Decision of the General Manager no. 310 din 06.08.2021, for the appointment the commission for the re-assessment of the risk analysis in order to identify some additional instruments necessary for keeping under control the circumstance „lack of attention". The commission for the risk assessment establishes for each danger generated by the lack of attention like circumstance (cause) that favours the risk, new instruments for control that decrease the impact and/or the

probability of risk materialization, deadlines for implementation and employees responsible for the implementation of the control methods/ instruments newly identified.
After ending this stage, „Register for the risk evidence" is going to be filled in with control instruments/methods established for each risk.

Safety recommendations

Considering the direct cause of the incident, the investigation commission considered that it is not needed to issue safety recommendations.

3.4.42. The railway incident happened on the 14th March 2021, in the railway county Iași, between Lunca Ilvei and Leșul Ilvei railway stations, track sections Suceava – Ilva Mică, in the running of freight train no.90759 (light locomotive EA 1083) got by the railway undertaking MMV Rail România SA, consisted in the detachment of a suspended part from the locomotive a hit of 21 track inductors.
The investigation report was completed on the 20th July 2021.

Causes and contributing factors

Direct cause of the incident was the entrance into the structure clearance of parts from the railway installations (drawing no.4 from the Instructions no.328) of the vertical damper from the axle no.6 of the locomotive. It was possible following the breakage of the support for fastening the upper ear of the damper and its turning round the support for fastening the lower ear.

Contributing factors:

- appearance and development, in time, of a crack into the support body (from the locomotive body) for the fastening of upper ear of the damper, following the taking over of the loads transmitted from the locomotive body;
- existence of an older crack, that was covered with weld layer, that favoured the appearance of stresses into the support body and its breakage very close to that weld layer.

Underlying causes – none.

Root cause of the incident was keeping in running of motorised rolling stock with a failure that endangered the traffic safety through the fact that at the checking of the technical condition, in order to reach, by maintenance, the general objective regarding the reliability in working of the locomotive EA 1083, in accordance with the Technical Specification ST 061/2007 (periodical inspections at the locomotive LE 5100 kW), one could not observe the appearance of the crack in the upper support for the fastening of the damper.
It was possible, following the missing provision in the Technical Specification 061/2007, like work to be performed, the *checking by visual inspection of their supports for fastening the damper ends*.
According to the Technical Specification ST 061/2007 (figure no.5), chapter 2. *Mechanical and pneumatic part* no.crt.13 *Hydraulic damper* (like part to be inspected), box *Content of works* is mentioned (like works to be performed) only *„Control of lining fastening on bolts. Control of oil losses. Removal by dismantling into specialized workshop".*

Measures taken

Considering:

- similar cases happened on the public railway network (the railway incident happened on the 9th May 2021, at the locomotive EA 829 of the train no.1754, between Buzău and Boboc, sectioning of the upper support for the fastening of the vertical damper of the axle no.1 right);
- the fact that, in the case investigated, the upper support for the fastening of the damper was welded before, it revealing that the sectioning happened in the past;
- the fact that the old crack was on the back part, difficult to be observed during the inspections made outside the locomotive, when it was taken over or during the route at stops over 5 minutes.
- SC MMV Rail România SA, like beneficiary of the contract of services ERI, asked SC Constantin Grup SRL, like render of services, to add to the content of works performed during the inspections type RT, R1 and R2 at the part hydraulic damper, position no.13 from chapter 2 Mechanical and Pneumatic Part, from the Technical Specification ST 061/2007 – Periodical

Inspections at the locomotive LE 5100 kW, with the next wording: Checking, by visual inspection, the technical condition of the supports for the fastening of those two ends of the damper, also the new content will be: "Control of lining fastening on the bolts. Control of the oil losses. Removal by dismantling into a specialized workshop. ***Checking, by visual inspection, the technical condition of the fastening supports at those two ends of the damper."***

Safety recommendations

Considering that the measures taken during the investigation, the investigation commission appreciate that it is not timely to issue safety recommendations.

3.4.43. The railway incident happened on the 12th April 2021, in the railway county București, in the railway station Stănești, consisted in the passing past the exit signal XI by the train no.34153 (light locomotive DA 797).

The investigation report was completed on the 19th May 2021.

Causes and contributing factors

The direct cause is the inobservance of the position of the exit signal XI being in stop position.

Underlying causes

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 positions of fixed and mobile signals.

Root causes-None.

Other findings:

There were observed the provisions of art.35, art.36, art.39 from the Government Decision no.117/2010 for the approval of *Regulation for investigation the accidents and incidents, for development and improvement of Romanian railway and metro safety and* the provisions of Operational Procedure PO SMS 0-4.03 of *CNCF „CFR" S.A (infrastructure manager)* regarding the notification of accidents and incidents happened on railway network.

The locomotive DA 797 ran on the 12th April 2021 with INDUSI device isolated, against the provisions of Instruction for the activity of locomotive crew no.201, approved by Minister Order no.2.229 from the 23rd November 2006.

Safety recommendations -None.

3.4.44. The railway incident happened on the 9th May 2021, in the railway county Galați, track section Buzău - Focșani, consisted in the hit of 6 track inductors, in Buzau railway station and between Buzau and Boboc railway stations, by a hydraulic damper detached and fallen from the locomotive EA829, hauling the passenger train no.1754.

The investigation report was completed on the 8th May 2021.

Causes and contributing factors

Direct cause

The direct cause of the incident was the entrance of the locomotive damper, afferent to the axle no.1, right side in the running direction, into the „structure clearance for the elements of the railway installations" (Drawing no.4 from the Instructions no.328/2008). It was possible following the turning of the damper round the lower support for the fastening, because the breakage of the upper end for the fastening of that.

Contributing factors

The factor contributing to the incident occurrence was the appearance and development, in time, of a crack into the material of the upper support for fastening the damper, following the taking over of the loads sent by the locomotive body.

Underlying causes

Unsuitable application of the Technical Specification ST31/2016, for reaching, by maintenance, the general objective of reliability in the working of the locomotive EA 829, that is at the checking of the technical condition of the upper system for catching and fastening the vertical damper afferent to the axle no.1, right side of the running direction, on the locomotive body, there was not prevented the appearance of a damage.

Root causes - None.
Safety recommendations - None.

3.4.45. The incident happened on the 12th May 2021, in the activities area of „METROREX" SA, in the metro station 1 Mai, in the running of train no.5211, consisted in the hit of a metallic panel fallen from the station ceiling, being into the structure clearance, on the line.
The investigation report was completed on the 11th June 2021.

Causes and contributing factors
Direct cause
The direct cause of the incident was the entrance of the panel into „*the structure clearance of the trains*", following its detachment from the fastening system.
Underlying causes
Inobservance of the provisions from the Instructions 201M/2011, art. 16, letter d. regarding the watching of the line and train route.
Root causes
Lack of some customized/detailed procedures regarding the controls of the suspended ceiling from the public areas.
Measures taken during the investigation
During the investigation, the next measures were taken:
1. It was disposed that, starting with the 12th May 2021, the metallic panels from the metro stations 1 Mai, Grivița, Basarab 1 and Basarab 2 be controlled, respectively additional consolidation of the metallic panels with self-drilling screws
2. By Office circular, it was disposed that, starting with 1st June 2021, the working team Suspended ceilings 1 and 2, from the Section LT 2, the performance of detailed controls at the suspended ceiling, metallic structure and troughs for the collection of the water coming from the infiltrations in the stations, upon a program before established.
Safety recommendations
According to the Instruction no.305/2002 regarding the performance of the inspections at lines, track special installations, tunnels and special constructions, controls of the suspended ceilings, all of these are made visually from the platform. By the visual control, one can not see the quality of fastening of the metallic panels on the suspended ceiling, respectively if it is unfastened.
Romanian Railway Safety Authority – ASFR shall ensure that Metrorex SA drafts a procedure for the control and revision of the suspended ceilings, including the way to perform the control and the specific periodicities, for the types of suspended ceilings.

3.4.46. The railway incident happened on the 17th May 2021, in the railway county Brașov, in Valea Lungă railway station, in the running of freight train no.90939, got by the railway undertaking SC Rail Force SRL, consisted in hit of elements of the railway infrastructure by an open door from a train wagon.
The investigation report was completed on the 7th June 2021.

Causes and contributing factors
Direct cause of the incident was the entrance of the first left door, in the running direction, from the wagon no. 33876735311-7, into „structure clearance for the elements of the railway installations" (Drawing no.4 from the Instructions no.328/2008), following its opening, probable consequence of the action of a person in the last stop station, before the incident occurrence.
Underlying causes - None
Root causes - None**.**
Additional remarks
During the investigation, there were made the next findings on some deficiencies and gaps, without relevance for the conclusions on the accident causes:
According to the documents submitted by the railway undertaking Brașov, one can conclude that when the accident happened, the locomotive crew had the maximum continuous duty exceeded.

Safety recommendations

Considering the findings made and the incident occurrence, the investigation commission did not consider necessary to issue safety recommendations.

3.4.47. The railway incident happened on the7th June 2021, in the railway county Cluj, in the running of freight train no. 50456, got by the railway undertaking SC UNICOM TRANZIT SA, consisted in passing on danger the exit signal X III in stop position (it being on red position) and running through the switch no.6 of the railway station Cuciulat.
The investigation report was completed on the 12th July 2021.

Causes, contributing factors

Direct cause of the incident was the not tracking by the driver of the positions of the exit signal X III, that was on "**STOP without pass the signal in stop position!** *Day and night* – a light red unit to the train." from the railway station Cuciulat and non-application of the brake.

Contributing factors

- not-paying of attention by the driver in the driving process of the locomotive;
- hauling of the locomotive with INDUSI device isolated.

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

1. Regulation for hauling and braking no. 006/2005, art.72 (1,2), regarding the application of emergency brake early and with a decrease of the corresponding pressure, so the train be stopped in the established place.

2. Instructions for the activity of locomotive crew no.201/2007, art.127. (1) During the train hauling, along the route, the locomotive crew has to track carefully:

a) position of the fixed and mobile signals and of the indicators placed in accordance with the specific regulations in force;

g) working way of the installations for the speed control, exiting along the line and into the locomotive.

3. Signalling regulation no. 004/2006,

- art.8 Meaning of based colours used for signalling, in relation to the train running and performance of shuntings is as follows: a. red, that orders stop;
- art. 21 – Light entry signals give the next indications: fig.28 – FREE with the speed established, ATTENTION! The next signal orders stop. Day and night – a light yellow unit to the train.

Root causes - none**.**

Safety recommendations

Considering the causes and factors that led to the incident occurrence, for the prevention of similar incidents, the investigation commission issues the next safety recommendation:

1. Re-assessment of the risk analysis regarding the passing the signals on danger in order to identify additional instruments necessary for keeping under control the circumstance „lack of attention" and of the risk analysis regarding the working of the device INDUSI from the locomotive, including the way this activity is kept under control.

3.4.48. The railway incident happened on the 22nd June 2021, in the railway county Iaşi, between Coşna and Leşul Ilvei railway stations, in the running of passenger train no.1765 (got by railway undertaking SNTFC „CFR Călători" SA), consisted in the detachment of a suspended part of the hauling locomotive EA 546 and hit of 13 track inductors.
The investigation report was completed on the 4th November 2021.

Causes and contributing factors

Direct cause of the incident is the entrance of the vertical damper from the axle no.4 of the locomotive into the structure clearance for the parts the railway installation (drawing no.4 from Instructions no.328). It happened following the detachment of the damper from the upper ear and its turning round the support for its fastening in the lower ear.

The contributing factor of the incident was the appearance and development of some wears, appeared in time, on the thread of the stud bolt for the fastening of the upper ear, pronounced wears of insufficient fastening of the nut.
Underlying causes – none.
Root causes – lack of an operation for the identification of the wear of the thread from the stud bolt for the fastening of the damper on the upper support, that be included into the reference documentation Technical Specification ST31/2016 (periodical inspections at the locomotive LE 5100 kW), drafted by the railway supplier and accepted by the service beneficiary.
It was possible following the lack of provisions in ST31/2016, like work to be performed, of *checking visually the parts for the fastenings of the damper ears into the fastening supports from the locomotive body (upper), respectively from the guard connection (lower)*.
According to the Technical Specification ST31/2016 (figure no.5), chapter 2. *Mechanical and pneumatic part* no .crt.13 *Hydraulic damper* (like subunit to be revised), heading *Content of works* is mentioned (like works to be performed) only *„Control of the lining fixing on bolts. Control of the oil losses. Repair by dismantling into a specialized workshop".*
Measures taken
Considering:
- Similar cases happened on the public railway network:
  - railway incident happened between the railway stations Lunca Ilvei and Leşul Ilvei, in the running of freight train no.90759 – light locomotive EA 1083 (MMV Rail România SA);
  - railway incident happened on the 9th May 2021, at the locomotive EA 829 of the train no.1754 (CFR Călători), between Buzău and Boboc and the railway incident happened on the 14th March 2021, both cases consisted in the breakage of the upper supports for the fastening of the dampers from the axles no.1 and 5 and with consequences for the track installations.
- The fact that, at this case investigated, the stub for the fastening of the upper ear of the damper has traces of deleted thread, following the wears appeared in time, generated by an insufficient fastening of the nut with spring on the thread,

SNTFC „CFR Călători" SA, like beneficiary of the service contract**,** by the special department of the railway county Iaşi, asked the Repair Section Suceava, like subunit of the Locomotive Repair Company „CFR – SCRL Braşov" SA, that got the Conformity Certificate for the Maintenance Functions and that is service render, to add to the content of works to be performed (first line) during the inspections type RT, R1 and R2 at the subunit *hydraulic damper* from the chapter 2 Mechanical part, position no.10 from the Technical Specification ST31/2016 – Periodical inspections at the locomotive LE 5100 kW, with the wording „*of its thread, of the fastening condition of the nut with spring"***,** so the new content will be: Control of the lining fastening on bolts, *of its thread, of the fastening condition of the nut with spring*, oil losses, (repairs in a specialized workshop) and on Ph3- Control of the vertical and horizontal dampers (fixing, oil losses)
Safety recommendations
Considering the measures taken during the investigation, respectively the request of SNTFC „CFR Călători" SA, like entity in charge with the maintenance for the locomotive EA 546, to Locomotive Repair Company „CFR SC RL Braşov" SA, to add at the content of works to be performed within the inspections type RT, R1 and R2 at the subunit *hydraulic damper*, the investigation commission appreciates that it is not timely the issuing of safety recommendations.

3.4.49. The railway incident on the 8th July 2021, in the metro activity „METROREX" SA, in the station Eroilor, consisted in the dispatching of train no.1304 to Politehnica, and not to Grozăveşti as it was stipulated in the working timetable.
The investigation report was completed on the 6th September 2021.

Causes and contributing factors
The direct cause of the incident was the dispatching of the train no.1304 to another direction than that from the working timetable A1344, following a human error in the route making.
Underlying causes

- Infringement in the train driving of art. 16 letters c) and d) from the Instructions for the Instructions for the metro drivers 201M, approved by Order of Minister of Transports and Infrastructure OMTI no.395/201, that is there were not followed the exit route and direction Combined indicator of direction and speed, according to the Working Timetable A1344.
- Inobservance in the tracking of train running of art.19, letter b) from Instructions for metro movements no. 005M, approved by Order of Minister of Transports and Infrastructure no.1620/2012, that is there was not followed on the display/overhead the development of the train running.

Root causes
None.
Safety recommendations
None

3.4.50. The railway incident happened on the 10th July 2021, in the railway county București, in Toporu railway station, consisted in the passing past the exit signal X2 by the freight train no. 20574-1.
The investigation report was completed on the 6th August 2021.

Causes and contributing factors
The direct cause is the inobservance of the position of exit signal X2 from the railway station Toporu indicating stop**.**
Underlying causes
- Inobservance of the maximum continuous duty length for the locomotive against the provisions of Order 256/29.03.2014.
- 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 positions of the fixed and mobile signals.

Root causes - None.
Other findings:
There were met the provisions of art.35, art.36, art.39 of the Government Decision no.117/2010 for the approval of *Regulation for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety and* the provisions of operational procedure PO SMS 0-4.03 of *CNCF „CFR" S.A* regarding the notification of railway accidents and incidents happened on railway infrastructure.
The locomotive DA 992, of the freight train no.20574-1, ran on the 10th July 2021, with the device INDUSI isolated, against the provisions of the Instructions for the activity of the locomotive crew no.201, approved by Order of Minister no. 2.229 from the 23rd November 2006.
When the accident happened, one can consider that the locomotive crew was with the maximum accepted duty exceeded with 3 hours and 10 minutes against the provisions of Minister of Transports' Order no.256/2013. There was found a new journey report on which there is suspicion of issuing and stamping before the date of use.
Safety recommendations - None.

3.4.51. The railway incident happened on the 1st September 2021, in the activity area of „METROREX" SA, main line II, track 2, metro station Piața Romană, consisted in the detachment of a masking sheet and hit of a train current collector, respectively of the half-train set 1306 - car 2 MP1, right side, in the running direction, opposite the contact rail.
The investigation report was completed on the 24th November 2021.

Direct causes and contributing factors
The direct cause of the incident is the detachment of the metallic element (masking sheet) under the metro station platform and its entrance into the train structure clearance.
Contributing factors

The incident occurrence was favoured by the detaching of the metallic sheet elements.
Underlying causes - None.
Root causes - None.
Measures taken during the investigation
The preliminary inquiry commission disposed the checking and analysis of the opportunity to remove the metallic masking elements from the tracks 1 and 2 of the metro station Piața Romană. On the 1st/2nd September 2021, o commission, consisted in the general manager, head of the Department for Approvals, Regulations, Deputy of the Head of Lines and Tunnels 2, as well as working staff from Lines, Tunnels and Management of Station Maintenance, disposed the removal of the metallic masking elements from both platforms of the metro station Romană. On the 1st/2nd September 2021 and on the 2nd/3rd September 2021, all the metallic elements from the platforms afferent to the lines 1 and 2 of the metro station Piața Romană were removed.
The planned measure - Metrorex SA will plan, for the metro station Obor, detailed inspections of the metallic masking elements existing between the platform and line.
Safety recommendations - None.

3.4.52. The railway incident happened on the 8th September 2021, in the railway county Brașov, in Rupea railway station, in the running of freight train no.21844, got by SNTFM „CFR Marfă" SA, consisted in the hit of the cover box from the device DAM and of the rod for the operation of the switch no.6 by the support of the brake shoe holder of the brake rigging from a wagon of the train.
The investigation report was completed on the 28th October 2021.

Causes and contributing factors
Direct cause of the incident is the breakage of the ensuring splint, followed by the fall of the safety clips, it leading to the fall of the bolt from the hanger of the brake shoe holder from the upper side.
Factors contributing to the incident occurrence consisted in the old breakage 60% of the safety stirrup-piece, that was preventing the fall of the triangular axis.
Underlying causes -None.
Root causes - None.
Additional remarks
During the investigation, there were done the next findings on some deficiencies and gaps, without relevance for the conclusions on the accident causes:
1. In the railway station Câmpia Turzii, the technical inspection in transit is made by a single technical examiner. Upon the investigation commission estimation, the regulation framework ca create confusions regarding the number of technical examiners necessary so the result of a such inspection be effective. In the operational procedure there is not stipulated the number of technical examiners necessary, only the time for the performance of the inspection.
Measures taken
Following the way the incident happened and the findings done by the investigation commission, SNTFM „CFR Marfă" SA will take measures for the future prevention of similar incidents/accidents:
1. carrying out an analysis on the time allocated by the operational procedure for the performance of a technical inspection in transit, by assessing and establishing the staff necessary and eventually the succession of the operations in case of using a single technical examiner;
2. during the periodical repairs at wagons, there will be asked the repair units to assemble new splits for the ensuring the parts that can fall along the route.
Safety recommendations
Considering the way the incident occurred, the findings done and the measures taken by SNTFM „CFR Marfă" SA, the investigation commission did not consider necessary to issue safety recommendations.

3.4.53. The railway incident happened on the 19th September 2021, in the railway county Galați,

track section Buzău – Mărășești (electrified double-track line), in Pufești railway station, consisted in the passing on danger the entry signal „Y" in stop position, it being on „closed", commanding „STOP without passing the signal in stop position", by the locomotive EA 741 that hauled the train no.5054 (got by the railway undertaking SNTFC „CFR Călători" SA).
The investigation report was completed on the 19th October 2021.
Causea and contributing factors
The direct cause of the incident is the lack of right understanding of the working environment, necessary to take all the measures for stopping the train in safety conditions.
Contributing factors
The factor contributing to the incident occurrence was the poor communication between the driver and the movements inspector, following the technological restriction imposed by the malfunction of the equipment, the radio equipment of the locomotive.
Underlying causes
- inobservance of the provisions of art.93, point(1) of the Signalling Regulation, that is the passenger train no.5054 was not stopped in front of the entry signal „Y", of the railway station Pufești, that was on „closed" and that was commanding stop;
- non-application of the knowledge got in the training process by the driver, of the provisions of art.127 from the practice code, part of Safety management system of the railway passenger undertaking SNTFC „CFR Călători" SA - „Instructions for the activity of the locomotive crew" no. 201/2007.

Root causes - None.
Safety recommendations - None.

3.4.54. The railway incident happened on the 6th October 2021, in the railway county Constanța, track section Constanța-Medgidia, consisted in a runaway of a wagon on the lines of the railway station Palas and the occupation of the track II of the running line between the railway stations Palas Valul lui Traian.
The investigation report was completed on the 26th October 2021.
Causes and contributing factors
The direct cause of the incident is the non-coupling of the wagon at the Track Motor vehicle-UAM, cumulated with the non-coupling of the general pipe at air source of UAM, during the shunting on the end switches of the station.
Underlying causes
1.inobservance of the provisions of art.186 (1), from „Instructions for the activity of locomotive crew" no. 201/2007;
2. inobservance of the provisions of Sheet no.18 from the Technical Operation Plan of the railway station Palas, regarding the way to perform shunting with the UAM.
Root causes - None.
Measures taken
By the paper no.4/6/3455/25.10.2021, Line Division worked out „ACTION PLAN for the removal of the nonconformities that led to the incident occurrence on the 6th October 2021, in the railway station Palas", establishing the next measures:
- analysis of the disciplinary deviations of the staff involved, in accordance with the Disposal of General Manager of CNCF CFR SA no. 74/2014;
- discussions, upon signature, of the railway incident with all operation staff, having the functions:
  - driver of the heavy railway vehicles;
  - head DEU;
  - driver,

deadline the 30th November 2021;
- doing a practice training course for additional service, with staff getting function of driver of heavy railway vehicles and locomotive driver, with the titles:

- „coupling, connection, uncoupling of railway vehicles" (Regulation 006/2005, art.40 and Regulation 005/2006 art. 103,104 and 106);
- UAM running, Regulation 005/2006, art. 286;
- stopping of the railway vehicles run away – Instructions 201/2007, art.176 and Regulation 005/2006, art.81,
- deadline the 29th November 2021.

Safety recommendations - None.

3.5 Accidents and incidents investigated within the last 5 years

Investigations performed between 2017-2021:

Accidents investigated (1)		**2017**	**2018**	**2019**	**2020**	**2021**	**TOTAL**
Accidents (Art.19, 1 + 2)	Train collisions	-	-	-	**2**	**1**	**3**
	Collisions between trains and obstacles	-	-	-	-	-	-
	Train derailments	**26**	**22**	**27**	**31**	**22**	**128**
	Level crossing accidents	-	-	**1**	-	-	**1**
	Persons accidents generated by the rolling stock in motion	-	-	-	-	-	-
	Rolling stock fires	**5**	**3**	**4**	**9**	**7**	**28**
	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	-	-	-	-	-	-
Incidents		**17**	**12**	**31**	**25**	**24**	**109**
TOTAL		**48**	**37**	**63**	**67**	**54**	**269**

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

4 RECOMMENDATIONS

4.1. Brief presentation and analysis of the safety recommendations issued in 2021

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

<table>
<tr><td rowspan="2">No.</td><td colspan="2">Train/ rolling stock involved</td><td colspan="3" rowspan="2">Site of the railway event</td><td rowspan="2">Date of the report completion</td><td colspan="2" rowspan="2">Type of railway event</td></tr>
<tr><td>No. of train</td><td>Type of train</td></tr>
<tr><td rowspan="5">1.</td><td rowspan="5">30744</td><td>Freight</td><td>București Triaj</td><td>24.01.2020</td><td>19:05</td><td>07.01.2021</td><td>accident</td><td>Derailment of electric locomotive</td></tr>
<tr><td colspan="7">In the railway county București, in București Triaj, Post 17railway station, there was the derailment of the locomotive LE-MA 014, hauling the freight train no.30744.</td></tr>
<tr><td>Recommendations issued</td><td>1</td><td colspan="5">1. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator CNCF „CFR” SA shall reassess the risks associated to the dangers consisting in:
- failure in the assignment of a number of workers according to the subunits sizing;
- failure in the proper provision with the materials necessary for the performance of the track maintenance and repair, so they be kept under control.</td></tr>
<tr><td>Recommendation implemented (closed)</td><td>1</td><td colspan="5">1.Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April2022, notified with reference to the safety recommendation no.1, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented.
1. „Reassessed – Risk analysis no.L6/17/20.01.2021
Filling in the register Record of the traffic safety dangers – P112 (unsuitable provision with the materials necessary for the performance of line maintenances and repairs) respectively P113 (non-allocation of a number of workers according the subunits sizing.”</td></tr>
<tr><td colspan="9"></td></tr>
<tr><td rowspan="5">2.</td><td rowspan="5">80460</td><td>Freight</td><td colspan="2">Merișor-Bănița</td><td>25.01.2020</td><td>23:50</td><td>22.01.2021</td><td>accident</td><td>Fire into electric locomotive</td></tr>
<tr><td colspan="8">In the railway county Timișoara, between Merișor and Bănița railway stations, track II, km.66+000, a fire burst into the electric locomotive EA-1012, hauling the freight train no.80460.</td></tr>
<tr><td rowspan="3">Recommendations issued</td><td rowspan="3">5</td><td colspan="6">1. Romanian Railway Safety Authority – ASFR shall ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the hauling of some tonnages bigger than those that ensure a working of the electric locomotive in unlimited time conditions and at most 5 minutes in limited time conditions.</td></tr>
<tr><td colspan="6">2. Romanian Railway Safety Authority – ASFR shall ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the use within the repairs at MET, of some services that do not comply with the relevant safety requirements from the technical standards in force.</td></tr>
<tr><td colspan="6">3. Romanian Railway Safety Authority – ASFR shall ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the use within the repairs at MET, of some suppliers that comply with the conditions for certification.</td></tr>
</table>

				4. Romanian Railway Safety Authority – ASFR shall ask GRUP FEROVIAR ROMÂN SA the performance of a risk analysis for the danger represented by the use in the operation of the hauling vehicles without the planned repair made, having exceeded the norm of time and the norm of km run, or having the electric cables with the life time exceeded.
				5. Romanian Railway Safety Authority – ASFR shall analyze together with CNCFR and OTF the way to establish (calculation and testing) and to record the information regarding the tonnages of the trains in the working timetables, without eliminating from the analysis the possibility to update the national regulation framework or the implementation of some procedures of SMS of SMS of CNCFR and railway undertaking.
		Recommendations implemented **(closed)**	**4**	**1, 2, 3, 4**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April2022, notified with reference to the safety recommendations no.1,2,3 and 4, issued following the accident investigation, that they were analyzed, the measures to be taken identified and implemented. **1**.„*There was worked out the risk analysis no. G3.9/276/06.04.2021, and the conclusion was that the approach from the investigation report regarding the train running in maximum time conditions over 5 minutes is wrong, the locomotive EA 1012 being protected against the overcurrent's from the traction engines by the device ICOL*." **2**.„ *There was worked out the risk analysis no.G3.9/276/06.04.2021 and there was assessed the risk represented by the use within MET repairs the services that do not comply with the safety requirements relevant."* ***3**.„ There was worked out the risk analysis no.G3.9/276/06.04.2021 and there was assessed the risk represented by the use within MET repairs suppliers that do not comply with the certification conditions*." **4**.„ *There was worked out the risk analysis no.G3.9/276/06.04.2021 and there was assessed the risk represented by the use in operation the hauling means without the performance of planned repairs, having exceeded the norm of time and km run, or with the electric cables with the life time exceeded*."
		Recommendation not-implemented **(closed)**	**1**	**5**.Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.5, issued following the accident investigation, that it was not implemented. *5*.„ *The train tonnages are written down in the working timetable, for each train category, and for other tonnages, they are established upon the calculation and experimental checking, in accordance with the provisions of Instructions no.006/2005*."

3.	83212	Freight	Golești	29.01.2020	14:12	28.01.2021	**accident**	Derailment of a wagon
		In the railway county Craiova, in Golești railway station, in the running of the freight train no.83212, on the connecting rails of switch no.26, operated on „diverging track", the both axle of the 27th wagon derailed.						
		Recommendation issued	**1**	**1**.Romanian Railway Safety Authority – ASFR shall ask the public railway infrastructure administrator CNCF „CFR" SA the re-assessment of the „Register of risks – synoptic table - 2019" of the railway county Craiova regarding the analysis of the danger represented by the failure in the replacement of the improper wooden sleepers and setting of concrete measures for the management of the risks associated to this danger.				

		Recommendation implemented **(closed)**	**1**	**1**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and they were implemented. **1**.„*When there was done analysis of the risks generated by keeping within the track the improper wooden sleepers, that have to be replaced, emergency I, within the curves with radius under 350 m, one considered the next ways of dealing with. The measures for keeping under control the risks, regarding the improper wooden sleepers within the track, consisted in their replacement, according to the provisions of safety norms, especially I314/1989, art. 25, point 4; provision with the sleepers is made upon the limits of the budget for procurements, that does not cover all the cases of track sections with such safety risks, following as for the uncovered situations, the safety risks be covered by traffic restrictive measures.*"

4.	23690	Freight	Berbești-Popești Vâlcea	29.01.2020	18:15	11.01.2021	**accident**	Derailment of a wagon
		In the railway county Craiova, between Berbești and Popești Vâlcea railway stations, km.25+610, the first bogie from the 21st wagon of the freight train no. 23690, derailed in the running direction.						
		Recommendations issued	**2**	**1.** Romanian Railway Safety Authority – ASFR shall ask CNCF „CFR" SA – railway county Craiova to analyze the risk generated by the failure in the removal, at the stipulated deadlines, of the failures levels 5 and 6, found during the inspection of the running and direct lines in the railway stations, made with the track testing and recording car and shall dispose effective measures for keeping it under control.				
				2. Romanian Railway Safety Authority – ASFR shall ask CNCF „CFR" SA – railway county Craiova to revise the identification of the own risks generated by keeping in operation the unsuitable normal wooden sleepers, that have to be replaced immediately (energency I), on the curves with radius under 350 m and shall establish the measures necessary for the improvement of the railway safety.				
		Recommendations implemented **(closed)**	**2**	**1, 2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*Following the analysis of the risk generated by the non-removal, according to the deadlines established, the failures level 5 and 6, found during the controls at the running/direct lines with track testing and recording car-VMC/gauge rule-TMC, the Line Division established the next measures:* *a) continuous and systematic monitoring of the way to remove the failures at the track geometry, resulted at the controls of the running/direct lines with VMC and TMC, during the controls made with PC/PAC from the Sections of Lines and the Headquarters of Line Division;* *b) keeping under control the track sections with geometry failures not-removed, irrespective of their level, by the staff in charge with the control in the Line Sections, taking corresponding safety measures (speed restriction/ traffic close), in accordance with the progress of failures*." **2**.„*During the analysis of the risks generated by the keeping within the track the improper wooden sleepers that had to be replaced emergency I, on the curves with radius under 350 m, there were considered the next dealing ways: Measures for keeping under control the risks about the improper wooden sleepers within the track consisted in their replacement, according to the provisions of safety norms, especially I314/1989, art.25, point 4; provision with the stocks of sleepers is made in accordance with the budget procurements, that can not cover all the cases of track sections with such*				

				safety risks, following that for the another situations uncovered, the safety risk by covered with traffic restrictive measures."
5.	30616-1	Freight	București Triaj	02.02.2020 10:45 27.01.2021 **accident** Derailment of an electric locmotive
		In the railway county București, in București Triaj railway station, Post 17, the lomotive LE-MA 014, hauling the freight train no.30616-1, got by the railway undertaking SC DB Cargo Romania SRL, derailed.		
		Recommendations issued	**2**	Romanian Railway Safety Authority – ASFR shall ask CNCF „CFR" SA – railway county București to assess the danger generated by the keeping for a long time the speed restrictions of 5 km/h and 10 km/h on the lines and switches of the railway station București Triaj, on which the trains run, so it can be controlled.
				Romanian Railway Safety Authority – ASFR shall ask the railway freight undertaking SC DB Cargo Romania SRL, together with the economic operator SC Softronic SRL Craiova make an assessment of the risk associated to the danger represented by the using in operation of rolling stock with values of the mechanical clearances at the limit of the of the tolerances accepted and which shorter can be exceeded and, so, can lead to a irregular distribution of the loads on the locomotive axles.
		Recommendations implemented **(closed)**	**2**	**1, 2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and no.2, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*Risk assesses:* *– Risk analysis no. L6/57/18.02.2021: Filling in the register Record of traffic safety dangers – P129 – keeping, for a long time, the speed restrictions on the lines and switches, without taking the measures for the rehabilitation of the track geometry and speed restriction removal.*" **2**.„*On the 30th November 2021, Head of Traffic Safety Department, together with the Head of Locomotive Department checked the unified working commands, made by Softronic SRL for electric locomotives that were weighed, but also for the electric locomotives that needed the balancing of the loads on axles, after performing turning or commutation of axles.* *There was found that the unified working commands have attached and dated the sheet of measurements at the weighing, with the loads on axles and clearances, situated between the tolerances prescribed. There was found that during the weighing of the electric locomotives at SC Sotronic Craiova, either staff of DB Cargo Romania SRL was present at the weighing, that is workshop manager or gang foreman, or in cases where DB Cargo Romania SRL had no representative at SC Softronic SRL headquarters, the weighing sheet was sent by e-mail and only after the agreement of DB Cargo representative, the locomotive was put again in operation.* *For the time analyzed, from the establishment of measures for the control of the risks associated to the putting again in operation, the electric locomotives at which, following the commutation of the axles it is necessary to perform the balancing of the loads on axles and to regulate the clearances, there were no more locomotives at which be necessary the commutation of the axles*."
6.	74-1	Passenger	Sălișteа-Apoldu de Sus	08.02.2020 08:43 03.02.2021 **accident** Derailment of electric locomotive
		In the railway county Brașov, between Sălișteа and Apoldu de Sus railway stations, km 33+237, first axle of the locomotive, hauling the passenger train IR no.74-1, derailed in the running direction.		

		Recommendations issued	**3**	**1**.Romanian Railway Safety Authority– ASFR shall ask the public railway infrastructure administrator - CNCF „CFR" SA to perform a risk analysis for the danger represented by the failure in the setting of the deviation level of the failures recorded and the failure in their recording in the report of failures found, following the control of the track geometry with the testing and recording car, for its schedule and removal.
				2.Romanian Railway Safety Authority– ASFR shall ask the railway county Brașov to revise the identification of the risks associated to the railway operations regarding „failure in the compliance with the technical conditions that the pair of wheels of the railway vehicles have to meet with, in order to be accepted for running" and to add to SMS procedures the own safety measures or from the practice codes in force, in order to ensure that the wheelsets of the locomotives work upon the conditions regulated, in complete safety.
				3.Romanian Railway Safety Authority– ASFR shall ask the railway undertaking SNTFC „CFR Călători" SA to analyse again the conditions basis for the issuing of the paper that disposed the uncoupling of the equipment for the lubrication of the flange of wheel, so the lubrication of the running surfaces of the wheels be made, at least until the appearance of some wears stabilized at these.
		Recommendations implemented **(closed)**	**2**	**1, 2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*The risk analysis was made (paper no. 260/ 134/ 16.02.2021), resulting a risk level=9, that implies measures for the risk decrease. For it, there was disposed the meeting, exactly, with the provisions of Instruction 329/1972 and the inclusion in the plan of measures, worked out following the inspection of the lines with VMC, also of the failures from the track sections with speed restriction under 30 km/h.*" **2**.„*SNTFC „CFR Calatori" SA revised the identification of the risks regarding „inobservance of the technical conditions with what had to comply the wheelsets from the railway vehicles, in order to be accepted in running", they being recorded in the register of dangers and in the sheet for the assessment of risks.*"
		Recommendation in implementation process **(open)**	**1**	**3**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.3, issued following the accident investigation, that it is in implementation process. **3**.„*Regarding the working of the installations for the lubrication of the flange of wheels from the locomotives, SNTFC „CFR Călători" SA is analyzing the implementation of another system of lubrication the flange of wheels with graphite rods, fitted on the active surface of the flange of wheel.*"
7.	34372	Freight	Fărcașele-Drăgănești Olt	17.02.2020 02:30 — 15.02.2021 — **accident** — Derailment of 13 wagons
		In the railway county Craiova, between the Fărcașele and Drăgănești Olt railway stations, track II, 13 wagons of the train no.34372 derailed.		
		Recommendations issued	**4**	**1**.Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator assesses the risk associated to the danger of failure to perform, in good time, the overhauls at infrastructure, imposed by the practice codes and establishes the measures for keeping it under control.

				2.Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator assesses the risk associated to the danger of keeping within the curbs the rails well-worn at the head of the rail and sets measures for keeping it under control.					
				3. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator assesses again the risk associated to the danger to keep within the track the rails with surface failures and sets up measures for keeping it under control.					
				4. Romanian Railway Safety Authority – ASFR shall take care that the public railway infrastructure administrator assesses the risk associated to the danger to keep within the track the failures found following the measurements with the track testing and recoding car and establishes measures for keeping it under control.					
		Recommendations implemented **(closed)**	**4**	**1, 2, 3, 4**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1, 2, 3 and 4, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*Keeping under control the safety risks generated by the non-performance, on time, the overhauls imposes the next measures:* *a) limitation of the running speeds on the track sections with failures at the gauge, level and direction, according to the safety norms;* *b) limitation of the maximum speeds of trains, including the time increases in the graph of train running.*" **2**.„*Considering that the safety norms do not stipulate like effective measures the decrease, respectively the limitation of the running speed on the curved track sections with rail worn laterally or vertically, Line Division Craiova intends to perform replacement/commutation of rails worn, in order of emergencies, according to the budgets and keeping the safety risks on the tracks sections rested uncovered by budget, by the decision of the factors responsible*." **3**.„*Keeping under control the safety risks generated by the keeping within the track the rails with surface failures, imposes the next measures:* *a) replacement of the rails damaged according to the rails stocks available, in order of the failure seriousness;* *b) purchase of works for the replacement the rails in turn, re-fastening and re-establishment of the continuity CFJ, with third companies specialized, according to the budgets;* *c)limitation of the running speeds on the track sections with problems at the rail;* *d)limitation of the maximum speed of trains, including the time increases in the graphs of the train running.*" **4**.„*Following the analysis of the risk generated by the non-removal, upon the deadlines established, of the failures levels 5 and 6, found during the inspections of the running/direct lines with VMC/TMC, the Line Division established the next measures:* *a) continuous and systematic monitoring of the removal of the failures existing at the track geometry, resulted following the control of the running/direct lines with VMC and TMC, during the control made by PC/PAC from the track sections and line division headquarters;* *b) keeping under observation the line sections with failures at the geometry, not-removed, irrespective of their level, by whole staff with revision tasks within the Track Sections L, taking the corresponding traffic safety measures (limitation of the speed/traffic closing), in accordance with the failure development*."					
8.	30648	Freight	Mintia-Păuliș Lunca	17.02.2020	16:55	08.02.2021	**accident**	derailment of a diesel locomotive	

<table>
<tr><td></td><td></td><td colspan="8">In the railway county Timișoara, between Mintia and Paulis railway stations, km 0+150, in the running of freight train no.30648, the axles no. 1 and 4 of the hauling locomotive DA 1680 derailed.</td></tr>
<tr><td></td><td></td><td>Recommendation issue</td><td>1</td><td colspan="6">1. Romanian Railway Safety Authority – ASFR shall take care that the manager of the noninteroperable railway infrastructure SC RC – CF Trans SRL Brașov has the resources and capability to meet with the requirements for the maintenance of the railway infrastructure, that were basis for the granting of the safety authorization.</td></tr>
<tr><td></td><td></td><td>Recommendation implemented (closed)</td><td>1</td><td colspan="6">1. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented.
1.„ASFR carries out continuous surveillances at the non-interoperable railway infrastructure managers.”</td></tr>
<tr><td rowspan="5">9.</td><td rowspan="5">60274</td><td>Freight</td><td colspan="2">Balota</td><td>25.02.2020</td><td>10:35</td><td>23.02.2021</td><td>accident</td><td>Side colision and derailment of 2 wagons</td></tr>
<tr><td colspan="9">In the railway county Craiova, in the railway station Balota, there were a side collision and derailment of the first two wagons of the freight train no.60274 by the set of locomotives EA 691 and EA 640.</td></tr>
<tr><td rowspan="2">Recommendations issued</td><td rowspan="2">2</td><td colspan="6">1.Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking SC Grup Feroviar Român SA assess again the risk associated to the danger represented by leaving the working place by the staff in charge with the traffic safety, without meeting with the specific regulations and shall establish effective measures for keeping it under control.</td></tr>
<tr><td colspan="6">2. Romanian Railway Safety Authority – ASFR shall take care that the railway freight undertaking SC Grup Feroviar Român SA assess again the risk associated to the danger represented by the release of the direct brake of the locomotive, following the interaction between the driver seat and the lever of the valve brake cock FD1, and shall establish measures for keeping it under control.</td></tr>
<tr><td>Recommendations implemented (closed)</td><td>2</td><td colspan="6">1, 2. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented.
1.„There was worked out the re-assessment of risk no.G.12/313.31.03.2021. It was established that the risk is acceptable.”
2.„ There was worked out the risk analysis no.G.3.9/723/20.07.2021, establishing like conclusion that the back of the chair and the handle of the valve is a consequence of the initial construction of the locomotive and it is due less to the driver chair, irrespective of the model.”</td></tr>
<tr><td rowspan="2">10.</td><td rowspan="2">3111</td><td>Passenger</td><td colspan="2">Utvinisu Nou-Sântana</td><td>23.03.2020</td><td>4:00</td><td>22.03.2021</td><td>accident</td><td>Fire into the diesel multiple unit</td></tr>
<tr><td colspan="9">In the railway county Timișoara, between Utvinișu Nou and Sântana, railway stations track I, km.17+600, in the running of passenger train no.3111, a fire burst into diesel the multiple unit no.1017.</td></tr>
</table>

		Recommendations issued	**2**	**1**. Romanian Railway Safety Authority - ASFR shall ask the railway passenger undertaking SNTFC „CFR Călători" SA the revision of the procedure regarding „Planning of the inspections and repairs at the locomotives, multiple units and electric train sets got by SNTFC „CFR Călători" SA, that is the add-in duties and responsibilities regarding the withdrawal from traffic of the diesel multiple units, when they reach the norms of time/km for the performance of planned repairs, in accordance with the regulations in force.
				2. Romanian Railway Safety Authority - ASFR shall ask the railway passenger undertaking SNTFC „CFR Călători" SA to make again the identification and assessment of the risk associated to the railway operations, for the risk of keeping in service of the motorized rolling stock (locomotives, diesel multiple units, electric train sets) with the norm of time/km for the performance of planned repairs exceeded, considering that, regarding this accident, these risks were very serious.
		Recommendation in implementation process **(open)**	**1**	**1**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it is in implementation process. **1**.„*The operational procedure „Planning of inspections and repairs at the locomotives and electric train sets got by SNTFC „CFR Calatori" SA" is in analyzing and revision process*"
		Recommendation implemented **(closed)**	**1**	**2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.2, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented. **2**.„*SNTFC "CFR Calatori" SA revised the risk identification regarding „Inobservance of the cycle of inspections and repairs at the rolling stock", they being recorded in the register of dangers and in the sheet for the assessment of risks.*"

11.	3535	passenger	Augustin-Racoș	05.04.2020	21:25	01.04.2021	**Serious accident**	Fire into two cars
		In the railway county Brașov, between the railway stations Augustin and Racoș, a fire burst into two passenger cars of train Regio no.3535						
		Recommendations issued	**3**	**1.** Romanian Railway Safety Authority - ASFR shall ask CNCF „CFR" SA to draft a plan of actions with the corresponding public authorities, for the case of fires in the railway vehicles from the composition of a train in running, on an electrified line, plan that meets with all the requirements stipulated at the criterion R of the Annex II of EU Regulation no.1169/2010.				
				2. Romanian Railway Safety Authority - ASFR shall ask SNTFC „CFR Călători" SA to make an analysis about the opportunity to incorporate the equipment CCTV of the car and, where appropriate, of other warning systems, into a monitoring system that shall provide operative information in case of some railway failures/incidents/accidents.				
				3. Romanian Railway Safety Authority ASFR shall ask SNTFC „CFR Călători" SA the revision of the action in case of fire into a passenger train in running, so the actions for removing the travellers in safety be a priority.				
		Recommendations implemented (**closed**)	**2**	**1, 3**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no. 1 and 3, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*The public railway infrastructure administrator CNCF„CFR"SA has worked out, together with the central public authorities an action plan. „Unitary management of the participants in the intervention in case of railway accidents", registered under the no.1/3906/22.06.2007. This plan is*				

				in accordance with the requirements stipulated at the criterium R from the Annex II of the Regulation EU no. 762/2018, Annex II, point 5.5." **3**.„*SNTFC „CFR Călători" SA, by the Decision no.15/18.05.2021 established „Plan for action in case of fire at a passenger train in running".*
		Recommendation in implementation process **(open)**	**1**	**2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.2, issued following the accident investigation, that it is in implementation process **2**.„*SNTFC „CFR Călători" SA analyses the implementation of some warning systems in case of works for car modernization or renewing.*

12.	80489	freight	Vatra Dornei	17.04.2020	15:25	15.04.2021	**accident**	Derailment of an electric locomotive
		In the railway county Iași, in the railway station Vatra Dornei, in the running of freight train no.80489, consisting in the light locomotive EA 426, that moved on the dispatching route from the diverging track no.7 to the running line Vatra Dornei-Ilva Mică, when it ran on the switch no.24, the first axle of the first bogie from the locomotive derailed in the running direction.						
		Recommendation issued	**1**	**1**. Romanian Railway Safety Authority – ASFR shall ensure that the railway undertaking SC Grup Feroviar Român SA re-assesses the risks form the activity field „maintenance of the railway vehicles", considering the dangers generated by the putting into operation of a railway motorised vehicle with failures that impose the suspension of an axle.				
		Recommendations implemented **(closed)**	**1**	**1**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented. **1**.„*There was worked out the risk analysis no. G.3.9/707/15.07.2021*."				
13.	89158	freight	Capu Midia	04.06.2020	16:00	17.05.2021	**accident**	Derailment of wagons
		In the railway county Constanța, in Cap Midia railway station, km.0+500, between the track section points P2 and P1, in the running of the freight train no.89158, 4 wagons derailed.						
		Recommendations issued	3	**1**.Romanian Railway Safety Authority - ASFR shall take care that SC GFR SA identifies the own risks generated by the keeping for a long time the speed restrictions established following the existence of some failures at the track geometry.				
				2. Romanian Railway Safety Authority – ASFR shall take care that SC GFR SA reassess the risk associated to the danger of keeping within the track the sleepers improper.				
				3. Romanian Railway Safety Authority – ASFR shall take care that SC GFR SA, like undertaking, identified the own risks generated by the danger of coupling into the trains wagons with the maximum load on axle exceeded.				
		Recommendations implemented **(closed)**	**3**	**1, 2, 3**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1, 2 and 3, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*There was analyzed the danger with the risks associated, existing in the Register of risks. As reference to the risk analyzed there was identified and assessed a new danger for the risk area „Process for the line maintenance*." **2**.„*There was analyzed the danger „Keeping within the track the improper sleepers", proposing another value for the Probability - P.3*." **3**.„*There was analyzed the danger with the risks associated, code CUS18 and monitorised*."				

		freight	Baru Mare-Crivadia	11.06.2020	15:50	08.06.2021	**accident**	Derailment of a wagon
		In the railway county Timișoara, between Baru Mare and Crivadia railway stations, the second axle from the 15th wagon of the freight train no. 30536 derailed.						
		Recommendations issued	**1**	**1.** Romanian Railway Safety Authority-ASFR shall ensure that the public railway infrastructure administrator CNCF „CFR" SA re-assesses the risks associated to the danger generated by the keeping in operation improper wooden sleepers within the curves and it establishes viable safety measures for keeping under control these risks.				
14.	30536	Recommendation implemented **(closed)**	**1**	**1**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented. **1**.„*The Line Division, following the re-assessment of the risks associated to the danger generated by keeping in operation the improper wooden sleepers within curves, established the next safety measures: Taking the necessary steps for ensuring the material, financial and human resources; Performance of track maintenance, complying with the technological process, at the works for the replacement of the wooden sleepers within the curves, rectification of the gauge and keeping it between the limits of the accepted tolerances. Monitoring of all track sections in curve with wooden sleepers, respectively the performance of measurements (gauge, level, versine), meeting with the deadlines established in I 305/1997; there were worked out the schedules for the measurements at the lines with CMC, VMC and TMC; results of these measurements were interpreted, analyzed and schedules for those failures removal were worked out;* *Provision with the material resources, respectively rai land normal wooden sleepers, that is new rail type 49, cured, 23 pieces of 30 ml for the exterior rail of the curve km 53+835 / 54+530, replaced between February-May 2021. On the interior rail it was replaced with rail SB and they were regulated and the joints of the both rails were put in the same positions in the same period of time.* *The wooden sleepers were replaced by SC Antrepriza de Construcții Cai Ferate SA, upon the contract no.352/ 30.07.2021, concluded by the railway county Timișoara. The wooden sleepers were replaced between August-December 2021, curve from km 53+835 / 54+530, there were replaced in turn 1236 sleepers with new ones, including new fastenings (rubber plates, polyethylene plates and screws B2).* *For ensuring the human resources, there were employed workers at the District 5 Pui and there were seconded other workers from the Section L9 Simeria for the rail replacement.* *Control measures:* *Inspections in accordance with I 305/1997 are made according to the sheets no.2, 3, 4, 9, 10, 11 and 12, upon the annual and month schedules, worked out by the management of Line Division, completed with finding notes, notified to the district.* *Trolley for the track measuring - CMC – for 2021 it was worked out a schedule for the line measuring, following the measurements one worked out a schedule for the removal of the failures found.* *Testing and recording car - VMC – for 2021 there were performed measurements on the 31st March 2021, when there were registered 10 failures level 3, these being removed during the works for the replacement of rails and sleepers, above mentioned. During the measurement from the 27th October 2021, the line was closed permanently for the works stipulated in the contract above mentioned.* *Gauge rule - TMC – for 2021, there were made measurements on the 23rd*				

				March 2021. The failures found were removed during the works for the replacement of rails and sleepers, above mentioned. *Following the replacement of the sleepers, there was carried out mechanical packing of sleepers with the vehicle Plasser, and ploughing of the ballast MP in November 2021.* *All the curves with wooden sleepers, afferent to Line Division are carefully monitored by measurements at the gauge, level, deflections, rail wears, so now the risks associated to the danger generated by the keeping in operation the improper wooden sleepers within the curves, are under control, being paid a special attention to the process of systematic assessment of the dangers, considering mainly the results got by track monitoring, in order to get the best possible management of risks, being soon established options for the answer to risks and, if case, the corresponding actions, establishment of measurements for risk control, meeting with the dealines for implementation.*"

15.	30548	freight	Balota	26.06.2020	21:50	23.06.2021	**accident**	Derailment of a wagon
		In the railway county Craiova, in the railway station Balota, the both axles of the 9th wagon of the freight train no.30548 derailed, the wagon reclining.						
		Recommendations issued	**2**	**1**. Romanian Railway Safety Authority – ASFR shall make sure that CNCF „CFR" SA, like infrastructure administrator, takes the measures necessary so, the changes of working routines disposed for ensuring the health safety, following the pandemic Covid-19, not affect the activity process, especially in the subunits directly involved in the operation activity; **2**. Romanian Railway Safety Authority – ASFR shall make sure that DBCR, like railway undertaking, makes an analysis of the risk associated to the danger of not carrying the duties by the own staff, provided that 3 employees of the company did not simultaneously meet with their duties.				
		Recommendations implemented **(closed)**	**1**	**1, 2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no. 1 and 2, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented **1**.„There was worked out the plan of measures no.42/1/1860/08.07.2021. There was re-updated the sheet PTE no.25 for all railway stations a having shunting activity, following the pandemic Covid-19, in order to ensure the distance conditions, there was established a special register for the records of railway undertaking regarding the ensuring of the rolling stock". **2**.„According to AGIFER recommendations from the investigation report of the accident happened on the 26th June 2020, in the railway station Balota, there were identified, on the 16th June 2021, dangers that can lead to railway accidents or incidents following the failure in the compliance with the duty tasks in the operation. According to the control notes, worked out between June – august 2021, there were no deviations in the accomplishment of the duties by the operation staff, both in shunting and in train hauling. There were only some cases where the locomotive crew carried out the duty with the device for the punctual control of the speed isolated, the staff being called for examination It is disposed that the staff with control tasks to determine the locomotive crew to realize the risks that can appear in the conditions of performing the train hauling or shunting with the device for the punctual control of the speed or the safety and vigilance device isolated. The surveillances of the application of the control measures disposed shall continue and there will be analized their effectiveness in November 2021."				
16.	30688-1	freight	Fundulea-Sărulești	10.07.2020	04:50	07.07.2021	**accident**	Derailment of a diesel locomotive

		In the railway county București, in the running of freight train no.30688-1, between the railway stations Fundulea and Sărulesti, the locomotive DA 010, a dead one in the train composition, derailed.							
		Recommendations issued	**2**	**1**.Romanian Railway Safety Authority – ASFR shall ask the railway undertakings to identify the diesel electric locomotives provided with toothed crown made off material belonging to the burden 82592 and be sure that those dispose measures for keeping under control the risk associated to the danger represented by the breakage of the toothed wheel in operation. **2**.Romanian Railway Safety Authority – ASFR shall be sure that SC Deutsche Bahn Cargo România SRL shall re-assess the management of the maintenance and putting in operation of the locomotives and shall dispose viable measures for keeping under control the risks specific to those activities.					
		Recommendations implemented **(closed)**	**2**	**1, 2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented **1**.„*there was worked out and distributed a material, that presents the causes and consequences of the not-meeting with the duty tasks by those 3 employees, to the staff in charge with the training;* *The staff was notified, at the staff courses in the quarter III 2020, regarding the deviations from of the shunting staff and technical examiner, on duty on the 26th June.2020, in the railway station Balota at the shunting for the re-forming of the train 30548, in order to be dispatched.* *Following the completion of the investigation report, there were identified the risks associated to the dangers of not-meeting with the duty tasks and like measures there was disposed that the staff in charge with the control, supervises during the controls the performance of the duty in the shunting, technical inspections at trains, performance of the braking tests*." **2**.„*The technical Director disposed the revision of the procedure PA 04 45: L48 mentioning, at the works for the accidental repairs, the obligations of the of the executive staff and of the staff responsible for the notification and sending to the traffic control the situation of the locomotives submitted to intervention.* *- Procedure PA 04 „Locomotive maintenance" was revised until the 10th August 2021 and it was notified to the staff interested for taking note and confirming.* *- it is enclosed the document proving the taking note of the provisions of the procedure PA 04 „Locomotive maintenance"*."					
17.	23689	freight	Popești Vâlcea-Berbești	05.08.2020	15:30	04.08.2021	**accident**	Derailment of a wagon	
		In the railway county Craiova, in the running of freight train no.23689, between Popești and Berbești railway stations, km 24+570, a wagon derailed.							
		Recommendations issued	1	**1**.Romanian Railway Safety Authority – ASFR shall make sure that SNTFM makes an analysis of risk associated to the danger represented by the putting into operation of wagons partially downloaded.					
		Recommendation implemented **(closed)**	**1**	**1**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented **1**.„*SNTFM worked out a sheet for the risk assessment no.SCT2/35/2021, sheet of measures for the prevention of risks no.SCT2/44/2021, action plan no. SCT 2/45/2021 and the assessment of the action plan effectiveness no. SCT 2/05/2022.*"					

<table>
<tr><td rowspan="5">18.</td><td rowspan="5">50492</td><td>freight</td><td colspan="2">Timișu de Sus-Predeal</td><td>24.08.2020</td><td>03:38</td><td>19.08.2021</td><td>accident</td><td>Fire into an electric locomotive</td></tr>
<tr><td colspan="9">In the railway county Brașov, between Timișu de Sus and Predeal railway stations, a fire burst into the banking locomotive EA 089 of the freight train no.50492.</td></tr>
<tr><td>Recommendations issued</td><td>1</td><td colspan="7">1. Romanian Railway Safety Authority – ASFR shall ask the railway freight undertaking SC Unicom Tranzit SA to make an assessment of the risks generated by the danger generated by the repeated tentatives to put the train in motion, in the situation of some stops that are not stipulated in the timetable for the running line, on the track section Brașov – Predeal.</td></tr>
<tr><td>Recommendation un implementation process (open)</td><td>1</td><td colspan="7">1. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it is in implementation process
1.„There was issued the Decision of the General Manager UTZ for the appointment of the commission for the assessment of risks for the danger represented by the repeated attempts to put the train in movement in case of some stops that are not stipulated in the working timetable of the trains, on the running track section Brașov – Predeal, instruments/methods of control and avoiding.
- now, the commission is carrying out its activity and it is going to perform the next actions:
•identifications of the trains that had the hauling and composition system (tonnage and number of wagons) and that ran on the track section above mentioned, between November 2021 – February 2022 (3 months);
•identification of the journey reports for the cases found;
•reading and interpretation of the records of IVMS installations from the hauling locomotives.”</td></tr>
<tr><td colspan="9"></td></tr>
<tr><td rowspan="5">19.</td><td rowspan="5">8023</td><td>passenger</td><td colspan="2">București Obor-Pantelimon</td><td>13.09.2020</td><td>07:33</td><td>07.09.2021</td><td>accident</td><td>Derailment of a railway car</td></tr>
<tr><td colspan="9">In the railway county București, when the passenger train R.8023 left the railway station București Obor, the first car derailed.</td></tr>
<tr><td rowspan="2">Recommendations issued</td><td rowspan="2">2</td><td colspan="7">1. Romanian Railway Safety Authority – ASFR shall assure that the infrastructure administrator re-assess he risk associated to the danger represented by keeping within the track the improper wooden sleepers and will establish efficient measures for keeping it under control.</td></tr>
<tr><td colspan="7">2. Romanian Railway Safety Authority – ASFR shall assure that the public railway infrastructure administrator re-assess the risk associated to the danger represented by the performance of the track inspection with not-authorized staff for the traffic safety and will establish efficient measures for keeping it under control.</td></tr>
<tr><td>Recommendations implemented (closed)</td><td>2</td><td colspan="7">1, 2. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2, issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented
1.„Re-assessment of the risks – Analysis of the risks no.L6/242/15.09.2021. P23-keeping within the track of improper wooden sleepers.”
2.„There was identified the danger P1- performance of track inspection with staff not-authorized for the traffic safety and there was worked out the Plan of measures no.L6/255/22.09.2021.”</td></tr>
<tr><td rowspan="2">20.</td><td rowspan="2">60520</td><td>freight</td><td colspan="2">Brebu-Cornuțel Banat</td><td>13.09.2020</td><td>10:00</td><td>07.09.2021</td><td>accident</td><td>Derailment of wagons</td></tr>
<tr><td colspan="9">In the railway county Timișoara, between Brebu and Cornuțel Banat railway stations, km, in the running of freight train no.60520, the first 12 wagons of the train derailed.</td></tr>
</table>

		Recommendations issued	**4**	**1**. Romanian Railway Safety Authority - ASFR shall assure that the infrastructure manager CNCF „CFR" SA re-assess the risks associated to the danger generated by keeping in operation the improper wooden sleepers within the curves and will establish viable safety measures for keeping under control these risks.
				2. Romanian Railway Safety Authority - ASFR shall check how the infrastructure manager CNCF „CFR" SA analyzed and implemented the safety recommendation in case of the railway accident happened on the 8th March 2019, between the railway stations Telciu and Coșbuc and, in accordance with the findings resulted from these checkings, shall ask the infrastructure manager to take the required safety measures.
				3. Romanian Railway Safety Authority - ASFR shall assure that the railway undertaking Tim Rail Cargo SRL re-assess the risks associated to the danger generated by the non-identification of all failures, of the parts worn out or of the shortages at wagons and it will establish viable safety measures for keeping under control these risks.
				4. Romanian Railway Safety Authority - ASFR shall assure that the railway undertaking Tim Rail Cargo SRL will assess the risks associated to the danger generated by the use of some improper wagons for the transport of some type of good and will establish the safety measures for keeping under control these risks.
		Recommendations implemented **(closed)**	**4**	**1, 2, 3, 4**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1, 2, 3 and 4 issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*Following the re-assessment of the risks associated to the danger generated by the keeping in operation improper wooden sleepers within curves, there were established the next safety measures: taking the steps necessary to ensure the material, financial and human resources; performance of the track maintenance meeting with the technological process, especially at the works for the replacement of the wooden sleepers within the curves, rectification of the gauge and keeping it between the limits of accepted tolerances; monitoring of all curves with wooden sleepers, respectively carrying out measurements (gauge, level, versine), meeting with the deadlines established in I 305/1997*." **2**.„*the recommendation was implemented by CNCF „CFR" SA*." **3**.„*By the paper AFER no.2000/1945/29.07.2021 the Safety Unique Certificate of TRC was limited between 29th July 2021-20th August 2021 because of the railway certificate in the railway station Fetești*." **4**.„*For the limitation ending, TRC was monitored by ISF Timișoara, through month surveillance, between the 20th August 2021-20th February 2022, during this time a part of procedures being changed and adapted for keeping under control the risks generated by the inobservance OMT nr.256/2013, OMT nr.855/1986, Ord.17A/447/1971 și Ord. 17Da/610/1987*."

21.	34304-1	freight	Grădinari-Vadu Lat	22.09.2020	22:20	01.09.2021	**accident**	Fire at a diesel locomotive
		In the railway county București, between Grădinari and Vadu Lat railway stations, on the track I, km 34+700, the locomotive DHC 746, hauling the freight train no.34304-,1 burst into flames.						

		Recommendations issued	**2**	**1** Romanian Railway Safety Authority - ASFR shall assure that the railway undertaking, getting the rolling stock and being also provider of repairs and inspections for its own rolling stock, will re-assess the risks associated to the dangers represented by „Lack of inspections at the locomotives when they are put into service or along the route" and „Carrying out the duty on the locomotives with the planned inspections and repairs exceeded", and it will establish safety measures viable for keeping under control these risks.
				2. Romanian Railway Safety Authority - ASFR shall assure that the railway undertaking getting the rolling stock and being also provider of repairs and inspections for its own rolling stock, identifies and fills in „The list for the risk identification" with the risks associated to the dangers represented by „Schedule and performance of all types of planned inspections, instead those regulated by the norms in force", will re-assess them and establish the safety measures viable for keeping under control these risks.
		Recommendations implemented **(closed)**	**2**	**1, 2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2 issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented **1**.„*There was worked out the Decision no.73/27.01.2022, regarding the team for the re-assessment of the risks included in the Register of Risks associated to the transports and shunting. There was worked out the additional list of identification of dangers and risks, no.2/75/2022. There was established the seriousness of the additional dangers no.2/75A/2022. There was established the appearance frequency of the additional dangers no.2/75B/2022*." **2**.„*There was established the measures for the prevention of additional dangers associated to the transport and shunting, no.2/75D/2022. There was worked out the sheet of assessment the working places no.2/75E/2022*."

22.	90478	freight	Bănița	08.10.2020	01:30	07.10.2021	**accident**	Fire at an electric locomotive
		In the railway county Timișoara, in Bănița railway station, in the running of freight train no.90478, a fire burst into the locomotive EA 647.						
		Recommendations issued	**2**	**1**.Romanian Railway Safety Authority - ASFR shall ensure that CNCFR, together with Electrificare CFR and, if case, with the railway undertakings, will analyze how to intervene for earth connection of the contact line, for the identification of some ways of reducing the times necessary for the performance of these operations.				
				2. Romanian Railway Safety Authority - ASFR shall ensure that the railway undertaking VTR will re-assess how the train schedule is managed, for the assignment, to its own staff, of the duties that shall ensure that the trains requested for schedule correspond to all the provisions from Working Timetables.				
		Recommendations not implemented **(closed)**	**2**	**1, 2**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2 issued following the accident investigation, that they were not implemented. **1, 2**. „*Not-implemented – Address ASFR to AGIFER no.2310/699/2021*."				

23.	80522	freight	Brănești-Fundulea	25.10.2020	01:35	09.09.2021	**accident**	Fire into a diesel locomotive
		In the railway county București, between Fundulea and Brănești railway stations, track II, km 35+200, in the running of freight train no.80522, a fire burst into the hauling locomotive DA 1523						
		Recommendations issued	**1**	**1**. Romanian Railway Safety Authority - ASFR shall ensure that SC GFR SA re-assesses the risks of fire due to the leakages of flammable liquids from the locomotive				

		Recommendation implemented **(closed)**		**1**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1 and 2 issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*There was worked out the risk analysis no.G.3.9/931/20.09.2021*."

24.	89170	freight	Dorobanțu - Romcim (PC 2 Medgidia)	28.12.2020	07:10	22.12.2021	**accident**	Derailment of wagons
		In the railway county Constanța, noninteroperable track section Dorobanțu - Medgidia PC2, km 4+870, in the running of freight train no.89170, two wagons derailed.						
		Recommendations issued	**3**	**1**. Romanian Railway Safety Authority-ASFR shall ensure that CNCF „CFR" SA re-assess the risks associated to the danger generated by keeping in operation the improper wooden sleepers within the curves and establishes monitoring measures for keeping under control these risks.				
				2. Romanian Railway Safety Authority-ASFR shall ensure that CNCF „CFR" SA re-assesses the risks associate the danger of not ensuring the number of staff necessary for the performance of maintenances according to the practice codes.				
				3. Romanian Railway Safety Authority-ASFR shall ensure that GFR SA re-assesses the risks associated to the danger generated by the not ensuring of the optimum conditions for checking the distribution of the load in wagons, according to the practice codes and establishes the safety measures necessary for keeping these risks under control				
		Recommendations implemented **(closed)**	**3**	**1, 2, 3**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendations no.1,2 and 3 issued following the accident investigation, that they were analyzed, the measures to be taken were identified and implemented. **1**.„*There was identified the risk of keeping within the track improper wooden sleepers and it is recorded in the register of dangers, line category, at point P23.*" **2**.„ *There was identified the risk generated by the non provision with the necessary workers for the performance of maintenances and it is recorded in the register of dangers, line category, point P73.*" **3**.*„There was re-assessed the risk associated, generated by the lack in ensurance of the optimum conditions for checking the distribution of the load in the wagons and there will be established the safety measures necessary for keeping it under control."*				
25.	5211	passenger	Gara de Nord–	12.05.2021	14:00	11.06.2021	**incident**	Hit of metallic panel detached
		On the metro network București, main line IV, track 1, in the metro station 1 Mai, in the running of train no.5211, between the metro stations Gara de Nord-Străulești, it hit of a metallic panel fallen from the station ceilling on the line.						
		Recommendations issued	**1**	**1**. Romanian Railway Safety Authority – ASFR shall ensure that Metrorex SA workers out a procedure for the control and revision of the suspended ceilings, including the way to perform the control and the specific periodicities, for the types of suspended ceillings.				
		Recommendation not-implemented (**without answer)**	**1**	**1.**Up to the completion of this report, there was no answer from Romanian Railway Safety Authority regarding the implementation way of the safety recommendation no.1, issued following the incident investigation.				
26.	50456	freight	Cuciulat	07.06.2021	10:33	12.07.2021	**incident**	Trailling of a switch

		In the railway county Cluj, the freight train no.50456 passed the exit signal X III on damager (it being on red position) and running the switch no.6 of the railway station Cuciulat.		
		Recommendations issued	**1**	**1**. Romanian Railway Safety Authority-ASFR shall ask the railway undertaking UNICOM TRANZIT SA to re-assess the risk analysis regarding the passing by the signals in order to identify additional instruments necessary for keeping under control the circumstance „lack of attention" and of the risk analysis regarding the working of the device INDUSI from the locomotive, including the way this activity is kept under control.
		Recommendation implemented **(closed)**	**1**	**1**. Romanian Railway Safety Authority, by the answer from the paper no.2330/42/2022, sent on the 27th April 2022, notified, with reference to the safety recommendation no.1, issued following the accident investigation, that it was analyzed, the measures to be taken were identified and implemented. **1**.„*There was performed the risk analysis regarding the passing by the signals, in order to identify some additional instruments necessary for keeping under control the circumstance „lack of attention" and risk analysis regarding the working of INDUSI installation from the locomotive, including the way this activity is kept under control*"

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**
2017	31	1	0	1	29
2018	42	31	6	5	0
2019	60	26	17	8	9
2020	111	63	39	9	0
2021	**52**	**44**	**4**	**3**	**1**
TOTAL	**296**	**165**	**66**	**26**	**39**

General Manager
DUMITRU Laurențiu-Cornel