



MINISTERUL TRANSPORTURILOR
AGENCIA DE INVESTIGARE FERROVIARĂ ROMÂNĂ - AGIFER



ROMANIAN RAILWAY INVESTIGATION AGENCY

- AGIFER -

ANNUAL REPORT

2016



INTRODUCTION

This is the Annual Report of Romanian Railway Investigation Agency AGIFER (hereinafter referred to as AGIFER) for 2016. It was drawn up in accordance with the *Regulations for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and metro safety*, approved through the Government Decision no. 117/2010 and meets with the requirement of the Directive 2004/49/CE of European Parliament and Council, transposed into Romanian legislation through the Law no.55/2006 on the 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

Romanian Railway Investigation Agency – AGIFER was set up on the 4th September 2015, through the reorganization of Romanian Railway Investigation Body, carrying its duties, stipulated in the national and European legal papers, in force at the reorganization moment.

The year 2016, the first complete activity year for AGIFER, was a year with 74 investigations, continuing and finishing those 28 investigations opened and in process in 2015, to which 46 new opened investigations were added. From these 74 investigations, one was opened following a serious accident, one following a collision between a tower wagon and a freight train, 37 following rolling stock derailment, 10 following fires in the motorised rolling stock and 25 other incidents, all these cases being generated by trains in running. I point out that, upon national legislation, AGIFER does not investigate hits of cars at the level crossings or hits of persons by the railway vehicles in running, if from the first findings not result malfunctions of the signalling equipments or non-closing of the barriers.

It is regrettable that in 2016 a serious accident happened in the shunting activity of the national freight undertaking, in the railway county Craiova, in the railway station Bârsești, consisting in the serious collision between 2 electric locomotives. Following the impact, the driver of a locomotive died immediately and the another one, being seriously injured and died afterwards. I want to express my compassion for the families of the died drivers and my belief that the circumstances of this event shall be deeply investigated and the recommendations issued shall lead to the improvement of railway safety, removing the causes that generated this accident.

A good investigation of accidents&incidents is a very important tool for emphasizing the causes of their occurrence. An important subject that has to be analyzed during an investigation is how the economic operators that perform transports on railways analyzed and understood the dangers and risks existing in their activity. Though this approach we want to make each railway actor be aware that through a deep risk analysis and taking the necessary measures, one can avoid an important part of events.

We must try always to prevent possible serious accidents, approaching the causes of some accident less serious and of some near misses and examining why some types of accident appear. This is the reason why each year we summarize the types of accidents we investigated previously. The role of our investigations is to check how well the safety measures are efficient in practice and to identify gaps and drawbacks of the measures for the risk control.

In the presumptive situation where accidents do not happened is not a realone, the most important challenge for me and my team is the continuous improvement of the railway safety, going in depth with de investigations, even if it sometimes disturbs, until the conditions are revealed, the causes and factors determined.

I'd like to thank to all the organizations we cooperated within this year and to point out the important steps made in this direction with the General Inspectorate of Police – Direction of Railway Transports. Our relationships with the infrastructure administrator/managers and with the railway undertaking are more and more close, and these relationships are based upon a mutual understanding of our roles and admission of the technical capacities. Our independence is important

for us, but it is fundamental not to be seen as an inapproachable institution and distant from the real problems of the railway sector.

I'd like to thank also to NIB Network, European Union Agency for Railways, all NIBS partener, with which AGIFER cooperated both in investigations and in good practice sharing events.

Not finally, I'd like to thank to AGIFER specialists, for the high levels of the investigations, for their professionalism and responsibility.

AGIFER General Manager

Phd. Vasile BELIBOU

1.2 Role and purpose

Role of Romanian Railway Investigation Agency-AGIFER

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

According to the provisions of the Safety Directive, to the provisions of Law no.55/2006 on the railway safety and to the Government Decision no.117/02.03.2010 that approves the Regulations for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and metro safety (hereinafter referred to as Investigation regulations), in making the decision for the opening of an investigation, AGIFER takes into account:

- 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 managers, railway undertakings, Romanian Railway Safety Authority or of other member states of European Union.

AGIFER does not investigate:

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

For any of these above-mentioned cases, an investigation can be started taking into account those mentioned in the previous paragraph.

AGIFER purpose

Through the investigation of the accidents and incidents, AGIFER aims the improvement of the railway safety and prevention of some accidents and incidents similar to those investigated.

The investigations, if necessary, have as final result safety recommendations, that are AGIFER proposal for the improvement of the railway safety.

1.3 General data about AGIFER

Employees at the end of 2016

At the end of 2016, AGIFER had 42 employees, that is:

- 1 general manager;
- 1 deputy general manager;
- 1 economic director;
- 2 advisers of the general manager;
- 4 department heads;

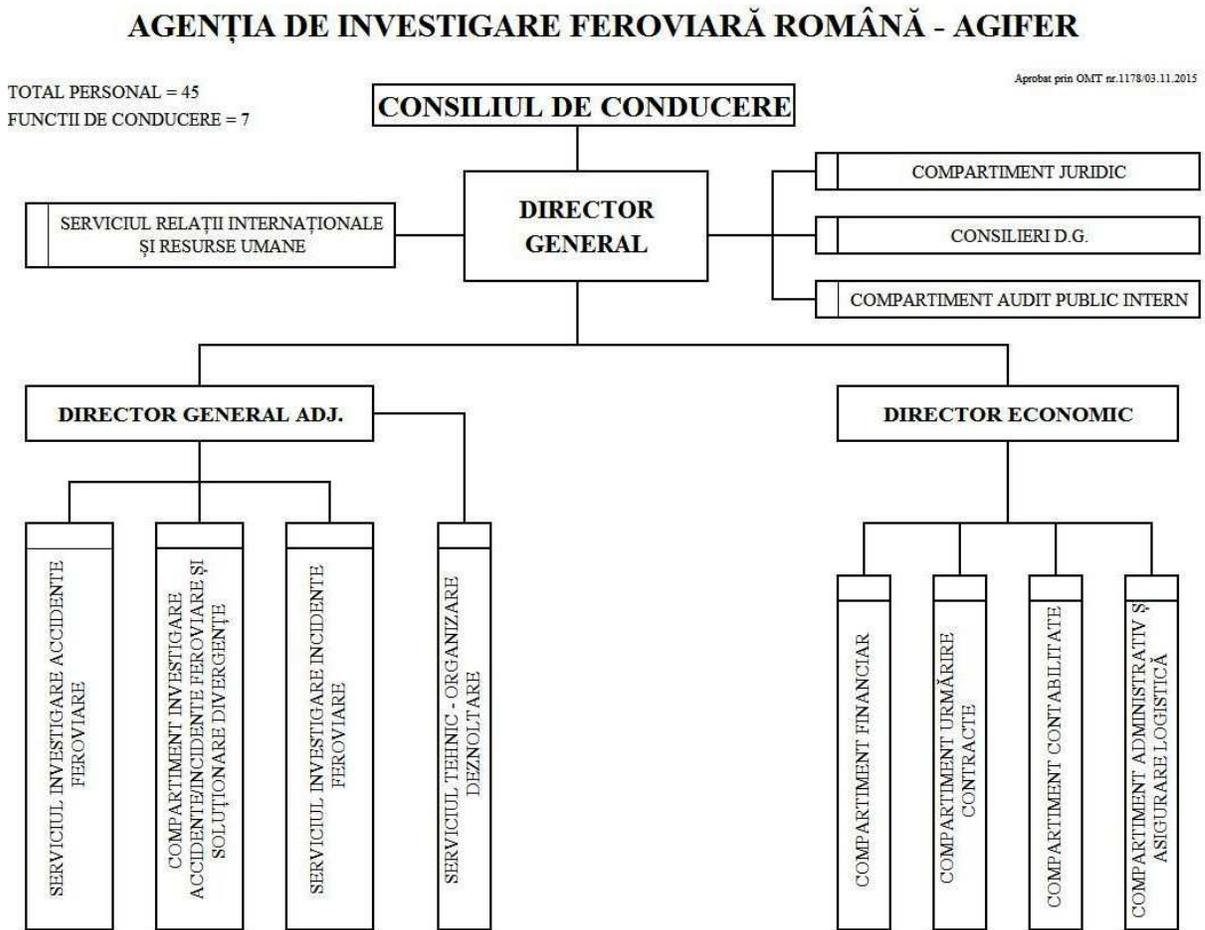
- 20 investigators;
- 2 psychologists;
- 1 legal adviser;
- 1 auditor;
- 5 experts;
- 1 technician;
- 1 referent;
- 2 economists.

Budget

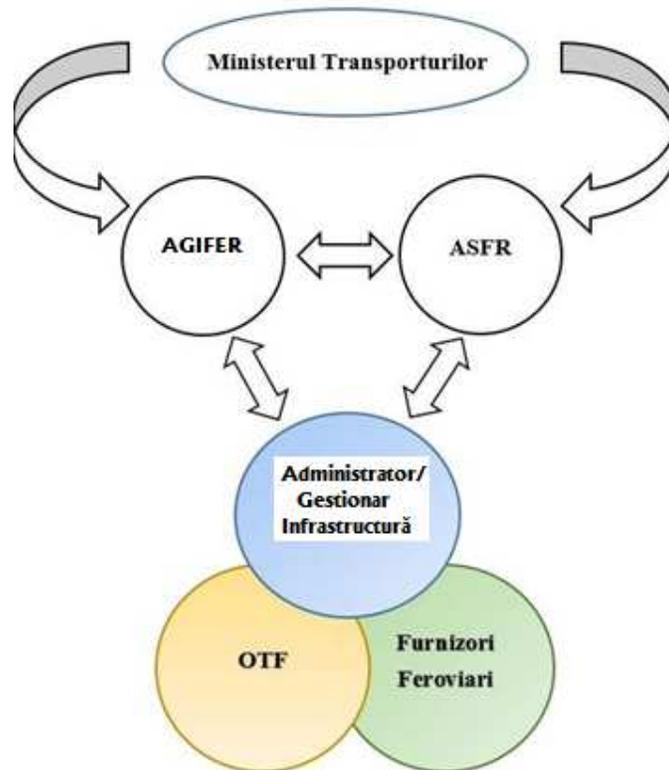
In 2016, AGIFER had for its activity a budget of 4.276.836 lei, that is 950.408 euro (considering an exchange rate 1 € = 4,5 lei).

1.4 Organization

In 2015, through the Minister of Transports' Order no.1178/03.11.2015 AGIFER organization chart was approved, being presented bellow:



1.5 Organization chart



2. INVESTIGATION PROCESS

The investigation aims to prevent the accidents and incidents and includes gathering and analyzing of the information, establishment of the conditions, including the determination of the causes and, if case, the issuing of some safety recommendations.

The investigation is from the legal point of view an administrative act, allowing the main investigators to fulfill their tasks as efficiently as possible and as soon as possible. The investigation is independent of any legal inquiry. The investigation does not aim in any way the establishment of the degree of guilty or the responsibility.

The result of an accident or incident investigation is the object of the investigation report prepared according to the seriousness of the accident or incident.

The report presents the investigations objectives and includes, if case, safety recommendations.

Before drawing out the investigation report (the final investigation report) one works out a draft report, that according to the provisions of the art 22(3) of the Law 55/2006 is submitted to the infrastructure administrator, involved railway undertakings, Romanian Railway Safety Authority, victims and their relatives, owners of the damaged goods, manufacturers, involved emergency services and the representatives of the staff and the users in order to inform them about the investigation and its course and to give them the possibility to present their opinions on the investigation and to express their comments on the information of the draft report.

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

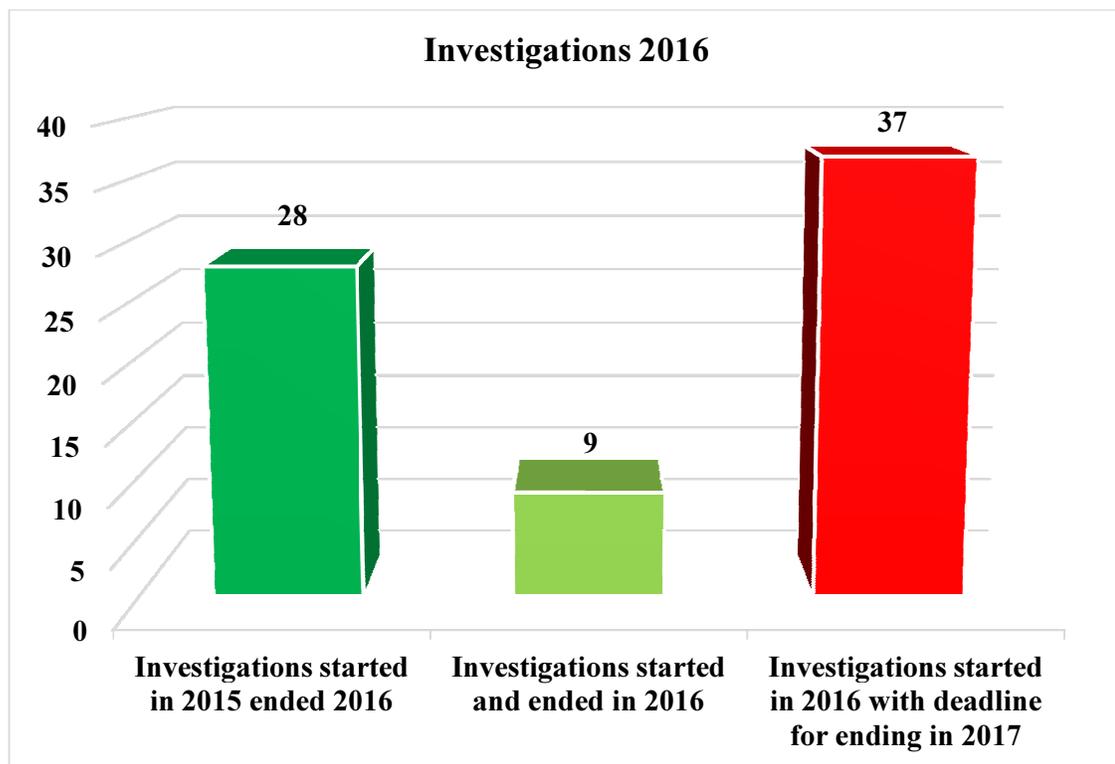
After its ending, the investigation report is submitted to the management of Romanian Railway Investigation Agency - AGIFER for the approval and publishing on its site.

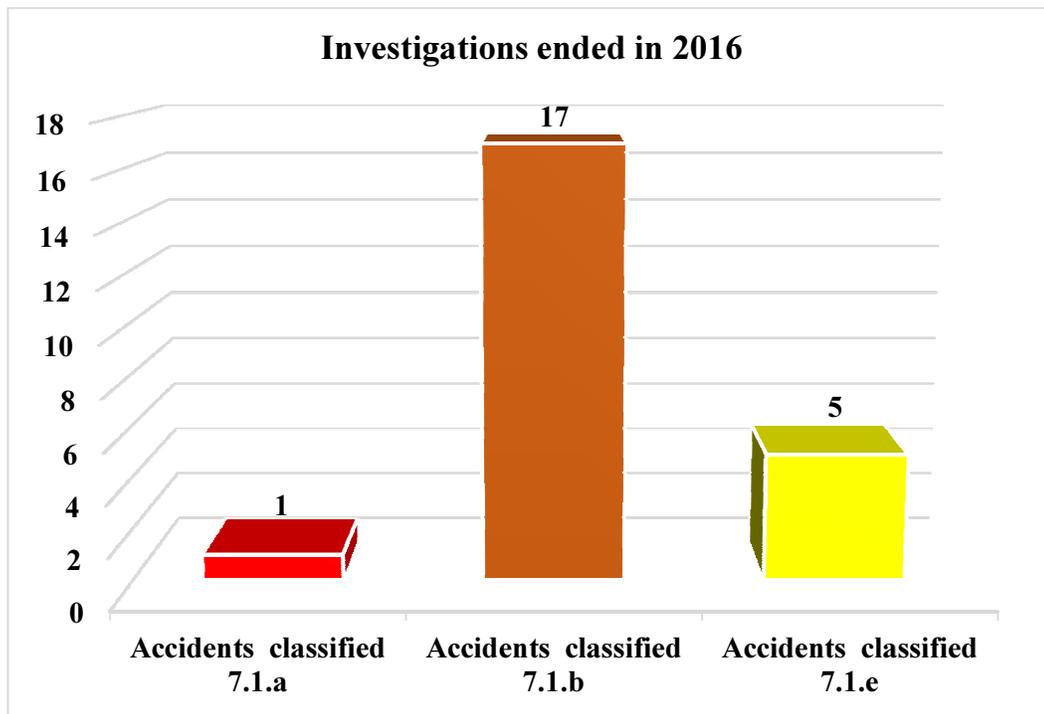
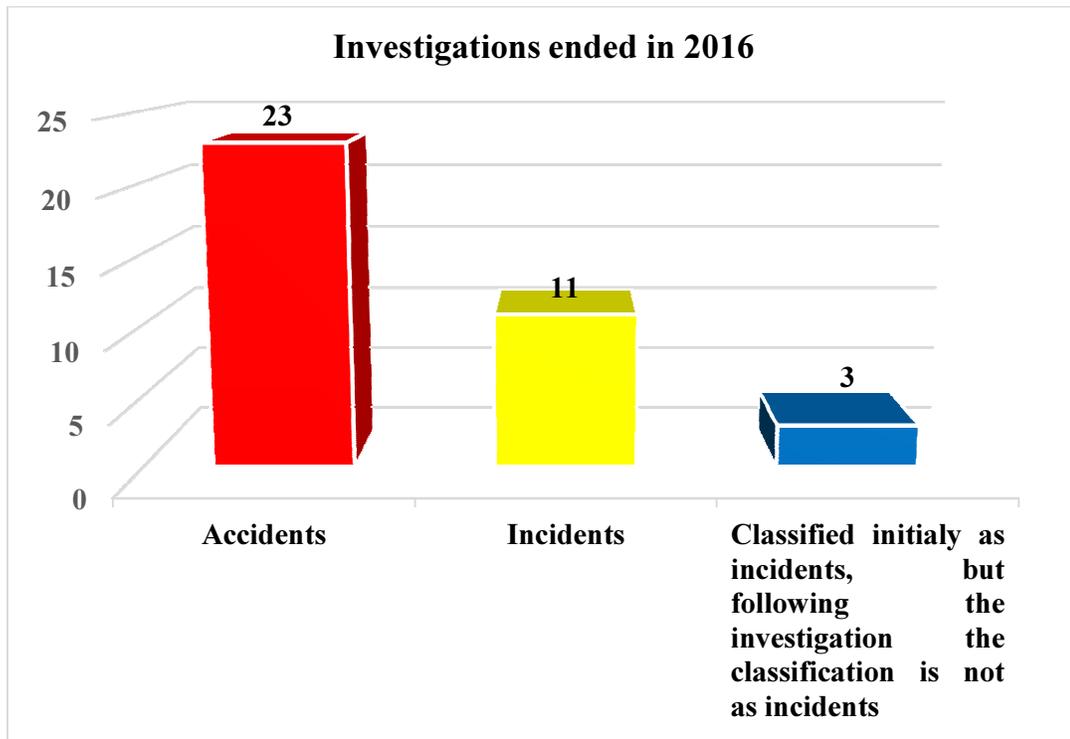
2.1 Investigated cases

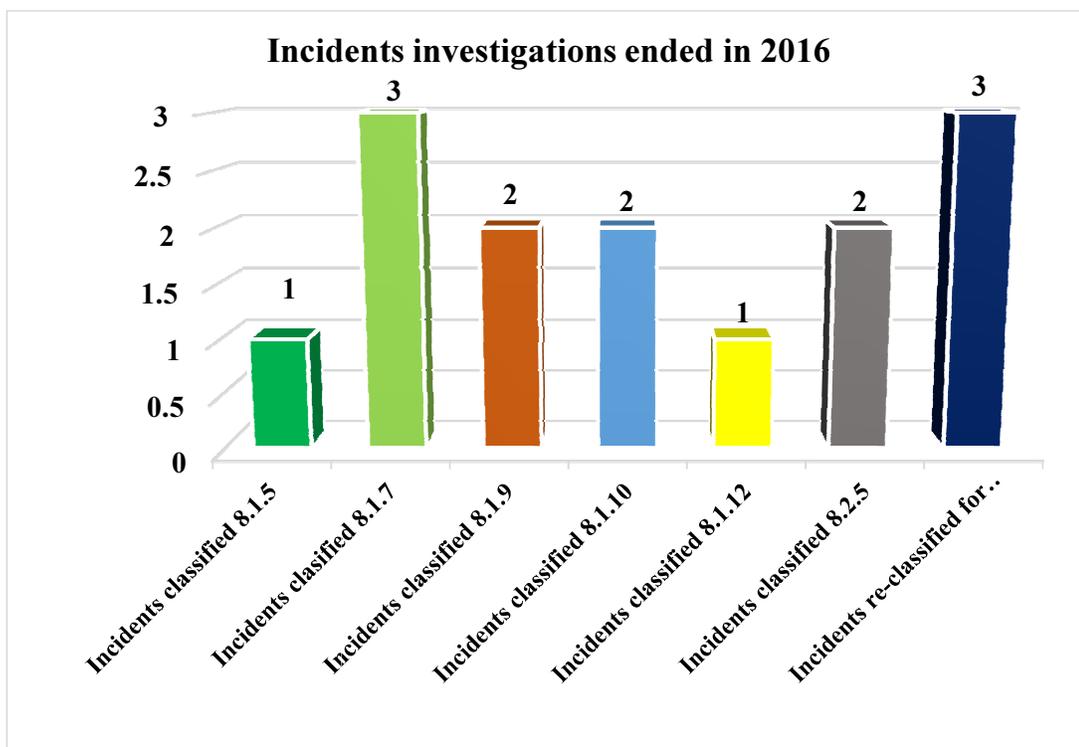
In 2016, AGIFER staff investigated **74** accidents/incidents, according to the provisions of *Law no.55/2006 on the railway safety and of the Regulations for investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety* approved by the *Government Decision 117/2010* – hereinafter referred to as *Investigation regulations*. From those 74 investigations, 28 were opened in 2015, and the other ones of 46 were opened in 2016.

In 2016, one also ended and closed **37** investigations, respectively:

- **23 accidents;**
- **14 incidents**, from which:
 - 11 cases classified according to the provisions of art.8.1 group A from the *Investigation regulations*, for which Romanian Railway Investigating Agency ensured the investigator in charge. In 2 cases, following the investigation, the investigation commission did not consider that it corresponds to a railway incident, according to the provisions of *Investigation Regulations*;
 - 2 cases classified according to the provisions of art.8.2 group B from the *Investigation Regulations*, for which AGIFER General Manager decided to start investigation and he appointed the members of the investigation commission;
 - 1 case classified according to the provisions of art.8.3 group C from the *Investigation Regulations*, for which AGIFER general manager decided to start investigation and appointed the members of the investigation commission. Following the investigation, the investigation commission considered that it is not a railway incident in accordance with the provisions of the *Investigation Regulations*.





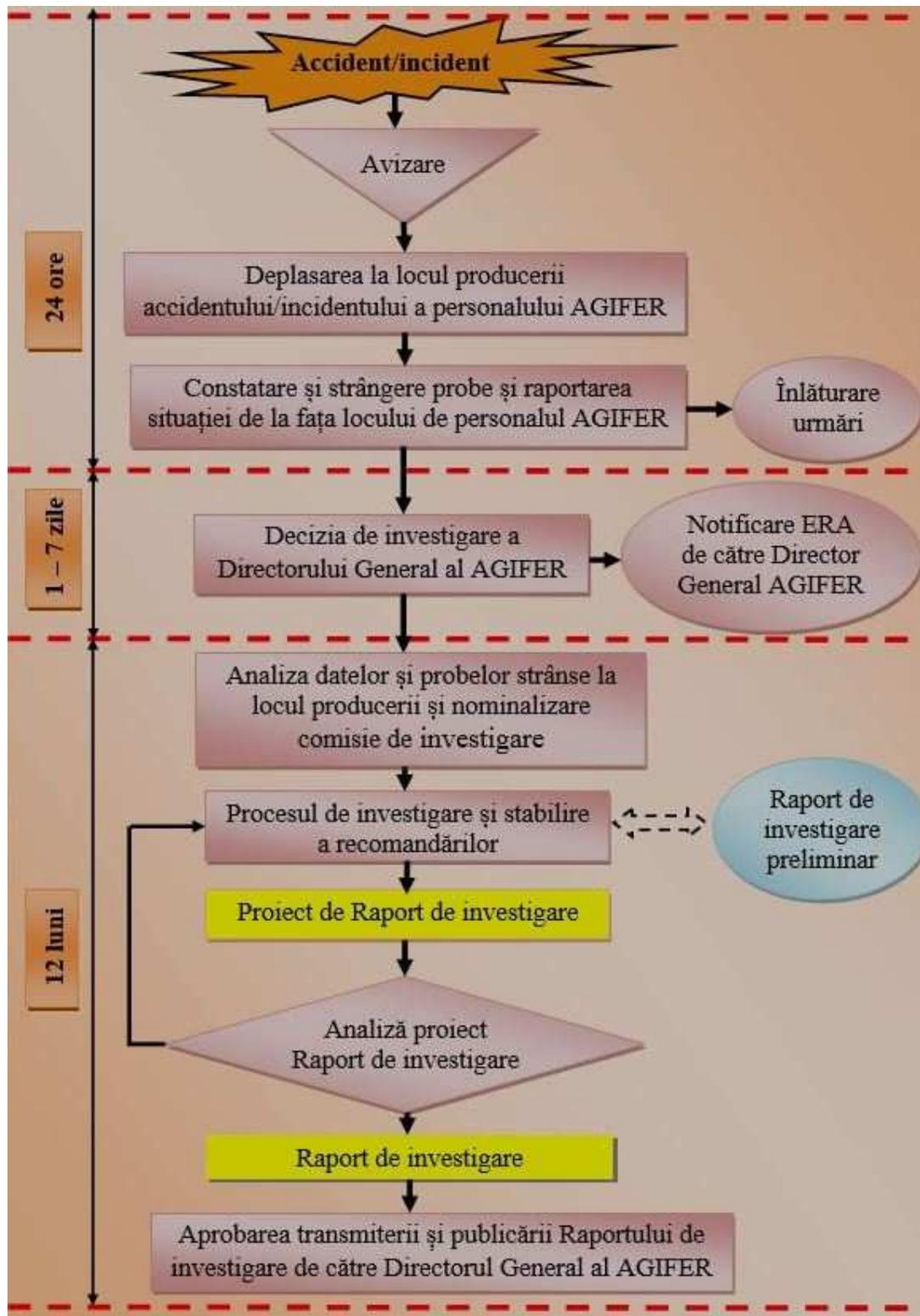


2.2 Institutions involved in the investigation (currently or exceptionally)

From its setting up until now, during the investigations Romanian Railway Investigation Agency - AGIFER cooperated with the authorities in charge with the legal inquiry, as well as with other authorities responsible with the interventions at the accident/incident site.

According to the provisions of the art. 20, paragraph 4 of the Law no. 55/2006 concerning the railway safety, in the investigations, Romanian Railway Investigating Agency – AGIFER can use, if necessary, specialists from related fields. During 2015, for the railway accident happened on the 5th June 2015, at 02:30 o'clock, in the Railway County Timișoara, track section Strehaia - Caransebeș (electrified single-track line), in the railway station Orșova, in the running of the freight train no.21153 (got by the railway undertaking SNTFM „CFR Marfă” SA), 4 wagons derailed (from the rear of the train: one bogie of the 4th wagon, the 5th wagon overturn, all axles of the the 6th and the 7th wagons derailed and reclined at 45o), one used in the investigation commission a representative of the Construction Faculty fom Timisoara. The investigation extended also in 2016 until the 6th of June 2016.

2.3 Investigation process



3. INVESTIGATIONS

3.1. Overview of the investigations ended in 2016 as against to 2015, identification of the main tendencies

Type of the accidents investigated in 2016 ⁽¹⁾	Number of accidents	Number of victims		Damages (lei)	Damages (€)	Tendency of the accident number, as against to 2015 (difference between the number of cases and percentage)
		Deaths	Seriously injured			
Train collisions	1	-	1	559,59	124,18 €	0 (0%)
Train derailments	17	-	-	1477047,60	1477047,60 €	+1 (+6%)
Road vehicles hit at the level crossings	0	-	-	0	0	-1 (-100%)
Fires at in the rolling stock	5	-	-	3415146,80	758921,51 €	+2 (+66,6%)
Total damages (about)	23	-	1	10080288,25	2240064,06 €	+2 (-9,5%)

⁽¹⁾ one took into account the year of the investigation end;

3.2. Investigations ended and started in 2016

In the year 2016 Romanian Railway Investigation Agency (AGIFER) ended and closed 37 investigations (from which 28 were investigations opened in 2015) and started the investigation in 37 cases for which the investigations opened in 2016 have to be ended in 2017. For the analyzed period of time, 3 investigation cases were closed, following their re-classification made upon the preliminary findings.

In the bellow table we present the investigations and their legal basis, taking into account the requirements of European Directive for the railway safety and of the national legislation.

Investigations ended in 2016

No.	Date of occurrence	Presentation	Legal basis of the investigation ⁽¹⁾	Date of ending
1	07.02.2015	In the railway county Timișoara, track section Sânnicolau Mare - Ronaț Triaj (non-electrified single-track line), managed by the infrastructure manager SC RC-CF TRANS SRL Brașov, between the railway stations Satu Nou and Biled , km 33+800, in the running of the freight train no.89388, consisting in 10 loaded wagons, type Uagps, hauled by the locomotive DHC 713 (got by	i	11.01.2016

		the railway freight undertaking SC GRUP FERROVIAR ROMÂN SA), both bogies of the wagons 5, 6, 7. 8 derailed, and the first axle of the wagon 9 derailed also.		
2	14.04.2015	In the railway county Constanța, in the railway station Agigea Nord , during the stabling of the freight train no. 82571 (got by the railway undertaking SNTFM „CFR Marfă” SA), the first bogie from the fourth wagon, in the running direction, derailed.	i	15.02.2016
3	27.04.2015	In the railway county Constanta, in the railway station Tulcea Marfuri , in the running of the freight train no.21716 (got by the railway freight undertaking SNTFM „CFR Marfă” SA), a fire burst into the hauling locomotive DA 1383.	i	12.01.2016
4	28.04.2015	In the railway county Iasi, in the railway station Săbăoani , one found out that the movements inspector on duty did not get authorization for the operation of the traffic safety equipments.	iii	22.03.2016
5	07.05.2015	In the railway county Brasov, track section Ploiesti Vest – Brasov (electrified double-track line), between the railway stations Predeal and Timișu de Sus , on the track II, km 150+966, in the running of the freight train no.30686 (got by the railway freight undertaking DB Schenker Rail România), hauled by the locomotive EA 006 (as hauling locomotive) and locomotive DA 166 (as banking locomotive), the first bogie of the 5-th wagon after the locomotive, in the running direction, derailed.	i	21.03.2016
6	16.05.2015	In the railway county Brasov, track section Copșa Mică – Sibiu (non-electrified single-track line), between the railway stations Loamneș and Ocna Sibiului , in the running of the passenger train no.2568, consisting in the diesel multiple-unit ADH 1412, got by the railway undertaking SNTFC „CFR Calatori” SA, both axles from the fist bogie, in its running direction, derailed.	i	08.03.2016
7	22.05.2015	In the railway county Craiova, in the railway station Caracal , on the line 1, in the running of the train no. 31652, got by SNTFM „CFR	i	06.05.2016

		Marfă” SA, both bogies of the 18th wagon derailed.		
8	26.05.2015	In the railway county Brasov, track section Brasov – Sighisoara (electrified double – track line), in the railway station Vânători , km 288+300, in the running of the freight train no.50428 (got by the railway undertaking SC UNICOM TRANZIT SA), 7 wagons, starting with the 23rd to the 29th derailed (the 24th overturn).	i	23.05.2016
9	27.05.2015	In the railway county Galati, track section Focsani – Marasesti (electrified double-track line), between the railway stations Mărășești and Putna Seacă , track 1, km 112+000, the train no. 58394 (the tower wagon DP-052, got by Line district LC Mărășești), overtook and hit seriously the rear wagon of the freight train no.41786 (got by the railway undertaking SNTFM „CFR MARFĂ” SA).	i	20.05.2016
10	05.06.2015	In the railway county Craiova, track section Strehaia - Caransebeș (electrified single-track line), at the entrance in the railway station Orsova , on the line 2, passing over the the switch no. 5/9, in the running of the freight train no. 21153 (got by the railway undertaking SNTFM „CFR Marfă” SA) hauled by the locomotive EA 492, 4 wagons derailed (from the rear of the train: one bogie of the 4 th wagon, the 5 th one overturn, all axles of the 6 th and 7 th wagons derailed and these wagons reclined at 45°).	i	06.06.2016
11	02.07.2015	In the railway County Craiova, in the railway station Roșiori Nord , in the running of the freight train no.61706 (got by the railway undertaking SNTFM „CFR Marfă” SA) , the first 5 axles of the hauling locomotive ED 043 derailed in the running direction.	i	30.06.2016
12	05.07.2016	In the Railway County Brașov, between the railway stations Coșlariu group Podu Mureș and Crăciunel , the first axle of the 7th wagon fom the locomotive of the freight train no.40617 (got by the railway undertaking DB Schenker Rail Romania SA) derailed in the running direction.	i	04.07.2016
13	06.07.2015	In the railway county Galați, in the railway	i	30.06.2016

		station Cătușa , in the running of the freight train no.59464, got by the railway undertaking SC UNICOM TRANZIT SA, two wagons of the train derailed (both bogies of the 11 th wagon and first bogie of the 12 th wagon,in the running direction).		
14	20.07.2015	In the railway county Craiova, track section Costești – Roșiori Nord (non-electrified single-track line), between the railway stations Balaci and Roșiori Nord , three wagons loaded with cars, in the composition of the freight train no. 60812 (got by the railway undertaking SC Transferoviar Grup SA) derailed	i	19.07.2016
15	11.08.2015	In railway county Timișoara, track section Simeria - Livezeni (electrified double-track line), km 65+670, between the railway stations Merișor and Bănița , in the running of the freight train no. 80438, got by the railway undertaking SC GRUP FERROVIAR ROMÂN SA, a fire burst into the hauling locomotive EA 085.	i	04.08.2016
16	22.08.2015	In the railway county Brașov, track section Ucea – Victoria (non-interoperable track section managed by SC Viromet SA Victoria – non-electrified single-track line), km 8+100, a fire burst into the locomotive DA 1524,hauling the freight train no. 89497, got by the railway undertaking SC GRUP FERROVIAR ROMÂN SA.	i	13.06.2016
17	06.09.2015	In the railway county Timisoara, track section Strehaia - Caransebeș (electrified single-track line), km 446+250, between the railway stations Vălișoara and Valea Timișului , in the running of the freight train no.80368-1(got by the railway undertaking SC Grup Feroviar Român SA), consisting in 26 wagons (loaded with diesel), six wagons of the train derailed (two of them overturned).	i	01.07.2016
18	11.09.2015	In the railway county București, track section Dambu – Armasesti, in the railway station Dâmbu , in the running of the freight train no.31550 (got by the railway freight undertaking SNTFM „CFR Marfă” SA) both	i	31.08.2016

		bogies of the 24th wagon derailed.		
19	14.10.2015	In the railway county Cluj, track section Razboieni - Apahida (electrified double-track line), in the railway station Valea Florilor , end X, on the track I, in the running of the freight train no.80413 (got by the railway undertaking SC GRUP FERROVIAR SA), consisting in 18 wagons loaded with diesel, 6 wagons derailed (three of them overturned), being in the train composition from the 12th to the 17th.	i	12.10.2016
20	15.10.2015	In the railway county Timișoara, track section Iliia-Radna, in the railway station Ilteu , end X, on the track II, on the cross-over 1/3, in the running of the passenger train no. 2343 (got by the railway undertaking SNTFC „CFR Călători” SA), the first axle of the hauling locomotive EA 263, in the running direction, derailed .	i	13.10.2016
21	03.11.2013	In the railway county Timișoara, between the railway stations Arad and Aradu Nou , in the running of the passenger train no.14316-2 (got by the railway undertaking SC Regiotrans SRL Brașov), the entry signal Y _{FA} of the railway station Aradu Nou was passed on danger	iii	12.04.2016
22	04.11.2015	In the railway county Constanța, in the running of the freight train no.31762-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), in the railway station Fetești , the train was routed with the braked weight percentage non-ensured.	iii	11.07.2016
23	04.11.2015	In the railway county Constanța, in the running of the freight train no.31764-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), in the railway station Fetești , the train was routed with the braked weight percentage non-ensured.	iii	11.07.2016
24	19.11.2015	In the railway county Brașov, track section Brașov - Vânători (electrified double-track line), on the running track II, km 238+607, between the railway stations Rupea and Racoș , , in the running of the freight train no.41758-1 (got by the railway undertaking	i	18.11.2016

		SNTFM „CFR Marfă” SA), consisting in 33 wagons loaded with diesel, hauled by the locomotive EA 456 and with the banking locomotive EA 869, seven wagons derailed (three of them overturned), being from the 12th to the 18th in the train composition.		
25	17.11.2015	In the railway county Constanța, in the running of the freight train no.31734-1(got by the railway undertaking SNTFM „CFR Marfă” SA), in the railway station Fetesti , one found out that the train was routed with the braked weight non-ensured	i	20.10.2016
26	29.11.2015	In the railway county Craiova, in the railway station Filiași , km.285+500, in the running of the freight train no.93754 (got by the railway undertaking SNTFM „CFR Marfă” SA), the covers of DAM equipments from the switches no. 4 and 18 and the concrete slabs from the board crossing of the line III of the railway station were hit by parts from the rolling stock in running.	iii	07.04.2016
27	21.12.2015	In the railway county Cluj, in the railway station TUNEL , the work train no.38230, consisting in the train PLASSER DGS 62N, passed, in its running, the signal Y, on danger, followed by the trailing of the switch no.6.	iii	07.04.2016
28	27.12.2015	In the railway county Timisoara, end Y of the railway station Arad , during the shunting process for the coupling of the hauling locomotive DA 1097 at the rake of coaches of the passenger train Regio nr.3115 (got by the railway undertaking SNTFC „CFR Călători” SA), on the line 7A1 (occupied), the rake of coaches Regio no. 3115, stopped, was hit seriously. Followed this situation, the first wagon was damaged and 7 passengers were injured, 4 of them were taken to the hospital.	i	26.09.2016
29	11.01.2016	In the railway county Timisoara, track section Simeria - Livezeni (electrified double-track line), in the railway station Petrosani , at the stabling on the line 8 of the freight train no.20954 (got by the railway undertaking SC Cargo Trans Vagon SA), consisting in 16 wagons, the first bogie of the wagon no.85535310074-3 (the 10th from the	i	19.12.2016

		locomotive) derailed.		
30	23.01.2016	In the railway county București, non-interoperable track section Târgoviște - Pietroșița (non-electrified single-track line), in the railway station Aninoasa , a fire burst in the diesel multiple unit DESIRO 2114, being passenger train Regio no.9438 (got by the railway undertaking SNTFC „CFR Călători” SA).	i	14.12.2016
31	25.01.2016	In the railway county Iași, in the railway station Suceava , during the couplig operation of the locomotive DHC 615 at the rake of coaches no. 5604 (got by the railway undertaking SNTFC „CFR Călători” SA) a collision happened, followed by the routing and running with technical problems at the wagon no.50532068004-2, being in the composition of the train no.5604.	i	07.07.2016
32	23.01.2016	In the railway county Craiova, on the track section Băbeni – Piatra Olt , in the running of the freight train no.80450, hauled by the locomotive DA 1544, the maximum speed, established through the running order, was exceeded.	iii	15.09.2016
33	09.03.2016	In the railway county Constanța, km. 133+700,between the railway stations Tulcea Mărfuri and Cataloi , in the running of the freight train no.93311-2 (got by the railway freight undertaking SNTFM „CFR Marfă” SA), a fire burst in the hauling locomotive DA 1306.	i	14.12.2016
34	17.05.2016	In the activity of SC Metrorex SA, in the station Nicolae Grigorescu , the train no.3917 (got by SC Metrorex SA) was dispatched in another direction than the one stipulated.	iii	08.06.2016
35	04.07.2016	In the railway county Timișoara, in the railway station Caravan , the passenger train no. 1695 (got by SNTFC „CFR Călători”) passed the exit signal X II on danger and trailed the switch no. 2.	iii	19.12.2016
36	13.05.2016	In the railway county Craiova, between Segarcea - Cerat , the diesel multiple unit R no. 932, that was train R no.9135 (got by SNTFC „CFR Călători” SA), exceeded the speed of 40 km/h stipulated in the working timetable, running with speeds between 41 ÷	iii	15.09.2016

		61 km/h.		
37	23.10.2016	In the railway county. Galați, between the railway stations Pufești and Adjud , a track magnet was hit by a wheel from the system for the operation of the hand braking from the freight wagon no.81533556487-9, being in the composition of the train no.71722-1 (got by the railway undertaking SC GFR SA).	iii	19.12.2016

(1) **Legal basis of the investigation:** i= According to the Safety Directive, ii= Upon the national legal basis (that cover 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 started in 2016, that are to be finished in 2017

No.	Date of occurrence	Presentation	Legal basis of the investigation ⁽¹⁾	Date of ending
1	06.02.2016	In the railway county Cluj, track section Dej Călători - Jibou (non-electrified single-track line), in the railway station Letca , in the running of the freight train no. 42691, consisting in 29 wagons (loaded with salt), hauled by the locomotives DA 931 and DA 1158, got by the railway freight undertaking SNTFM „CFR Marfă” SA, 10 wagons derailed.	i	02.02.2017
2	08.02.2016	In the railway county Brașov, track section Luduș - Măgheruș Șieu (non-electrified single-track line), managed by SC RC - CF TRANS SRL, km 15+350, between the railway stations Luduș și Sărmășel , in the running of the passenger train Regio no.14020 (got by the railway undertaking SC REGIOTRANS SRL Brașov), the first axle of the diesel multiple unit AMX 1602 derailed, in its running direction.	i	02.02.2017
3	18.02.2016	In the railway county Cluj, track section Măgheruș Șieu – Beclean pe Someș (electrified single-track line), between the exit signal X1 and the switch no.4 from the railway station Șintereag , in the running of the passenger train regio no.4206-1 (got by the railway undertaking SNTFC „CFR Călători” SA), the first axle from the hauling locomotive EA 670, derailed, in its running direction.	i	09.02.2017
4	10.03.2016	In the railway county Brasov, in the railway station Siculeni , in the running of the freight train no.83286 (got by the railway undertaking SNTFM „CFR Marfă” SA), the first bogie of the wagon	i	09.03.2017

		no.31534542105-3, the 4th of the train, derailed in the running direction		
5	12.03.2016	In the railway county București, in the railway station Chitila , in the running of the freight train no.40616-1 (got by the railway undertaking DB Schenker Rail Romania SRL (now Deutsche Bahn Cargo Romania SRL), the last two wagons derailed, respectively wagon no.43714378439-9, and the wagon no.43714378598-2.	i	20.02.2017
6	12.03.2016	In the Railway County Craiova, between the railway stations Strehaia and Butoiești , km 304+00, in the running of the passenger train no. 9502 (got by the railway undertaking SNTFC „CFR Călători” SA) the hauling locomotive EA 329 hit a metallic joint fish plate.	iii	09.03.2017
7	21.03.2016	In the railway county Brașov, track section Brașov – Sighișoara (electrified double-track line), in the railway station Augustin , on the switch no.7, the first bogie of the locomotive EA 498, hauling the passenger train IR no.1745 (got by the railway undertaking SNTFC „CFR Călători” SA) derailed in the running direction.	i	20.03.2017
8	15.04.2016	In the railway county Cluj, track section Dej Călători - Jibou (non-electrified double-track line), at the passing of the freight train no.42619 through the railway station Galgau , consisting in 30 wagons (got by the railway freight undertaking SNTFM „CFR Marfă” SA), the first axle from the 25th wagon of the train, loaded with empty containers, derailed in the running direction	i	16.01.2017
9	22.04.2016	In the railway county Cluj, track section Jibou – Carei, in the railway station Zalău Nord , in the running of the freight train no.48402 A (got by the railway undertaking SNTFM „CFR Marfă” SA), five axles of the hauling locomotive DA 970 derailed.	i	19.04.2017
10	26.04.2016	In the railway county Craiova, in the railway station Craiova , in the running of the freight train no.39554, got by the railway freight undertaking Deutsche Bahn Cargo România SRL, three wagons, loaded with cereals, derailed, that is the 9th, the 10th and the 11th (two of them overturned).	i	21.04.2017
11	03.05.2016	In the railway county Craiova, track section Turceni - Drăgotești (electrified single-track line), between the railway stations Drăgotești and Borăscu , km 39+041, in the running of the freight train no.23652 (got by the railway undertaking SNTFM „CFR Marfă” SA), both bogies of the first	i	21.04.2017

		wagon and the first bogie of the second wagon derailed		
12	19.03.2016	In the railway county Craiova, on the industrial branch got by Terminal Arpechim, connected to the railway station Bradu de Sus , the first two wagons from the locomotive derailed, owned by the the economic agent CH-VTGCH and rented by the railway undertaking SNTFM CFR Marfă SA.	iii	03.04.2017
13	05.05.2016	In the railway county Craiova, in the railway station Caracal , the train no. 39552, hauled by DA 1009 (got by the railway undertaking Deutsche Bahn Cargo România) hit the point motor of the switch no.30,	iii	27.04.2017
14	08.05.2016	In the railway county Brasov, track section Braşov - Ploieşti Vest (electrified double-track line), km 148+125, on the track I, between the railway stations Predeal şi Timişu de Sus , in the running of the freight train no.33304 (got by the railway undertaking SNTFM „CFR Marfă” SA), a fire burst into the hauling locomotive EA 852.	i	03.05.2017
15	21.05.2016	In the railway county Craiova, track section Turceni – Drăgoteşti (electrified single-track line), in the railway station Dragotesti , the freight train no.23639 (got by the railway undertaking SNTFM „CFR Marfă” SA), at its crossing over the switch no.7, the second bogie of the 27th wagon derailed.	i	19.04.2017
16	25.05.2016	In the railway county Timisoara, track section Simeria – Hunedoara (electrified single-track line), in the railway station Pestiş , in the running of the freight train no.30638 (got by the railway undertaking Deutsche Bahn Cargo România), 11 wagons derailed	i	23.05.2017
17	28.05.2016	In the railway county Craiova, track section Băbeni Alunu (non-electrified single-track line), km 37+800, between the railway stations Alunu and Berbeşti , in the running of the freight train no.79184 (got by the railway freight undertaking SC Grup Feroviar Român SA), the second bogie of 15th wagon derailed.	i	23.05.2017
18	01.06.2016	In the railway county Iaşi, between the railway stations Ruginoasa and Paşcani , the locomotive EC-085 from the passenger train no. 5402-1 (got by the railway undertaking SNTFC „CFR Călători” SA) hit 9 track magnets.	iii	30.05.2017
19	14.06.2016	In the railway county Brasov, track section Braşov - Sighişoara (electrified double-track line), between	i	25.05.2017

		the railway stations Cața and Rupea , a fire burst in the inactive locomotive EA 557 of the passenger train Regio no.3536 (got by the railway undertaking SNTFC „CFR Călători” SA).		
20	22.06.2016	In the railway county Cluj, track section Salva – Vișeu de Jos (non-electrified single-track line), km 12+200, between the railway stations Telciu and Coșbuc , in the running of the freight train no.42564 (got by the railway undertaking SNTFM „CFR Marfă” SA), two wagons derailed.	i	14.06.2017
21	10.07.2016	In the railway county București, in the railway station Bucureștii Noi , in the running of the freight train no.71706, got by the railway freight undertaking SNTFM „CFR Marfă” SA, two loaded wagon derailed (the 12th and 13th wagons of the train) by one bogie.	i	15.06.2017
22	02.08.2016	In the railway county Craiova, in the railway station Valea Albă , in the running of the freight train no.92310, got by the railway undertaking SNTFM „CFR Marfă” SA, the first axle from the locomotive ED 047 (the second in front of the train) derailed	i	27.07.2017
23	05.08.2016	In the railway county Galați, track section Buzau - Mărășești (electrified double-track line), between the railway stations Buzau and Boboc , on the track II, km 135+680, in the running of the passenger train no. 5110, got by the railway undertaking SNTFC „CFR Călători” SA ,a fire burst into the hauling locomotive EA 818.	i	14.07.2017
24	26.08.2016	In the railway county Bucuresti, track section Videle – Giurgiu Nord (non-electrified single-track line), km 54+400, between the railway stations Târnavele and Rădulești , a fire burst into the locomotive DA614, that ran as train no. 87232, got by the railway undertaking SNTFM „CFR Marfă” SA.	i	24.07.2017
25	02.09.2016	In the railway county Craiova, track section Filiași-Strehaia, in the railway station Gura Motrului , in the running of the freight train no.93756A-1, got by the railway undertaking SNTFM „CFR Marfă” SA, the first axle of the hauling locomotive EA130 derailed.	i	31.08.2017
26	02.10.2016	In the railway county Brașov, track section Brașov-Siculeni (electrified single-track line), between the railway stations Bicsadu Oltului and Malnaș Băi , km 54+100, in the running of the passenger train no.1642, got by the railway undertaking SNTFC „CFR Călători” SA, the 6 th axle of the hauling locomotive EA 014 derailed, in the running	i	Investigation in process

		direction.		
27	02.10.2016	In the railway county Craiova, between the railway stations Hârsești and Recea , the locomotive DA 1191, got by the railway undertaking SNTFC „CFR Călători” SA and hauling the passenger train Regio no. 9401-2, hit 14 inductors	iii	23.05.2017
28	06.10.2016	In the railway county Craiova, in the railway station Balota , the inactive locomotive EA 566 of the train no. 97559, got by the railway undertaking SNTFM „CFR Marfă” SA, hit an inductor	iii	23.05.2017
29	19.10.2016	In the railway county Constanța, railway station Medgidia , in the running of the freight train no.80394, hauled by the locomotive DA 1523, got by the railway undertaking SC GRUP FERROVIAR ROMÂN SA, the first bogie of the 6 th wagon of the train, loaded with cement, derailed.	i	Investigation in process
30	29.10.2016	In the railway county Constanța, between the railway stations Dunărea and Cernavodă Pod , the locomotive EA 538, hauling the train no. 1581, got by the railway undertaking SNTFC „CFR Călători” SA., hit a metallic profile.	iii	23.02.2017
31	13.09.2016	In the railway county Craiova, in the railway station Caracal , the train no. 20902, got by the railway undertaking SC Transferoviar Grup SA exceeded the speed restriction of 30 km/h for the railway station Caracal, running with 69 km/h	iii	23.05.2017
32	17.11.2016	In the railway county Brașov, track section Gheorgheni - Deda (electrified single-track line), in the railway station Ditrău , in the area of the switch no.4 from end Y, in the running of the freight train no.51720, got by the railway undertaking SNTFM „CFR Marfă” SA, 4 wagons, loaded with ammonium nitrate, derailed (both bogies of the the 17 th , 18 th and 19 th wagons derailed and one bogie of the 20 th wagon derailed)	i	Investigation in process
33	23.11.2016	In the railway county Timișoara, in the railway station Arad , at the shunting from the free line 1A to the line 12A1 occupied by a rake of 25 wagons (24 loaded with fuel and a buffer wagon, empty at the rear of the train), the locomotive DA 352 got by the railway undertaking SC MMV Rail România collided seriously the rake of stopped wagons, damaging the first wagon, climbing it over the second wagon.	i	Investigation in process

34	30.11.2016	In the railway county Craiova, in the railway station Bârsești , during the shunting for the restabbling of a light locomotive EA 515, for its coupling with the locomotive EC 104, (both of them got by the railway undertaking SNTFM „CFR Marfă” SA), coupled at the freight train no.81708-1, stabled on the line 5, these two locomotives collided seriously. Following the impact, the driver of the locomotive EA 515 died, the driver of the locomotive EC 104 was seriously injured and the next damages happened: <ul style="list-style-type: none"> • destruction of the body from the first wagon of the freight train no.81708-1; • seriously damage of those two locomotives and the derailment of the first bogie from the locomotive EC 104. 	i	Investigation in process
35	30.11.2016	In the railway county Constanța, in the railway station Neptun , a fire burst into the diesel multiple unit AM753, that ran as passenger train no.8389, got by the railway undertaking SNTFC „CFR Călători” SA. Following the fire, the driver had burns on the face and on the both arms and the diesel multiple unit was damaged about 50%.	i	Investigation in process
36	25.12.2016	In the railway county Timișoara, in the railway station Șofronea , the cover of the bars, for the operation and control of the switch no. 4, of the system ELP from the switch no. 3 and of the impedance bond of the section 013C, was hit and broken by the light locomotive EA 389, that ran as train no.79818, got by the railway undertaking MMV Romania.	iii	Investigation in process
37	27.12.2017	In the railway county Iași, between the railway stations Tutova and Bârlad , the inductors of 1000/2000 Hz and 500 Hz, afferent to the signal Bl 5, were hit by a part fallen from the locomotive DA 863, hauling the train no.1831, got by the railway undertaking SNTFC „CFR Călători” SA.	iii	04.05.2017

(1) **Legal basis of the investigation:** i= According to the Safety Directive, ii= Upon the national legal basis (that cover 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 studies) ended or ordered in 2016

Studies ordered in 2016 and ended in 2016

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 cover 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).

Studies ordered in 2016 in process

Order date	Study name (classification type, localization)	Legal basis of the investigation ⁽¹⁾	Complementary data
11.10.2016	Technical expertise of the axle broken section (metallographic determinations concerning the chemical composition and the structure of the metal the axle is made of and physico-mechanical tests on the sample taken from the axle body) no.6, series no.32978, axle derailed from the locomotive EA 014, hauling the passenger train no.1642 (got by the railway undertaking SNTFC „CFR Călători” SA), in the running into the railway county Braşov, track section Braşov-Siculeni (electrified single – track line), between the railway stations Bicsadu Oltului and Malnaş Băi, km 54+100, on the 2 nd October 2016, at 02:45 o'clock.	I	-

(1) **Legal basis of the investigation:** i= According to the Safety Directive, ii= Upon the national legal basis (that cover 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 ended and closed in 2016

During 2016, 37 investigations were ended and closed, from these 28 opened in 2015, the other 9 being opened during 2016. We present below a summary of those 37 investigation reports finished and ended during 2016.

3.4.1. The railway accident happened on the 7th February 2015, at 14:15 o'clock, in the running of the freight train no.89388, consisting in 10 loaded wagons type Uagps, hauled by the locomotive DHC 713 (got by the railway freight undertaking SC GRUP FERROVIAR ROMÂN SA) in the railway county Timișoara, the track section

Sânnicolau Mare - Ronaț (non-electrified single-track line), managed by the infrastructure manager SC RC-CF TRANS SRL Brașov, between the railway stations Satu Nou and Biled, km 33+800, both bogies of the wagons 5, 6, 7, 8 and the first axle of the wagon 9 derailed, in the running direction.

The investigation report was finished on the 11th January 2016.

Direct cause:

The **direct** cause of the accident is the fall between the rails of the right wheel of the guiding axle from the 5-th wagon after the locomotive, no.33539332500-6, at its running on an area with gauge values over the maximum limit accepted in operation.

Contributing factors:

- keeping in the track of sleepers that did not ensure the fastening of the rails and did not maintain the gauge between the accepted tolerances.
- distance between the exterior faces of the flanges of wheels, belonging to the guiding axle of the wagon no.33539332500-6 (the 5-th wagon after the locomotive), under the minimum value accepted in operation.

Underlying causes

Underlying causes of the accident consisted in the infringement of the provisions of the next National Safety Norms, as follows:

- art.25.4 from the Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge - no.314/1989 ,according witch it is not accepted within the track two unsuitable close sleepers and over two unsuitable sleepers in a group of 15 sleepers is not accepted;
- art.221(2) letter a from the Regulations for railway technical operation – no.002 and Table no.1 from Instructions on technical inspection and maintenance of wagons in operation no.250/2005, on the meeting with the accepted tolerances for the value of distance between the exterior faces of the flanges of wheels from the wheels set, in order to be accepted in operation.

Root causes:

The investigation commission identified as root causes of this accident, the deficiencies from the working out of the safety management system, written down in the chapter *C.5.2. Safety management system* from this investigation report, respectively:

1. non-inclusion of art.3 from the Sheet no.4, concerning the fortnightly inspection and of Sheets no.2 and no.3 from the *Instruction on the establishment of deadlines and order for the performance of track inspections no.305/1997* in „Flow chart of the process for the track diagnosis and work receptions” from the procedure code PP-63 „Railway infrastructure maintenance”.
2. non-inclusion of the Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauges no.314/1989 in the codes of good practice, applied for the risk associated to the identified dangerous and called „failure of the track superstructure”.
3. non-identification in the Danger Record, worked out according to the procedure code PP-83-01 „Control of all risks associated to the activity for the railway infrastructure management”, of the danger that led to the accident, respectively exceeding of the maximum accepted value for the track gauge.

Safety recommendations

Following the checking of the documents submitted by the railway infrastructure manager, the investigation commission found out a series of deficiencies in the

working out and application of the safety management system, written down in the chapter C.5.2. *Safety management system*

Taking into account these above mentioned, the investigation commission considers necessary to issue the next safety recommendation for Romanian Railway Safety Authority – ASFR:

1. RC- CF TRANS SRL Braşov, as railway infrastructure manager shall review the procedures of the safety management system, so, through their application, give assurances that the activities for the track maintenance, identification of the risks associated to the railway operations, working out and establishment of the measures for the risk control, as well as monitoring of the efficiency of the measures for the risk control are made according to the relevant requirements.

- 3.4.2. The railway accident happened on the 14th April 2015, at 15:30 o'clock, in the the railway county Constanţa, in the railway station Agigea Nord, at the stabling, on the line no. 5, of the freight train no. 82571 (got by the railway undertaking SNTFM „CFR Marfă” SA), in which the first bogie of the fourth wagon, in the running direction, derailed.

The investigation report was finished on the 15th February 2016

Direct cause

The direct cause of this accident is the overclimbing of the right rail by the wheel no.8 (of the axle 7-8, first in the running direction of the train) from the wagon no.31535493160-4, following the increase of the report between the driving force and the load that were acting on the attack wheel (the right wheel of the axle 7-8), so exceeding the derailment stability limit.

The increase of the report between the driving force and the load that were acting on the attack wheel was generated by the very important load transfer of the right wheel of the axle 7-8 (first in the train running direction) following the track twisting over the accepted value.

The track twisting over the accepted limit value happened because, during the works of periodical repair, performed in the railway station Agigea Nord, in case of the cross-over 15-19, the close lines were not taken at the same quota.

Underlying causes

Infringement of the provisions from the File for the Organization of the Periodical Repair Works in the railway station Agigea Nord, for:

- marking on site of the designed geometric parameters of the track, before and after the work end;
- daily measurement of the gauge, of the cross level from 2,5 m in 2,5 m and of the deflections on the line with speed restriction of 30 km/h;
- daily monitoring of the line between packing of sleepers I and packing of sleepers III and intervention if track distortions appear out of the tolerances accepted in operation.

Root causes

Root cause of the accident is that the File for the Organization of the Periodical repair in the railway station Agigea Nord was not made complying with the provisions of art. 3 from the Disposal of CNCF „CFR” SA no.12/2000, according which „during the works for periodical repair and mechanic packing of sleepers, in the switches area, one will consider to take the close lines at the same quota, so the afferent crosses-over be in the same plane”. So, through the organization file the works were incorrect sized, without included the switch no.19 (cross-over 15-19 completely).

Safety recommendations

Before the railway accident, in the railway station Agigea, periodical repairs with complete screening were performed (RPs), with heavy vehicles Plasser&Theurer on the switches from the end X of the railway station Agigea Nord.

Following the accident investigation, the investigation commission found out that, the File for the Organization of these works was not made with the compliance with the provisions of art. 3 from the Disposal of CNCF „CFR” SA no.12/2000, according which „during the works for periodical repair and mechanic packing of sleepers, in the switches area, one will consider to take the close lines at the same quota, so the afferent crosses-over be in the same plane”. So, the area where the periodical repairs had to be done was incorrect established, without included also the switch no.19 (cross-over 15-19 completely).

The commission found also out that, during the periodical repair works, the provisions of the File for the Periodical Repair Organization, end X of the railway station Agigea Nord were not met with, concerning:

- repair on site of the designed geometric parameters of the track, before and after the work finish;
- daily measurement of the gauge, of the cross level from 2,5 m in 2,5 m and of the deflections on the line with speed restriction of 30 km/h;
- daily monitoring of the line between packing of sleepers I and packing of sleepers III and intervention if track distortions appear over the tolerances accepted in operation.

Taking into account these above mentioned, for the improvement of the railway safety, the investigation commission considers necessary to issue the next safety recommendations:

1.Romanian Railway Safety Authority shall ask CNCF “CFR” SA, as railway public infrastructure manager, within the process of safety management, to analyze again the process for the preparation of the current repairs of the lines and to establish the safety measures that have to be implemented in order to ensure that, within this process, the drawing up of the documentation necessary for this type of works is done taking into account all the specific regulations in force for these type of works.

3.4.3. The railway accident happened on the 27th April 2015, at 03:30 o'clock, in the railway county Constanta, in the railway station Tulcea Mărfuri, in the running of the freight train no.21716, (got by the railway freight undertaking SNTFM „CFR Marfă” SA), consisting in a fire into the hauling locomotive DA 1383.

The investigation report was finished on the 12th January 2016.

Direct cause

The fire was generated by the short-circuit appeared in the circuit of the traction engine no.5, following the cut of the connection between the power supply cable of force „A” and the auxiliary pole, it leading to an electric arc, followed by braking of the insulator brush plate (electrical breakdown) and the penetration of the upper cover for its inspection. The penetration of the upper cover by the electric arc, together the short-circuiting of the power supply circuit from the traction engine, led to the ignition of the force cable insulation and of the oil residuals, followed by the fire extension in the locomotive engine room.

Contributing factors

- non- action of overcurrent protection because the failure of the field electronic controller - SREC;
- non-action of the protection against the short-circuit on the force circuit, because the failure of the device for the monitoring of the di-electric strength - AMRI and its insulation;

- unsuitable cooling of the traction engine no.5, following the oil deposits, resulted from the constructive sealing areas of the equipments and diesel engine, on the engine body, as well as on the filter of the ventilator protection, it generating the heating of the traction engine.

Underlying causes

One did not comply with the provisions of the Technical specification code ST-LDE 2100 CP- REV edition 1 Revision 4 „Planned inspections type PTAE (Pth3), R15, RI, RT, R1, R2, 2R2, R3 and accidental repairs type RIT, RIR, RAD, RA at the locomotives Diesel-electric of 2100 HP”, that is, within the planned repairs:

- - one did not inspected the power supply circuits of the protective relay 76;
- - one did not clean the filter of the ventilator protection from the traction engine.

Root cause

Lack of the procedures on the way to perform the inspection of the power supply circuits from the protective relay 76, for the locomotives provided with SREC – field electronic controller and AMRI – monitoring device for the monitoring of the dielectric strength, led to the use in operation of the this locomotive without protections for overcurrent and short-circuiting

Additional remarks

During the investigation the next problems, without importance for the accident causes, were identified:

The running order series CT no.1063257, drawn up by the railway station Tulcea Mărfuri for the freight train no.21716 on the 27th of April 2015 does not contain provisions on the speed restriction from km. 39+470 at 39+775, according to the telegram no.10 from the 3rd February 2015, issued by the Railway County - Track Division.

Measures taken

Following this railway accident, in order to prevent the appearance of fires in the diesel-electric locomotives of 2100 HP, the company in charge with the maintenance and repairs of the locomotives and vehicles SC IRLU „CFR IRLU” SA took the next measures:

- asked the management of the Section Palas to train again the staff according to the provisions „Guide for the prevention of the fires at the locomotives” approved through the order 17 RL/1/col.1988;
- AFER republished and approved the technical specification: „Planned inspections type PTAE (PTh), R15, RI, RT, R1, R2, 2R2, R3 and accidental repairs type RIT, RIR, RAD, RA at diesel-electric locomotives of 2100 HP”, code :ST LDE 2100CP-Rev:
- - in the „Work list” one included works of inspection, degreasing and cleaning of the field Controller SREC 170/30R (equipment that replaces the maximum current relays D54),
- - in the measurement sheet „Tests and examinations of the rheostat”, point 13 one included Field controller SREC 170/30R at the rubric: inspection of the working of the maximum current on the categories of traction engines.

From the measures taken by the company in charge with the maintenance and repair of locomotives and vehicles SC IRLU „CFR IRLU” SA is stated that within the Technical Specification „Planned inspections type PTAE (PTh), R15, RI, RT, R1, R2, 2R2, R3 and accidental repairs type RIT, RIR, RAD, RA at diesel-electric locomotives of 2100 HP”, code: ST LDE 2100CP-Rev, one did not stipulated also inspections on the operation of the field electronic controller type SREC.

Safety recommendations

With reference to the accident happened in the running of the freight train no.21716, one found out that within the planned inspections, the power supply circuits of the protective relay 76 were not inspected, provided that there are no procedures on the way to perform these inspections for the locomotives equipped with SREC – field electronic controller and AMRI – device for the monitoring of the di-electric strength. Taking into account these above mentioned, the investigation commission recommends Romanian Railway Safety Authority – ASFR to assure that:

- the supplier of the railway critical services SC IRLU „CFR IRLU” SA shall take the necessary measures in order to avoid the put in service the locomotives without inspection in advance of the power supply relay of the protective relay 76;
- because the devices SREC and AMRI have no redundancy systems for the operation of the protective relay no.76, SNTFM ”CFR_MARFĂ” SA shall take measures for assuring the working of the protections or signalling in real time of their failure.

- 3.4.4.** The railway incident happened on the 28th April 2015, in the railway county Iasi, in the railway station Săbăoani, where a movements inspector on duty did not get authorization for the operation of the traffic safety equipment series.
The investigation report was ended on the 22nd March 2016

Following the investigation , this incident was not classified as railway incident

Direct cause: none;

Underlying cause: none.

Root cause: none.

Measures taken during the investigation

Upon the findings of the inspector ASFR, SRCF Iași drew up and disseminated the operational procedure code PO 6-6.2.2 „Authorization of the staff with responsibilities in in traffic safety”, as part if integrated quality management system of the organization (date of coming in force 4th May 2015, revision 0).

Safety recommendations

Upon the legal framework that regulates the training and authorization of the staff that operate the traffic safety equipments, applied by the entities responsible with the implementation of its provisions, both from the documents submitted to the investigation commission and from the discussions with the decision makers from National Infrastructure Manager „CFR” S.A, resulted that the dissemination and application of the Decision no.86 of CENAFER general manager, that approves „conditions and minimum terms for practical training and probation for authorization”, led to their wrong interpretations and confusions, it being considers by the investigation commission as dangerous and unacceptable for the railway safety. In order to avoid the recurrence of such situations, the investigation commission recommends Romanian Railway Safety Authority – ASFR to revise the legal framework for the authorization of the staff with responsibilities in traffic safety, responsible with the operation of some types of traffic safety equipments, so it be clear, suitable and uninterpretable.

- 3.4.5.** The railway accident happened on the 7th May 2015, at 14:45 o'clock, in the railway county Braşov, track section Ploiesti Vest – Braşov (electrified double-track line), between the railway stations Predeal - Timișu de Sus, on the track II, km 150+966, in

the running of the freight train no.30686 (got by the railway freight undertaking DB Schenker Rail România), hauled by the locomotive EA 006 and the banking one EA 166, consisting in the derailment of the first bogie, in the running direction of the 5th wagon of the train.

The investigation report was finished on the 21st March 2016

Direct cause

The direct cause of this accident was the overclimbing of the exterior rail of the curve by the first wheel (no.7) from the wagon no.83536658171-7, following the increase of the report between the driving force and the load acting on this wheel, so exceeding the derailment stability limit. The increase of the report between the driving force and the load acting on the first wheel happened because the cross heterogenous loading of the wagon, it leading to the very important unloading transfer of the guiding wheel.

Underlying causes

- the loading of the wagon no.83536658171-7 of the freight train no.30686, without meeting with the provisions of point 3.3. from the Annex II RIV, for the homogenous disposition of the load in wagons;
- taking delivery of this wagon by the railway undertaking from the goods forwarding agent without meeting with the provisions of Uniform Freight Norm (NUM) 7 at art. 36 from Regulations for Romanian Railway Transport on the inspection of the loading way of the goods in wagons.

Root cause

Non-application of the provisions on the way of handling-reception of the wagon forwarding from the Regulations for Romanian Railway Transport, reference document of the procedure code 30 MMS „Management of the Process Reception – Handling of Wagons”, part of safety management system of DB Schenker Rail România SRL, namely the railway undertaking did not concluded with the wagon forwarding agent a document for the establishment in detail of the way of handling-reception of wagon forwarding.

Measures taken

At the derailed wagon one found out a cross heterogenous disposition of the load. The railway undertaking did not conclude with the wagon forwarding agent a document in which be established, in detail, the way of handling-reception of the wagon forwarding, it leading to to the reception for transport of the wagons of the train no.30686, without a control of the loading of the goods in wagons, contrary the provisions of the Regulations for Romanian Railway Transport.

During the investigation, the railway undertaking analyzed again the management of the process for handling-reception of the wagon forwarding and revised the Procedure „Management of the Process for Wagons Reception - Handling”, that is in this procedure one introduced some provisions on the control of loading of goods in wagons.

The railway undertaking (DB Schenker Rail România SRL) also concluded with the forwarding agent of the train wagons involved in the railway accident Convention on the loading and handling –reception of the wagons no. 58/24.02.2016, in which they established, in detail, the way of handling-reception of wagon forwarding, so, in this process can be controlled also the way of loading of goods in wagons.

Safety recommendations

Taking into account the measures taken by the railway undertaking during the investigation, the investigation commission considers that, in this situation, there is no need of issuing some safety recommendations.

- 3.4.6.** The railway accident happened on the 16th May 2015, at 17:50 o'clock, in the railway county Braşov, track section Copşa Mică – Sibiu (non-electrified single-track line), between the railway stations Loamneş and Ocna Sibiului, km 405+962, in the running of the passenger train no.2568, that is the diesel multiple-unit ADH 1412, got by the railway undertaking SNTFC „CFR Călători” SA, consisting in the derailment of both axles from the fist bogie, in its running direction.

The investigation report was finished on the 8th March.2016.

Direct cause

Direct cause of the accident was the fall between the rails of the right wheel of the driving axle from the diesel multiple unit ADH 11, that was passenger train no.2568, followed by the overclimbing of the running surface of the rail head from the exterior track of the curve by the left wheel of the same axle and its fall outside the track. It happened because the increase of the gauge value over the accepted maximum value, following the lateral displacement of the rail from the exterior track of the curve under the dynamic stresses of the moving rolling stock on the track.

Underlying cause

Underlying cause of the accident was the unsuitable maintenance of the track superstructure in the derailment area, it being confirmed by the keeping of some unsuitable sleepers that did not assure the rail fastening.

Root cause

Root cause of this accident was the non-application of the provisions of the operational procedures PO SMS 0-4.07 „Meeting with the technical specifications, standards and relevant requirements during the whole life cycle of the lines in maintenance process”, code PO SMS 0-4.12 „Management of the railway safety risks” and code PO SMS 0-4.28 „Checking and control of the maintenance results”, as well as of the practice codes used by the public railway infrastructure manager (instructions on the line maintenance).

Additional remarks

During the investigation the next findings were found out on some deficiencies and gaps, without importance for the conclusions on the accident causes.

So, the railway undertaking SNTFC „CFR Călători” SA (as owner of the multiple-unit), it did not apply for the authorization for the putting in service of the diesel multiple-unit type ADH 11 and, consequently, it does not get this type of authorization, against the provisions of the Government Decision no.877/2010.

Safety recommendations

The derailment of the diesel multiple unit ADH 11, that was passenger train no.2568, happened because the track gauge over the accepted maximum value, that was established by the unsuitable maintenance of the track superstructure in the derailment area.

The investigation commission considers that the complete infringement of the operational procedure PO SMS 0-4.07 „Meeting with the technical specifications, standards and relevant requirements during the whole life cycle of the lines in

maintenance process”, code PO SMS 0-4.12 „Management of the railway safety risks” and code PO SMS 0-4.28 „Checking and control of the maintenance results”, part of the safety management system of CNCF „CFR” SA, as well as of the practice codes used by the public railway infrastructure manager, led to the that unsuitable maintenance of the track superstructure in the derailment area.

Within the investigation process, one also found out that, for the diesel multiple unit type ADH 11, that was the train involved in he accident, the railway undertaking SNTFC „CFR Călători” SA does not get authorisation for putting in service according to the provisions of the Government Decision no.877/2010 on the interoperability of the railway system (issue without importance for the conclusions about the accident causes), although it was introduced in its stock in 2011 following some works of „adjustment for running on railway network” and was mentioned in the Annex no.II of the Safety Certificate Part B got by the railway undertaking.

Taking into account the mentioned issues, the investigation commission recommends Romanian Railway Safety Authority to ask:

1. The railway infrastructure manager to establish the safety measures that have to be implemented in order to ensure that in the process for the line maintenance, both the provisions of its safety management and those of the practice codes are completely met with.
2. The railway undertaking SNTFC ”CFR Călători” SA the documents on the type of works performed at the type of mentioned diesel multiple unit and, consequently, requests the compliance with the provisions of the mentioned government decision.

- 3.4.7.** The railway accident happened on the 22nd May 2015, at 03:40 o'clock, in the railway county Craiova, in the railway station Caracal, line no. 1, in the running of the train no. 31652, got by the railway undertaking SNTFM „CFR Marfă” SA, consisting in the derailment of both bogies of 18th wagon.

The investigation report was finished on 6th May 2016

Direct cause

The direct cause of the accident is the loss of the guidance capacity of the leading wheelset no. 2, of the guiding axle from the first bogie of the 18th wagon of the freight train no. 31652 (right wheel in the running direction) because the track twisting over the maximum limit accepted by the specific regulations in force .

Track twisting over the accepted limit happened because during the mechanical packing of sleepers performed in the railway station Caracal, the close lines were not put at the same quota.

Underlying causes

Infringement of the provisions of the art. 3 from the Disposal CNCF „CFR” SA no.12/2000 that led to the partial performance of the mechanical packing of sleepers in the area of the switches, without including also the switches no.14, 16/18 side 14 – 16/18 of the combined group no.12-14-16/18-20).

Root causes

Lack of some instructions/working procedures at the railway infrastructure manager with reference to the performance of the packing of sleepers with heavy vehicles Plasser & Theurer.

Safety recommendations

When this accident happened, in the railway station Caracal, one performed mechanical packing of sleepers with vehicles type Plasser 4S.

Following the investigation, the investigation commission found out that the working way with these types of heavy vehicles was not known and assumed by all factors involved in the performance of these works, being assumed just by the staff of SC „IMCF” SA, not by the staff with responsibilities in traffic safety from the Track section L2 Roşiori. Also, the documents specific to the performance of the mechanical packing of sleepers on the switches, of the railway infrastructure administrator, do not contain adequate provisions on the technological process with heavy vehicles Plasser&Theurer, for keeping under safety control the railway traffic.

Taking into account the findings of the investigation commission, Romanian Railway Investigating Agency considers necessary to issue the next safety recommendations:

1. Analysis of the safety management system, got by the public railway infrastructure administrator CNCF „CFR” SA, by Romanian Railway Safety Authority ASFR, concerning the performance of the maintenance of the infrastructure with heavy vehicles and the order to supplement the provisions specific to the performance of the mechanical packing of sleepers on the switches with heavy vehicles type Plasser&Theurer.
2. Analysis by Romanian Railway Safety Authority of the process for the training of the staff from CNCF „CFR” SA, in charge with the performance of the mechanical packing of sleepers on the switches with heavy vehicles type Plasser&Theurer and the order to include in this process the deadlines for specific training concerning the monitoring of the performance way of this type of works

- 3.4.8.** The railway accident happened on the 26th May 2015, at about 06:15 o'clock, in the railway county Brasov, track section Brasov-Sighisoara (electrified double-track line), in the railway station Vânători, km 288+300, in the running of the freight train no.50428 (got by the railway undertaking SC UNICOM TRANZIT SA), in which 7 wagons, starting with the 23rd to the 29th, derailed, (the 24th one overturned). The investigation report was finished on the 23rd May 2016.

Direct cause, contributing factors

Direct cause of the accident is the unlocking and the movement of the points from the switch no.7 during the crossing of the train no.50428 over the switch no.7, because the uncoupling and cut of the connection between the switch motor and the inside locking of the switch no. 7. By this connection one operated, locked and ensured the position of the switch points according to the ordered route.

The factors that contributed at the unlocking and movement of the points from the centralized switch of the turnout nr.7, were:

- unblocking of the of pin of the draft bar from the motor for the operation of the switch no.7 (part of the connection between the switch motor and the inside locking of the switch no.7), before passing the train no.50428 over this switch, in order to prevent the exit of this pin from the holes of the coupling between the end of the draft bar of the switch motor and the operation bar of the inside locking;
- the wears of the parts of the inside and middle lockings, corresponding to the switch no.7 over the accepted quotas, stipulated in the reference technical documentation;
- unsuitable technical condition of the special wooden sleepers from the area of the inside locking, that did not permit the fastening of the coach screws for the fixing of the sleepers, of the metallic plates with slide chairs.

Underlying causes – none

The root causes

The root causes of the accident consisted in the lack in the specific regulation framework of some detailed provisions on :

- tasks and responsibilities of the staff in charge with the track maintenance (rail track staff) and of the staff in charge with the interlocking equipments (interlocking staff), during the works performed together, in order to ensure the maintenance of the clamp locking and of the point motors from the interlocking switches;
- way and means to check reclining of the oblique joints of the locking box and of the tolerance stipulated in the reference technical documentation;
- tasks and responsibilities of each person from the gang in charge with the maintenance of the switch motors (interlocking gang).

Additional remarks

During the investigation, the next findings on the deficiencies and gaps were found out, without importance for the conclusions on the accident causes:

- - lack from the regulation framework of some clear and detailed provisions on the checking of the existence of seals for the control of the traction and control pins from the switch motors, made by the traffic staff with responsibilities in traffic safety;
- - for the fastening of the boxes for the stock-rail locking one used spring rings instead flat washers;
- - the main locomotive was not equipped with rear-view mirrors on the side of the driver's assistant, at both driving cabs.

Safety recommendations

The accident in which the freight train no. 50428 was involved, was generated by the loosening of the coupling between the end of the bar for the operation of the switch motor and the lock bar , because the unblocking of pin from the draft bar of this coupling, before the passing of the train over the centralized switch of the turnout no.7.

Taking into account the findings of the commission for the investigation of this accident, Romanian Railway Investigating Agency recommended to Romanian Railway Safety Authority to ensure, as follows:

1. supplement of the regulation framework on the checking and performance of the maintenance of the clamp lockings and of the switch motors from the interlocking turnouts, together the rail track and interlocking gangs, stipulating the tasks and responsibilities for each activity area.
2. establishment of some technical measures in order to assure the maintenance, that do not include the possibility to remove the couplings of the draft and control bars by unauthorized persons.
3. Supplement of the safety management system of CNCF,„CFR” SA with procedures on the performance of the biannual inspections at the switch motors and the checking of the not in sight parts of the turnouts by rail track and interlocking gangs, through which one establish the allocation of the staff tasks and its empowerment for their performance.

- 3.4.9.** The railway accident happened on the 27th May 2015, at 22:50 o'clock, in the railway county Galați, track section Focsani – Marasesti (electrified double-track line), between the railway stations Marasesti and Putna Seaca, on the running track I, km

112+000, consisting in the overtook and hit seriously of the rear wagon of the freight train no.41786 (got by the railway undertaking SNTFM „CFR MARFĂ” SA) by the train no. 58394 (tower wagon DP 052 got by the line district LC Marasesti).
The investigation report was finished on the 20th May 2016.

Direct cause and contributing factors:

Direct cause of the railway accident: human mistake consisting in the non-compliance with the positions of the block signals BI 12 and PrYF, being on „*STOP without passing the signal in stop position*”.

This mistake, cummulated with the non-watching of the front route of the tower wagon, led to the overtaking and serious collision of the rear wagon from the freight train, running in front of the tower wagon.

Contributing factors:

- the tower wagon was not equipped with a system for the automatic control of the train speed;
- the speedometer was out of service, the speed of the tower wagon was not correctly appreciated and all the measures for the safety traffic were not taken.

Underlying causes

1. Non-compliance with the provisions of the Regulations for signalling no.004/2006 on the positions of the passing light signal of the automatic section block and of the passing light signal of the automatic section block with distant signal function.
2. Non-compliance with the provisions of the Instructions for the running of the machines and vehicles for construction, maintenance of the tracks and contact line – no.340, for:
 - technical condition of the speedometer;
 - training, examination and authorization of the authorized manning agent;
 - knowledge and complete compliance with the specific regulations in force for the railway transport, by the authorized manning agent;
 - obligations of the authorized manning agent;
3. Non-compliance with the provisions of point B from the Annex 1.1. of the Minister of Transports and Infrastructure’s Order no. 815 from the 12th of October 2010, on the ensurance of training of the driver of the tower wagon by the specialized staff with professional competences specific to the types of rolling stock.
4. Non-compliance by the public infrastructure manager CNCF „CFR” SA of the provisions from EU Reguliantions no.1078/2012 on the common safety method for the monitoring that the railway undertaking and infrastructure administrators have to apply after getting a safety certificate or a safety authorization, as well as the entities in charge with the maintenance, by the lack of application of the the monitoring of its contractor (SC „ELECTRIFICARE CFR” SA).

Root causes

Lack from the regulation framework of the keeper and user of the tower wagon DP 052 (SC „ELECTRIFICARE CFR” SA) of the specific provisiosn on the position of the manning agent in relation to the running direction of the tower wagon.

Additional remarks

During the investigation, one found some deficiencies, unn-related the causes of the accident, as follows:

use of the tower wagon DP052 provided that, according to the provisions of the Minister of Transports’Order no.342/1999, this was not authorized, from technical

point of view, to run on Romanian public infrastructure (authorization series AVF no.1392/2009 issued by Romanian Railway Authority – AFER, on the 14th December 2009 expired starting with the 13th December 2010);

- at the accident date, the program for round o'clock duty for the manning agent of the tower wagon and electromechanical workers IFTE, as it is stipulated in the Regulations for the organization of the round o'clock duty for the staff from the electrification area no. 1/1179/30.07.2007 approved by the management of the economic operator SC "ELECTRIFICARE CFR" SA.
- Although without importance for the conclusions on the causes of the investigated accident, these deficiencies can be risks that can led anytime to railway accidents/incidents.

Safety recommendations

On the 27th of May 2015, between the railway stations Mărășești and Putna Seacă a railway accident happened, consisting in the overtaking and serious collision of the rear wagon of the freight train no.41786 by the tower wagon DP052, running as train no.58394.

The investigation commission established that the railway accident happened following a human mistake, consisting in the non-compliance by the driver of the tower wagon of the position „STOP without passing the signal on stop position!” of the block signal PrYF of the railway station Putna Seacă. This mistake, cummulated with the non-watching of the route in front of the tower wagon, led to the overtaking and serious collision of the rear wagon of the freight train running in front of the tower wagon.

The above mentioned human mistake led to the accident because the lack of a system for the automatic control of the speed, with which this type of tower wagon is equiped, the unique measure for the control of this type of mistakes being taken by the employee with responsibilities of manning agent, employee who, in case of this accident, made same mistake.

According to the provisions of art.6, paragraph (1) Instructions for the running of the machines and vehicles for construction, maintenance of the line and contact line – no.340/2003, if it runs light or in a set of wagons, a technological train has to be driven by an authorized agent (in this situation, driver of tower wagon) who will be joined by a manning agent , trained, examined and authorized according to the regulations in force.

The investigation commission has also found that now there is no national norm or procedure, that regulate the training, examination and authorization of the manning agent of the technological trains, used by the public infrastructure manager or its contractors.

Because the manning agent job is not included in the list of functions concerning the authorization of the staff with responsibilities in traffic safety, that has to perform the activity on own account,according to the Minister of Transports, Constructions and Tourism's Order no.2262/2005 and through his obligations and tasks stipulated in Instructions for the running of the machines and vehicles for the construction, maintenance of lineand contact line no.340/2003- his activity has not a traffic safety component, each organization that gets or uses such railway vehicles has to organize training, examination and authorization of the manning agents.

The investigation commission has also found that the economic operator, that gets and uses the tower wagon involved in this accident (SC „ELECTRIFICARE CFR” SA) has no stipulations, indications, working instructions or a procedure that present in detail the position of the manning agent in relation to the driver of the tower wagon, so one be sure that he meets with the tasks and obligations established by the

Instructions for the running of the machines and vehicles for the construction, maintenance of the track and contact – no.340/2003.

In the last years, on the railway infrastructure managed by CNCF „CFR” SA, there were many cases of human mistakes consisting in the non-compliance with the indication ”STOP” without passing the signal on stop position, in which the employees of the contractors, that get or use rolling stock, were involved (tower wagons, etc).

In order to avoid similar accidents, the investigation commission recommends Romanian Railway Safety Authority to dispose the measures necessary to ensure that:

1. CNCF„CFR” SA and SC „ELECTRIFICARE CFR” SA shall analyze the opportunity to provide this type of tower wagons, with equipments for the automatic control of speed;
2. SC „ELECTRIFICARE CFR” SA shall made a procedure on the position of the manning agent in relation to the running direction of the tower wagon.

3.4.10. The accident happened on the 5th June 2015, at 02:30 o'clock, in the railway county Craiova, track section Strehaia - Caransebeş (electrified single-track line), at the entrance in the railway station Orsova, on the line no. 2, over the switch no. 5/9, in the running of the freight train no. 21153 (got by the railway undertaking SNTFM „CFR Marfă” S.A), hauled by the locomotive EA 492, consisting in the derailment of 4 wagons (from the rear of the train: one bogie from the 4th wagon, the 5th wagon overturn, the 6th and 7th ones reclined at 45°).

The investigation report was finished on 6th June 2016.

Direct cause and contributing factors

The direct cause of this accident is the overclimbing of the rail from the exterior track of the curve by the leading wheel (on the right side in the running direction of the train) from the wagon no. 31535484375-9, because the increase of the ratio between the guiding force and the load on this wheel, so exceeding the derailment stability limit.

The increase of the ratio between the guiding force and the load on the leading wheel happened because the high load transfer of the right wheel of the guiding axle and increase of the lateral force (guiding one) of this wheel.

Contributing factors

1. Factors that contributed to the partial transfer of vertical load of the leading wheel:
 - difference of 23 mm (point „4” higher) found at the crosslevel between the two tracks, measured in the points „0” and „4”, situated at a distance of 10 m, distance very close to the distance between the end axles (10,8 m) of the wagon no. 31535484375-9, leading to the increase of the vertical loads acting on the wheels of the right behind cross-over – left front and to the partial transfer of the vertical loads, that acted on the wheels of the other cross-over (right front – left behind);
 - excess of cant of track existing at the derailment site, leading to the negative transverse accelerations.
2. Factors that contributed to the increase of the lateral force (guiding):
 - strong wear of the polyamide lining of the centre casting from the bogie I (first bogie in the train running direction) of the wagon no.31535484375-9, leading to the increase of the friction resistance, increasing the stiffness of the unit bogie – wagon body and implicitly the increase of the attack angle;
 - exceeding of the tolerances in operation for the values of the close deflections and between the maximum and minimum deflections in the curve, it leading to the lateral dynamic movements of the vehicle hauled during the running.

Underlying causes

Underlying cause of the accident was the infringement of the provisions of art.7B, point 1 from the Instructions of tolerances for the track construction and maintenance – tracks with standard gauge no.314/1989 on tolerances of the track laying, both for the values of the close deflections and between the maximum and minimum deflections in the curve.

Root causes

1. Non-application of the provisions of the Instruction for the line maintenance no. 300/1982, document associated to the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and requirements relevant within the whole lifetime of the tracks in the maintenance process”, part of the safety management system of CNCF “CFR” SA, on the sizing of the staff from the sub-units, responsible for the track maintenance, in relation to the workloads, it being confirmed by the undersizing of the staff from Line District no.5 Drobeta Turnu Severin and of Bridge District within Track Section L4 Drobeta Turnu Severin.
2. Non-identification as danger of the keeping in operation of the failures level 3 and 4 of the track geometry, as well as of the failures identified on the track sections with speed restriction of 30 km/h (or less), found out during the measurements performed with the testing and recording wagon.

Additional remarks:

During the investigation, following the checking performed at Track Section L4 Drobeta Turnu Severin, one found out that the bridge district inspector performed activities that implied responsibilities in traffic safety without being authorized according to the specific regulations for the job bridge district inspector/LA.

Safety recommendations

As it is stipulated in the chapter C.5.2. Safety management system, the investigation commission considers that the infringement of the provisions of the Instruction for the track maintenance no.300/1982 document associated to the operational procedures code PO SMS 0-4.07. „Compliance with the technical specifications, standards and requirements relevant within the whole lifetime of the lines within the maintenance process”, and of the operational procedure PO SMS 0–4.12 „Management of the railway safety risks”, part of the safety management system of CNCF „CFR” SA, it led to an unsuitable maintenance of the track superstructure in the derailment area.

In the context of these above mentioned and of the non-conformities found at the railway infrastructure at the accident site, for the improvement of the railway safety, the investigation commission considers necessary to address the next safety recommendation:

1. Romanian Railway Safety Authority - ASFR shall take care that the administrator of the public railway infrastructure - CNCF „CFR” SA, in the railway infrastructure maintenance, look always at the identification of risks associated to the hazards, of interface risks and risks generated by the changes.

3.4.11. The railway accident happened on the 2nd July 2015, at about 23:00 o'clock, in the Railway County Craiova, in the railway station Roşiori Nord, in the running of the freight train no.61706 (got by the railway undertraking SNTFM „CFR Marfă” SA), consisting in the derailment of the first 5 axles of the hauling locomotive ED 043, in the running direction.

The investigation report was finished on 30th of June 2016.

Direct cause, contributing factors

Direct cause of the accident is the blocking of the intermediate axle of the first bogie in the running direction (axle no.5) and the interruption of the auto-guiding of the leading axle. It led to the increase of the ratio between the guiding force and the load that act on the leading wheel, so exceeding the derailment stability limit on this wheel.

Contributing factors

- load transfer of the leading wheel from the axle no.6 (first axle in the running direction of the train), following its unbalancing, this wheel being the most load transfered against the other wheels from the right side in the running direction of the first bogie.
- gauge variations with values over the accepted values.

Underlying causes

Infringement of the art.1, point14 .1.c from the Instruction for norms and tolerances for the track construction and maintenance-lines with standard gauge no.314/1989 concerning the irregular variations of the gauge, with errors of less 2 mm/m.

Root Causes

None

Additional remarks

During the investigation, the findings were established, regarding some deficiencies and gaps, irrelevant for the conclusions at the accident causes.

- In the „Sheet of the measurement of the axle loads at the electric locomotives”, filled in for the locomotive ED 043, during the inspections made on the 2nd of July 2015, after the tyre turning, the values of the axle clearance at the axles no. 2 and 5 were not mentioned.
- In the „Sheet of measurements of the sizes after turning” filled in after the reprofiling by turning of the tyres from the wheels of the railway vehicles on the ground-wheel lathe Hegenscheidt one did not write down also the values of the roughness of the processed surfaces, although it is stipulated in the technical specification Code ST – Hegenscheidt MFD 106 CNC, approved by Romanian Railway Authority - AFER.

Safety recommendations

None.

- 3.4.12.** The railway accident happened on the 5th July 2015, between the railway stations Coşlariu group Podu Mureş and Crăciunel, consisting in the derailment of the first axle in the running direction of the 7th wagon from the locomotive, from the composition of the freight train no.40617 (got by the railway undertaking DB Schenker Rail Romania SA, now în prezent Deutsche Bahn Cargo România SRL)
The investigation report was finished on 4th July 2016.

Direct cause, contributing factors

The direct cause of this accident is the over-climbing of the rail from the exterior track of the curve by the leading wheel (wheel no.1 left side in the running direction of the train) of the wagon no.43714378134-6, following the change of the ratio between the The increase of the ratio between the guiding force and the load acting on the leading

guiding force and the load acting on this wheel, so exceeding the derailment stability limit. wheel was generated by the strong load transfer of the left wheel (wheel no.1) from the leading axle and by the increase of the lateral force (guiding one) on this wheel.

Contributing factors:

- difference of 31 mm (point „4” higher) found out at the crossing level between those two tracks, measured in the points „0” and „4”, situated at 10 m, distance equal with the base-wheel of the derailed wagon (distance between the axles), it leading to the increase of the vertical loads acting on the wheels of the back left cross-over – right front and to the partial decrease of the vertical of the vertical loads acting on the wheels of the another cross-over (left front – right back);
- existence of an area of about 30% from the surface of the section of the main spring leaf of the suspension spring from the wheel no. 1 with old breakage traces, this area contributing to the breakage of this spring leaf, it leading to the deterioration of the guiding capacity of this wheel and, implicitly, to the increase of the guiding force.

Underlying cause

The underlying cause of this accident is the non-compliance with the provisions of art.7A, points 1 and 2 from the Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge no.314/1989 concerning the accepted tolerances for the track distortion.

Root causes

None.

Safety recommendations

None.

3.4.13. The railway accident happened on the 6th July 2015, in the railway county Galați, in the factory railway station Cătușa, in the running of the freight train no.59464, got by the railway undertaking SC UNICOM TRANZIT SA, consisting in the derailment of two wagons (both bogies of the 11th wagon and first bogie of the 12th one in the running direction).

The investigation report was finished on the 30th June 2016.

Direct cause, contributing factors

The direct cause of the accident is the unsuitable condition of the track, within the switch no. R8, with values of the gauge over the maximum limit accepted in operation, it leading to the fall of the wheel between the tracks.

The contributing factors is the keeping of unsuitable sleepers within the line, that did not assure the fastening of the rails and the gauge according to the accepted limits.

Underlying causes

Infringement of the provisions of art.45 from the Instruction no.315/1950 – More important norms and tolerances for lines, branch lines and bridges, for the line with broad-gauge line (1520 mm) of Romanian railways, according which, at the branch-lines, the sleepers have to be in good condition and perfectly packed .

Root causes

None.

Safety recommendations

None.

- 3.4.14.** The railway accident happened on the 20th July 2015, at 16:20 o'clock, in the railway county Craiova, track section Costești – Roșiori Nord (non-electrified single-track line), between the railway stations Balaci and Roșiori Nord, consisting in the derailment of 3 wagons loaded with cars, being in composition of the freight train no. 60812 (got by the railway undertaking SC Transferoviar Grup SA)

The investigation report was finished on the 19th July 2016.

Direct cause

The direct cause of the accident is the loss of track stability, generated by the unsuitable composition maintenance of the welding track at km 189+400-189+500.

Underlying cause

Infringement of the provisions of the Instructions of norms and tolerances for the track construction and maintenance-tracks with standard gauge no.314/1989 and of the Instruction for the structure, maintenance and surveillance of the welded track no.341/1980 (printed again in 1997), concerning the structure of the welded track and ensurance of the fastenings between track items and maintenance on the track section Costesti-Rosiori Nord.

Root causes

1. Inefficiency of the measures that the manager of the public railway infrastructure took for the control of the classified risks, according to the Operational procedure „Management of railway safety risks” code: PO SMS 0-4.12, as „undesirable” and associated to the dangers generated by: the infringement of the conditions for the welded track execution, its maintenance and surveillance and by the infringement of the norms for the integrity keeping and of the norms for the quality of the track on bridges.
2. Non-application of the provisions of the Instruction for the track maintenance no. 300/1982, document associated to 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 tracks in the maintenance process”, part of the safety management system of CNCF “CFR” SA, concerning the sizing of the staff from the sub-units for the line maintenance, in relation to the amount of works, it being confirmed by the under-sizing of the staff from the Track District no.3 Miroși and of the Bridge District, from the Track Section L1Pitești.

Additional remarks

At the filling in the running order series RCv 14 Nr.040861, issued by the railway station Golești, one miss-wrote down that the train no.60812-1 runs between Costești – Roșiori Nord, in the conditions established in the timetable for the train no.70299-2 instead the train no.79299-2.

Safety recommendations

With reference to the accident happened in the running of the freight train no.60812, got by the railway undertaking SC Transferoviar Grup SA, one found out that the wagons derailment was generated by the keeping in operation of a welded superstructure, structured unsuitable and by the application of some measures, that

showed to be inefficient for the control of the risks associated to the dangers generated by the unsuitable condition of the track superstructure.

Upon these above mentioned, the investigation commission recommends Romanian Railway Safety Authority to ensure that CNCF „CFR” SA, like public railway manager, shall re-assess its own measures for the risk control, so be sure that those had as effect the decrease of the risks associated to the dangers appeared.

3.4.15. The railway accident happened on the 11th August 2015, at 19:54 o'clock, in the railway county Timișoara, track section Simeria - Livezeni (electrified double-track line), between the railway stations Merișor and Bănița, km 65+670, on the track II, in the running of the freight train no.80438, got by the railway undertaking SC GRUP FERROVIAR ROMÂN SA, consisting in a fire burst in the hauling locomotive EA 085. The investigation report was finished on the 4th August 2016.

Direct causes

The direct cause of the fire was a failure at the high power supply cable from the equipment block S4, that led to the local over-heating and ignition of the cable insulation, with the extension of the fire in the whole equipment block S4 and then at the rest of the units from the locomotive body and driving cabins.

Because the high temperature generated by the fire, the components and the materials from the equipment block S4 atomised, melt and distorted, it making impossible for the investigation commission to identify exactly the component whose failure generated to the fire.

Contributing factors

Train stop, non mentioned in the timetable, in the area of the entry signal of the railway station Crivadia, because the voltage variation in the high line, it leading in time, when the train started to run on area with gradient 16 ‰, at a high stress of the traction engines from which one was disconnected.

Underlying causes - none

Root causes

None.

Additional remarks

The intermediate inspection of the locomotive EA 085 was wrote down as made on the 9th of August 2015, at 12:00 o'clock, in the railway station Aradu Nou, where there were no technical conditions for the performance of a such inspection and the time for doing it.

The list of works for this type of inspection does not include the visual control of the equipments and cables from the equipment blocks S1 – S6.

Safety recommendations

On CNCF „CFR” SA infrastructure, track section Pui-Petroșani, in the last years, there were many cases of smoke releases at the locomotives of the railway unertakings. There were also cases of fires, in which the locomotives were destroyed and with a lot of damages at the infrastructure. In order to avoid the appearance of such similar cases, the investigation commission recommends ASFR to make sure that the railway undertaking shall analyze the oportunity to fit up on their electric locomotives devices to detect the smoke releases in the critical areas with predisposition to fire.

3.4.16. On the 22nd August 2015, at about 17:00 o'clock, in the railway county Braşov, track section Ucea – Victoria (non-interoperable track section managed by SC Viromet SA Victoria – non-electrified single-track line), km 8+100, consisting in a fire in the locomotive DA 1524, hauling the freight train no.89497, got by the railway undertaking SC GRUP FERROVIAR ROMÂN SA.

The investigation report was finished on the 13th June 2016.

Direct causes

Direct cause: the fire appeared because the electric arc in the rotor winding of the traction engine no.4, because its interruption in the area of the technological bending of the spires, it leading to the ignition of the bellow from the ventilation chanel, as well as of the electric insulation of the supply cables of the traction engine.

Contributing factors

The very important stress of the traction engines at high values and important variations of the current strength from the rotor circuit, in the running conditions from the 22nd of August 2015 (rain, vegetation fallen on the line, ramp profil with gradient of 10 %) that led to the train stop, being necessary its successive starting.

Underlying causes

None.

Root causes

None.

Measures taken

Following this accident, for the prevention of fires in diesel-electric locomotives of 2100 HP, the freight undertaking SC Grup Feroviar Român SA took the next measures:

- keeping under control of the equipments during the inspections and repairs, scheduled according to the Minister of Transports and Infrastructure's Order no.1359 from the 30th of August 2012;
- during the planned repairs type RR/RG one shall replace the power cables of the locomotives with new cables, resisting to over-heating and fire, and the bellow for traction engine from textile with leather bellow.

Safety recommendations

Taking into account the cause and the factors that generated this accident, as well as the measures taken by the railway undertaking during the investigation, the investigation commission considers that there is not necessary to issue some safety recommendations.

3.4.17. The railway accident on the 6th September 2015, at 22:04 o'clock, in the railway county Timisoara, track section Strehaia - Caransebeş (electrified single-track line), between the railway station Vălişoara and Valea Timişului, km.446+250, in the running of the freight train no.80368-1 (got by the railway freight undertaking GRUP FERROVIAR ROMÂN SA), consisting in 26 wagons (loaded with diesel), consisting in the derailment of six wagons of the train (two of them overturned).

The investigation report was finished on 1st July 2016.

Direct causes

The direct cause of this accident is the over-heating, followed by the breakage of the axle journal from the wheel no.4 of the wagon no.82537987165-0 (the 4th in the train) and the loss of the guiding capacity of the axle corresponding to the wheels 3-4.

Contributing factors

Age of the roller bearings from the the axle box afferent to the wheel no.4 of ths wagon (roller bearing WJ - 47 years from the manufacturing date, and the roller bearing WJP - 45 years from the manufacturing date).

Underlying causes

None.

Root causes

The root cause is the lack in the national technical norm for the repair of the axle boxes with roller bearings of some provisions that establish the maximum working time life for the roller bearings of the wagons (expressed in run kilometers or years).

Safety recommendations

On the 6th of September 2015, at 22:04 o'clock, in the branch of the Railway County Timișoara, between the railway stations Vălișoara and Valea Timișului, in the running of the freight train no.80368-1, got by the railway freight undertaking GRUP FERVIAR ROMÂN SA, six wagons of the trains derailed (two of them overturned).

The investigation commission found out that the railway accident happened because the over-heating, followed by the breakage of the axle journal from the wheel no.4 of the wagon no.82537987165-0 (the 4th of the train).

The investigation commission also found out that those two roller bearings type WJ/WJP, of the axle box afferent to this axle journal, were 45, respectively, 47 years old.

Although, through the UIC leaflets (both this valid at the manufacturing moment of the involved roller bearings, and that in force now), one imposes as reliabilitty condition the life time of 40 years for 75% of the roller bearings, and abroad there are technical norms that limit the limit use life time for these roller bearings, through the national technical norms in force no maximum working life time is establish for this roller bearings (expressed in run kilometers or years).

Taking into account these above mentioned, for the improvement of the railway safety, the investigation commission recommends Romanian Railway Safety Authority to analyze again the technical norm for the repair of the axle boxes with roller bearings and its supplement with provisions that establish the maximum working life time for the roller bearings of the freight wagons (expressed in run kilometers or years).

- 3.4.18.** The railway accident happened on the 11th September 2015, at 01:25 o'clock, in the railway county București, track section Dâmbu – Armășești, in the railway station Dâmbu, at the exit from the railway station on the track I Ghighiu, in the running of the freight train no.31550 (got by the railway freight undertaking SNTFM „CFR Marfă” SA), consisting in the derailment of both bogies from the 24th wagon of the train

The investigation report was finished on the 31st August 2016.

Direct cause

The direct cause of the accident was the fall of the right wheel, running direction, from the leading axle of the wagon no.315378818902, between the track rails, during the running in an area with gauge values over the maximum limit accepted in operation.

Contributing factors

Existence of seven successive sleepers unsuitable (cracks, rotten parts, inactive fastening), in the derailment area;

Underlying causes

Lack of maintenance of the railway infrastructure generated by the ignorance of the manager of the non-interoperable infrastructure of the lines laying out in the railway station Dâmbu, took over from the railway public infrastructure administrator CNCF „CFR” SA.

Root causes

None.

Additional remarks

During the investigation, some deficiencies and gaps were found out, without relevance for the conclusions on the causes:

the examiner that performed on the 10th of September 2016, in the railway station Berca, the technical inspection at the forming of the freight train no.31550, did not find out and deal with, at the wheel no.3 (second on the left side in the running direction) of the wagon no.31537881890-2, quote $qr = 6,5$ mm, infringing the provisions of art.87, Table no.1: Failures at the wheelsets/dealing way from the Instructions for the technical inspection and maintenance of the wagons in operation no.250 /2005

Safety recommendations

None.

- 3.4.19.** The railway accident happened on the 14th October 2015, at 05:55 o'clock, in the railway county Cluj, track section Razboieni - Apahida (electrified double-track line), in the railway station Valea Florilor, end X, track I, in the running of the freight train no.80413 (got by the railway undertaking SC GRUP FERROVIAR SA), composed from 18 wagons loaded with diesel, 6 wagons derailed, from the 12th one to the 17th one, three of them overturned.

The investigation report was finished on the 13th of October 2016.

Direct causes

The direct cause of this accident was the over-climbing of the running surface of the head of the right rail by the flange of the right wheel from the first axle in the running direction of the train (axle corresponding to the wheels 7-8) from the wagon no.84537851144-6 (the 13th of the train), following the increase of the ratio between the guiding force and the load acting on the leading wheel (wheel no.8), so exceeding the stability limit at derailment.

The increase of the ratio between the guiding force and the load acting on the leading wheel happened because the serious load transfer of this wheel and the increase of the lateral force (guiding force) on this wheel.

Contributing factors:

- unsuitable condition of the railway superstructure at the accident site;
- unsuitable condition of the track bed at km 457+470 of track I, between the railway stations Câmpia Turzii-Valea Florilor, that concerning the ground composition, determined upon laboratory analysis, it had powdered clay percentage nonconforming with the provisions of STAS 7582-91 „ Railway works – Track beds – provisions for design and quality control”;
- rainfall in the days before the accident

Underlying cause

The underlying cause is the unsuitable maintenance of the railway infrastructure at the accident site, that is it was made infringing the provisions:

1. chapter II, letter B „*Mechanical overhaul of the line*”, point 2 from „*Instruction for the performance of the line overhauls no.302/1986*”, from the File for the work organization, that is:
 - o one did not take samples (slotted holes) from the broken stone in order to identify the quota of the platform level, the high of the broken stone level and repairing situation, in all points, as it is stipulated in the File for the organization of the whole cleaning of the broken stone and in „*Instruction for the performance of the line overhauls no.302/1986*”;
 - o one did not cut the track bench in order to eliminate the water accumulated from rainfall from the track bed ;
 - o one did not monitor the keeping of the track direction between the instruction tolerances;
 - o one did not perform works for putting the joints on right section (on the same line);
2. art.7, point 1 from the Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge no.314/1989, that is, one did not comply with the tolerance of the crossing level in the area of straight line, for the maximum train speed of 80 km/h;
3. art.10, point B.5 from Instruction of norms and tolerances for the track construction and maintenance – lines with standard gauge no.314/1989, that is, one did not perform the works for putting the joints on right section (on the same line);
4. art.3, Sheet no.4 from Instruction for the establishment of terms and order for the performance of the track inspections no.305/1989, concerning the schedule of the works for the removal of the failures found during the inspections;
5. Chapter 4 „Norms of manpower and material consumption”, point.4.1 from „*Instruction for line maintenance no.300/1982*” concerning the ensuring of the manpower norm for the current manual maintenance, respectively of 174 person norm per year per.

Root cause

Root cause of the accident is the drawing up of the File for the organization of the works for the complete cleaning of the broken stone between the railway stations Câmpia Turzii and Valea Florilor, track I, without meeting with the provisions from the point III.1.2. of the Annex 1 - „Flow diagram of the maintenance process” from the operational procedure code PO SMS 0-4.07 according which the drawing up of the documents for the periodical repair is made upon the technological processes established through instructions, regulations and disposals. So, the file was drew up and approved without meeting with the provisions from chapter II, letter B „*Mechanical overhaul of the line*”, point 2 from „*Instruction for the performance of the line*

overhauls no.302/1986”, instruction used by CNCF „CFR” SA as code of practice in its own safety management system.

Additional remarks

During the investigation, one found out the next irregularities, without relevance for the railway accident causes:

- the staff of the locomotive EA 1014, on the 13rd of October 2015 exceeded the maximum locomotive duty, doing his duty starting with the 11:30 o'clock and 05:48 o'clock (accident moment) from the 14th of October 2015, that is 18 hours and 18 minutes of continue locomotive duty. Within this period of time, the locomotive staff completed the route sheet series XS no.3255, then re-opened unjustifiably the route sheet series XS no.3256, because the locomotive was not effectively handed over and he did not take a rest according to the provision of Norms for the continue maximum duty accepted for the locomotive, for Romanian locomotive drivers, approved by the Order of the Minister of Transport no.256/2013;
- the driving, respectively the operation control of the locomotive EA 1014 on the 13th/14th of October 2015 with the safety and vigilance equipment (DSV) out of service contrarily the provisions of Instructions for the railway staff no.201/2006 approved by the Order of the Ministry of Transport, Construction and Tourism no.2229/23.11.2006.

Safety recommendations

Before the railway accident, on the current line Câmpia Turzii – Valea Florilor, track I, one performed periodical repair with complete cleaning of the broken stone with heavy track machines.

Following the accident investigation, the investigation commission found out that the File for the organization of these works was drawn up without including the preparation works, contrarily the provisions from „Instruction for the performance of the line overhauls no.302/1986”.

The fact that, after the performance of the cleaning, resulted a muddy area, leads to the conclusion that, one did not take vertical samples (șlițuri) both for establishing the track section level and for determining the high of the broken stone levels and repair, in all points established by „Instruction for the performance of the line overhauls no.302/1986 and in the file for the work organization.

According to these above mentioned, for the improvement of the railway safety, the investigation commission recommends Romanian Railway Safety Authority be sure that CNCF „CFR” SA, as railway public infrastructure manager:

- within the safety management process identifies the dangers generated by the deviations from the practice codes, analyzes their associated risks (frequency, seriousness, level of risk) and establishes the safety measures for keeping under control the risks that can appear in the situations where, the documents for the performance of the periodical repair with complete cleaning of the broken stone, are made giving up, completely or partially, some stages of the technological processes stipulated in the practice codes, that are reference documents associated to the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and requirements relevant within whole life cycle of the lines in the maintenance processes”.
- shall analyze and dispose, if necessary, measures for the detail control of the track bed structure and of the level for repair, on the current line, track I between the railway stations Câmpia Turzii and Valea Florilor, in order to identify the areas

where, the compositions of the materials from which these levels are made of are not in compliance with the provisions STAS 7582-91 „Railway works – Track beds – provisions for track design and quality control”.

- 3.4.20.** The railway accident happened on the 15th of October 2015, at 20.00 o'clock , in the railway county Timișoara, track section Iliia-Radna, in the railway station Iteu, end X, on the track II, cross-over 1/3, in the running of the passenger train no. 2343 (got by the railway undertaking SNTFC „CFR Călători” SA), consisting in the derailment of the first axle of the hauling locomotive EA 263, in the running direction. The investigation report was finished on the 13th October 2016.

Causes and contributing factors:

Direct cause of the accident was the overclimbing of the rail by the flange of wheel, followed by its fall outside the track, generated by the decrease of the vertical force and increase of the guiding force, applied from the left side of the leading axle, following the next factors:

- exceeding of the accepted tolerances for the gauge and track crossing level on the cross-over between the switches no.1 and no.3 in the railway station Iteu.
- increase of the angle of attack between the leading wheel and the rail, generated by the deviation from the parallelism of the wheelsets from the bogie II of the locomotive (first in the running direction).

Underlying causes

Infringement of the Instruction of norms and tolerances for the construction and maintenance of the track, for lines with standard gauge no. 314/1989, art.1 point.14, art 7 letter A, respectively art.19 point 2 and point 6 concerning the accepted tolerances as against the nominal/prescribed gauge for the conventional lines, respectively as against the stipulated crossing level of a track as against the another one;

- infringement of the point.9 of Annex no.2 from the Railway technical norm „Railway vehicles. Electric locomotives of 5.100 kW and 3.400 kW. Technical provisions for planned inspections and repairs”, approved by Order of the Ministry of Transports no.366/2008, following the non-performance of the cycle of the planned repairs at the locomotives, according to the railway norm "Railway vehicle. Types of planned inspections and repairs. Norms of time and norms of km run for the performance of planned inspections and repairs", approved by Order of Ministry of Transports and Infrastructure no.315/2011, amended by Order of the Ministry of Transports and Infrastructure no.1359/2012.

Root causes

None.

Additional remarks

Locomotive EA 263 was operated having the metallic parts (primary suspension) with the using limit exceeded. Order no.366/2008 concerning the approval of the Railway technical norm „Railway vehicles. Electric locomotives of 5.100 kW and 3.400 kW. Technical provisions for planned inspections and repairs”, Annex 2. point 2.9, stipulate their compulsory replacement at the repairs with lifting from the axles, respectively 5 ± 1 years, or 600.000 km. The locomotive EA 263, when the accident happened, had 10 years from the last planned repair, respectively 1.166.579 km run.

Safety recommendations

None.

- 3.4.21.** The railway incident happened on 3rd November 2015, at 11:30 o'clock, in the railway county Timișoara, between the railway stations Arad and Aradu Nou, in the running of the passenger train no.14316-2 (got by the railway undertaking SC Regiotrans SRL Brașov), consisting in the passing on danger (in stop position) .of the entry signal YFA from the railway station Aradu Nou
The investigation report was finished on the 12th April 2016.

Direct causes

The direct cause of the railway incident was a human mistake, consisting in the infringement of the position "STOP without passing the signal in stop position!" of the light entry signal YFA from the railway station Aradu Nou.

Underlying causes

Underlying causes of the incident were:

- infringement of the provisions of art.90(2) from the Instructions for the activity of the locomotive staff no.201/2006, concerning the obligation of the driver to digest the content of the running order at its reception.
- infringement of the provisions of art.21 and of art.161(2) from the Signalling regulations no.004/2006, concerning the position of the light entry signal, respectively concerning the position of the identification plate of the light entry, exit, route and branch signals.
- infringement of the obligations of the drivers within the route, stipulated at art.127(2) from the Instructions for the activity of the drivers no.201/2006, that is the drivers has to take the measures imposed by the remarks along the route, in accordance with the specific regulations in force.

Root causes

None.

Safety recommendations:

With reference to the railway incident happened in the running of the passenger train Regio no.14361-2, on 3rd November 2015, consisting in passing on danger the light entry signal YFA of the railway station CFR Aradu Nou, in stop position, it having the position „STOP without passing the signal in stop position!”, the investigation commission recommends Romanian Railway Safety Authority – ASFR to assure that:

- the railway passenger undertaking SC Regiotrans SRL Brașov shall make the necessary measures for the psychological re-examination of the staff involved in the incident occurrence;
- the railway passenger undertaking SC Regiotrans SRL Brașov shall take the necessary measures for the re-assessment of the staff involved in the incident occurrence for the confirmation of its professional competences.

- 3.4.22.** The railway incident happened on the 4th November 2015, at 03:10 o'clock, in the railway county Constanța, in the railway station Fetesti, in the running of the freight train no.31762-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), consisting in the routing of the train with the braked weight percentage non-ensured.
The investigation report was finished on the 11th July 2016.
Following the investigation, one established that this case is not classified as railway incident.

Direct cause

None.

Underlying cause

None.

Root causes

None.

Safety recommendations

None.

- 3.4.23.** The railway incident happened on the 4th of November 2015, at 17:05 o'clock, in the railway county Constanța, in the railway station Fetesti, in the running of the freight train no.31764-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), consisting in the routing of the train with the braked weight percentage non-ensured. The investigation report was finished on the 11th July 2016. Following the investigation, one established that this case is not classified as railway incident.

Direct cause

None.

Underlying cause

None.

Root causes

None.

Safety recommendations

None.

- 3.4.24.** The railway accident happened on the 19th of November 2015, at 01:40 o'clock, in the railway county Brașov, track section Brașov - Vânători (electrified double-track line), between the railway stations Rupea and Racoș, on the running line, track II, , km 238+607, in the running of the freight train no.41758-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), consisting in 33 wagons loaded with diesel, hauled by the locomotive EA 456 and the banking locomotive EA 869, consisting in the derailment of seven wagons (three of them overturned), being in the train composition from the 12th to the 18th. The investigation report was finished on 18th November 2016.

Direct cause

The direct cause of the accident is the over-climbing of the active lateral surface of the rail head from the exterior track of the curve by the flange of right wheel of the first axle in the train running direction (axle corresponding to the wheels 7÷8) from the wagon no.31537965984-2 (the 12th of the train), because the increase of the ratio between the leading force and the load acting on the leading wheel (wheel no.8), exceeding the limit of stability at derailment.

The increase of the ratio between the leading force and the load acting on the leading wheel happened because the the increase of the lateral force (guiding one) on this wheel and the serious load transfer of this wheel.

Contributing factors:

- unsuitable technical condition of the sleepers in the points „1” and „0” (in the train running direction), allowing the movement of the metallic plates from the exterior track, meaning the increase of the gauge value;
- deviations at the track gauge between the points 2 and 1 (in the train running direction), whose values measures in static condition exceeded the track accepted limit. This gauge values led implicitly to the exceeding of the accepted change of the gauge over 2mm/m;
- the variable lateral wears of the rail head, that increase the hunting motion of the wagons;
- the superelevation of the track generated by the speed restriction at 50 km/h in the curve at km 238+425-238+790, where the cant of track was calculated for speed of 65 km/h.

Underlying causes

- infringement of the provisions of art.1, point 14 from the „Instruction of norms and tolerances for the construction and maintenance of lines with standard gauge no.314/1989”, concerning the accepted tolerances as against the nominal gauge established for the lines with ballast bed;
- infringement of the provisions of the point 4.1 from Chapter 4 „Norms of labor and material consumption”, of „Instruction for the line maintenance no.300/1982” concerning the assurance of the labor norm for the current hand maintenance.

Root cause

Root cause of the accident is the lack of application of the provisions from the operational procedure code PO SMS 0-4.07 „Compliance with the technical provisions, standards and relevant requirements during the line life in the maintenance process”, part of the safety management system got by CNCF „CFR” SA, concerning the sizing of the staff of the sub-units for the track maintenance, in relation to the works, fact confirmed by the sub-sizing of the staff of the Track District no.1 Racoş within Track Section L2 Sighişoara.

Additional remarks

During the investigation one found out some deficiencies and lacks, non-relevant for the conclusions on the accident causes, as follows:

- one did not comply with the rest time outside the home (in Depot Braşov) for the locomotive staff from the hauling locomotives of the freight train no.41758-1 involved in the accident (before its routing), that being less than the half of the previous working time, against the provisions of the art.8, point 1 of Norms on maximum continuous duty accepted in the locomotive, performed by the driver and/or driver’s assistant for Romanian railways, approved by Order of the Minister of Transports no.256/2013;
- one did not performed the visual inspection of the train no.41758-1 at its arrival in the railway station Brazi, because the wagon examiner was notified by telephone by the movements inspector to come after the stabling of the train in the station. So, one did not meet with the art.10, paragraph (4), letter a) from the Instructions for the technical control and maintenance of operated wagons no.250/2005.

Safety recommendations

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

Taking into account the factors contributing at the accident occurrence, factors based on underlying causes that are deviations from the practice codes, as well as that the surveillance of the railway economic operators has to be done by Romanian Railway Safety Authority – ASFR, the investigation commission does not consider necessary to issue safety recommendations.

- 3.4.25.** The railway incident happened on the 17th of November 2015, at 23:56 o'clock, in the railway county Constanța, in the railway station Fetești, in the running of the freight train no. 31734-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), consisting in the routing of the train with the braked weight percentage no-ensured. The investigation report was finished on the 20th October 2016.

Direct cause

The direct cause of the incident is the non-ensurance of the braked weight percentage of the freight train no.31734 between Livezi Ciuc and Ghimeș.

Contributing factors:

- possibility to send through the soft application ATLAS a message that in the field for the braked weight percentage had a value and in the field “Mentions” have another value for the braked weight percentage;
- the application field for the braked weight percentage is not compulsory to be filled in/checked in the process of asking/tendering/notification and approval of the train schedule;
- the traffic controllers within BCCTF did not regulate the way to train for these applications.

Underlying causes

Infringement of the Annex no.30 of the Regulations for hauling and braking no.006 for the freight trains consisting in wagons provided with braking proportional with the load, braked with automatic and electric braking.

Root causes

None

Measures taken by CNCF CFR SA

In order to make clear the provisions for the schedule of the freight trains consisting in wagons provided with equipments for braking depending on the load (FPÎ) , the provisions of the paragraph 16.2 from the General Disposals of the freight train timetables on SRCF 1-8 are canceled *”At the schedule of the freight trains running on high gradients stipulated in the Annex 12 of the Regulations for hauling and braking no.006 and consisting in wagons provided with equipments for braking depending on the load, the railway freight undertaking shall establish the braked weight percentage according to the provisions of the Annexes 25 31 of the same Regulations and shall notify CNCF ”CFR,, SA with reference to this issue” and are replaced with the next provisions:*

”At the schedule of the freight trains consisting in wagons provided with equipments for braking depending on load, one shall do as follows:

- 1. If a railway freight undertaking has in the timetable route (stipulated and) for the running of the trains consisting in wagons with equipments for braking depending on the load and run on one of the high gradients stipulated in the Annexes 25 31 of the Regulations for hauling and braking no.006, one shall use the braked weight percentage stipulated under the route, imposed if there are such wagons in the train composition.*
- 2. The trains consisting in wagons provided with equipments for braking commensurate with the load but do not transit the high gradients stipulated in the annexes 25 31 of the Regulations for hauling and braking no.006, can run on any route for freight trains, ensuring the braked weight percentage of minimum 50%.*
- 3. If a railway freight undertaking wants to use only a part of a route from the timetable (stipulated and) for the running of the trains consisting in wagons with equipments for braking depending on the load, and the respective part of route does not transit any of the high gradients stipulated in the Annexes 25 31 of the Regulations for hauling and braking no.006, the train can run on the respective route stipulated in the timetable and can be dispatched with a braked weight percentage under the value imposed for the trains consisting in wagons with equipments for braking depending on the load, but not less than 50%.*
- 4. If a railway freight undertaking has not a route stipulated in the timetable for the running of the trains consisting in wagons with equipments for braking depending on load and wants to transit at least one of the high gradient stipulated in the annexes 25 31 of the Regulations for hauling and braking no.006, the route shall be considered joining ”The diagram elements for making the timetable of the trains consisting in wagons provided with equipments for routes) stipulated in the timetables and a braked weight percentage shall be established for the whole route, being the highest from the values of the braked weight percentage of the constituents.*
- 5. If the freight trains consist also in wagons provided with equipments for braking depending on the load, but these have the brake off, the train has to ensure a braked weight percentage of minimum 50%.*

If the parameters taken into account by the railway freight undertaking (running speed, minimum braked weight percentage and maximum tonnage) are different from those included in ”Diagram elements for the drawing up of the timetable of the trains consisting in wagons provided with equipments for braking depending on the load”, the railway freight undertaking shall ask in clear the allocation of a route in the timetable. Through fax/e-mail, one sent a table concentrating all the values of the braked weight percentages established under the diagram elements for the drawing up of the timetable of the trains consisting in wagons provided with equipments for braking depending on the load, according to the tonnage and the train maximum speed on the track sections that have high gradients, with the length over 10 km, stipulated in the annexes 25 31 of the Regulations for hauling and braking no.006.

Measures taken by SNTFM „CFR MARFĂ” SA

The Department Program Analysis of SNTFM „CFR MARFĂ” SA assumed the right way to ask BCCTF-CN CF CFR SA, concerning the running of the additional trains in the soft system ATLAS-RU, so no suspicions concerning the infringement of the braked weight percentage of the freight trains appear.

Other findings

SC INFORMATICĂ FERROVIARĂ SA is not railway supplier because it has neither railway supplier authorization nor certificate for railway technical homologation/technical agreements according to the specific regulations in force.

Safety recommendations

The investigation commission recommends Romanian Railway Safety Authority - ASFR be sure that the railway infrastructure administrator makes and applies procedures for the use of the manual of the soft application ATLAS and ensures the training of the traffic controllers of BCCTF.

- 3.4.26.** The railway incident happened in the railway county Craiova, in the railway station Filiași, km.285+500, in the running of the freight train no.93754 (got by the railway undertaking SNTFM „CFR Marfă” SA), in which the covers of DAM equipments from the switches no. 4 and 18 and the concrete slabs from the board crossing from the line III of the railway station were hit by parts from the rolling stock in running. The investigation report was finished on the 7th April 2016.

Direct cause

The direct cause of the railway incident was the automatic brake-rod adjuster from the axle no. 6 went out the locomotive gauge, following the breakage of its fastening bolt.

Contributing factors

- existing of an old crack in the threaded part of the fastening bolt of the ear from the body of the automatic brake-rod adjuster type RL2-350, on about 20% from its cross section;
- non-greasing of the surface of the fastening bolt of the ear from the automatic brake-rod adjuster type RL2-350;
- the length of the safety cable from the automatic brake-rod adjuster type RL2-350 was too big, it leading to the going of the ear of its body out of the locomotive gauge.

Underlying causes

- infringement of the cycle of compulsory repairs at the locomotive, according to the provisions of Railway Norm NF 67-006:2011 "Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of the inspections and planned repairs", approved through the Order of Minister of Transports and Infrastructure no.315/2011, amended through the Order of Minister of Transports and Infrastructure no.1359/2012.
- lack of greasing of the bolt for the fastening of the body end (of the ear of the body) of the automatic brake-rod adjuster type RL2-350, against the provisions of the technical specification code ST LE REV 1-5/05-2011.

Root causes

Lack of some regulations on the length of the safety cable necessary against the going out the locomotive gauge of the automatic brake-rod adjuster type RL2-350, if it brakes.

Additional remarks

During the investigation, the next deficiencies, without relevance for the accident causes, were identified:

- after the incident, the driver did not draw up the event report through which notify the railway station according to art.22, paragraphs (1) and (2) from the *Regulations for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety*, approved through the Government Decision no. 117/2010 and art.9, paragraph (1), letter i from Instructions for the locomotive staff activity no.201/2007.
- after the notification made by the driver through the radio-telephone equipment to the railway station Filiași concerning the problems had at the locomotive, the movements inspector on duty in shift 27/28.11.2015 did not notify the incident, it being found out and notified on 29th November 2015, he neither dispose the checking of the route and switches, when the external station movements inspector heard noise at the locomotive during the visual inspection of the train, it being against the provisions of art.22, paragraph (1) from the *Regulations for the investigation of accidents and incidents, for the development and improvement of Romanian railway and metro safety*, approved through the Government Decision no. 117/2010;
- the external station movements inspectors on duty on 28th, 28th/29th and on 29th November 2015 did not check properly the condition of the switches from the end Y of the railway station Filiași at the taking over of the duty, according to the art.23, paragraph (5), letter c from the *Regulations for the train running and railway vehicle shunting* no.005/2005.

Measures taken

Following the railway incident, until the date of the investigation report ending, the involved parts did not dispose any measures.

Safety recommendations

With reference to the incident happened in the running of the freight train no.93754, hauled by the electric locomotive EA 314, the breakage of the fastening bolt of the ear from the body of the automatic brake-rod adjuster type RL2-350 happened because the existence of an old crack on about 20% from its cross section.

Appearance of cross crack at the bolt of the brake-rod adjuster could be identified during the planned repairs, in the condition of meeting the norms of time or of km imposed by the Railway Norm N.F. 67-006:2011 "Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of the planned repairs".

The appearance of the crack, as well as its extension was favoured by the lack of greasing on the surface of the fastening bolt of the ear of the body of the automatic brake-rod adjuster type RL2-350, it leading to additional stresses in its body.

After the breakage of the fastening bolt from the automatic brake-rod adjuster, its going out the locomotive gauge was possible because the safety cable did not ensure the keeping of the adjuster within the gauge.

Following these above mentioned, the investigation commission considers necessary to issue the next safety recommendations:

1. Romanian Railway Safety Authority shall ask SNTFM "CFR Marfă" SA, like railway undertaking, within its safety management system, to analyze again the maintenance of the locomotives and to establish safety measures that have to be implemented in order to ensure, within this process, all national safety norms are met, including Railway Norm NF 67-006:2011 "Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of the planned repairs"
2. Romanian Railway Safety Authority shall ask SNTFM "CFR Marfă" SA to add to the documentation on the inspections and planned repairs performed at the electric

locomotives of 5100 KW provisions clear on the length of the safety cable of the automatic brake-road adjuster, if it breaks, it not go out the locomotive gauge.

3. Romanian Railway Safety Authority shall ask the supplier of railway critical services SC „CFR-IRLU” SA to analyze again the processes of performing inspections and repairs at electric locomotives of 5100 KW, so be sure that within these processes are completely performed the works stipulated in the technical specifications or duty sheets.

3.4.27. The railway incident happened on the 21st December 2015, at 04,55 o'clock, in the railway county Cluj, in the railway station TUNEL, in the running of the work train no.38230, consisting in the vehicle PLASSER DGS 62N, consisting in passing on danger the signal Y, on red position, followed by the trailing of the switch no.6 (joined with the switch no. 4)

The investigation report was finished on 7th April 2016.

Direct cause, contributing factors

The direct cause of the incident was a human mistake consisting in the non-meeting with the position "STOP without passing the signal in stop position!" given by the entry signal of the railway station.

Underlying causes

The underlying causes of the incident was:

- infringement of the provisions from the Signalling regulations no.004/2006, art.21 concerning the position of the light entry signal and of art.161 (2) – concerning the meeting with the position of the identification plate of the entry, route, branch signals.

Root causes

None.

Safety recommendations

On the railway infrastructure of the administrator CN CF „CFR” SA, in the last years, there were many cases of human mistakes, consisting in the non-meeting with the position "*STOP without passing the signal in stop position!*" in which employees of the contractors, owners or users of rolling stock (technological vehicles for the maintenance of the track, of the high line and/or for movement of maintenance track staff were involved. Some of these human mistakes generated incidents that in slight different conditions could lead to serious accidents. Actually, two cases were registered like serious accidents that happened following the lack of a system for the automatic control of the speed, put into the technological vehicle, the single control of the driver being the accompany agent, subject to the same human mistake. In order to avoid some incidents or accidents with similar causes, the investigation commission recommends to provide the heavy track vehicle with some equipments for the automatic control of the speed, punctual, type INDUSI.

3.4.28. The railway incident happened on the 27th December 2015, at 14:25 o'clock, in the railway county Timișoara, end Y of the railway station Arad, at the operation for the coupling of the locomotive DA 1097, a hauling one, at the passenger train regio no.3115 (got by the railway undertaking SNTFC „CFR Călători” SA) on the line 7P (occupied), consisting in the serious collision of the rake of wagons regio nr.3115, being in stop position. Following this situation, the first wagon was damaged and 7 passengers injured, 4 of them being hospitalized.

The investigation report was finished on the 26th September 2016.

Direct cause, contributing factors

The direct cause of the incident is the maladjustment of the speed of the locomotive DA 1097 for the area of shunting, it leading to the serious collision of the rake of wagons.

Contributing factors

- non-application of the emergency brake by the driver when he found out that the traffic safety was affected;
- failure of the locomotive EGM 920, that make short the time for the putting in service and exit of the locomotive DA 1097 for the hauling of the passenger train regio no.3115.

Underlying causes

- infringement of the provisions from the Instructions for the locomotive staff activity no.201/2007, art.179(3) and art.198(1) and the Regulations for the hauling and braking no.006/2005, art.5(3) concerning the obligation of the driver to adjust the speed for shunting so he can stop the locomotive in the established place, without damaging the rolling stock;
- infringement of the provisions from the Regulations for hauling and braking no.006/2005 - art.73(1) concerning the obligation of taking measures for emergency braking if the traffic safety was affected;
- infringement of the Railway Norm "Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of the inspections and planned repairs", annex no. 1, table 3.1, approved by Order of Ministry of Transports and Infrastructure no.315/2011, amended by Order of the Ministry of Transports and Infrastructure no.1359/2012, concerning the planned repairs at the locomotives.

Root causes

None.

Measures taken

Following this incident, in order to prevent some collisions in shunting activity, the railway passenger undertaking SNTFC „CFR Călători” SA took the next measures:

- disposed to use skilled staff, pay an important attention to the shunting in order to identify and remove the wrong working habits of the locomotive staff, including how the downloading and interpretation of data from the speed recorder of the rolling stock are made, identification of the wrong working systems that can be factors favouring the occurrence of incidents and accidents;
- disciplinary analysis, in accordance with the Labour Code, of the staff involved in the incident occurrence.

Safety recommendations

Taking into account the cause and the factors contributing to the occurrence of this incident, as well as the measures taken by the railway undertaking following the incident occurrence, the investigation commission did not consider necessary to issue some safety recommendations.

3.4.29. The railway accident happened on 11th January 2016, at 21,30 o'clock, in the railway county Timisoara, track section Simeria - Livezeni (electrified double-track line), in the railway station Petrosani, at the stabling on the line 8 of the freight train no.20954 (got by the railway undertaking SC Cargo Trans Vagon SA), consisting in 16

wagons, the first bogie of the wagon no.85535310074-3 (the 10th from the locomotive) derailed.

The investigation report was finished on the 19th December 2016.

Direct cause, contributing factors

The direct cause of the railway accident was the fall of the right wheel (the wheel no. 1) from the leading axle of the wagon no.85535310074-3, the 10-th in the freight train no.20954, between the tracks. It happened because the unsuitable technical condition of the superstructure.

Contributing factors:

- unsuitable technical condition of the wooden sleepers in the point „0” (the point where the wheel no. 1 fell inside the track), these did not assured the fastening of the rails and keeping of the gauge between the accepted tolerances;
- the free spaces between the shoulders of the metallic plates and the base of the rail from the exterior track of the curve, at those three successive sleepers before the cross section of the track where the derailment happened (sleepers „0”÷„2”), that under the dynamic forces of the rolling stock wheels, allowed the additional overwidening of the track, against the values measured statically, with values between 4mm and 6mm;
- under-sizing of the workers from Track District no.7 Petroșani, responsible with the maintenance of the track infrastructure in the railway accident site;
- inadequate quantities of wooden sleepers sent to the Track District no.7 Petroșani for the performance of track maintenance and repair.

Underlying cause

- infringement of the provisions from the art.25, paragraphs (2) and (4) from „Instruction of norms and tolerances for the track construction and maintenance, lines with standard gauge no.314/1989”, concerning the failures that impose the replacement of the wooden sleepers and keeping of the unsuitable sleepers;
- infringement of the provisions from point 4.1. Chapter 4 „Norms of manpower and material consumption”, of „Instruction for the line maintenance no.300/1982” concerning the compliance with the norm of manpower at the current manual maintenance.

Root cause

Root cause of the accident is the non-application of the provisions from the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and relevant requirements within the whole life time of the lines in the maintenance process”, part of the safety management system of CNCF „CFR” SA, with reference to the sizing of the staff from the sub-units responsible with the track maintenance, in relation to the work total, it being confirmed by the under-sizing of the staff from Track District no.7 Petroșani from Section L9 Simeria.

Measures taken

Following the railway accident, in order to avoid such accidents with similar causes, the railway infrastructure manager CNCF „CFR” SA, through the Railway County Timișoara, took the next measures:

- employment in the Section L9 Simeria of 6 employees with execution responsibilities (workers for track maintenance II);
- performance of railway infrastructure maintenance (replacement of wooden sleepers, repairs of the railway infrastructure in order to remove the speed

restrictions) being in the Section L9 Simeria with authorized companies, with a total value of 6.842.914,73 lei.

Safety recommendations

According to the provisions of Chapter C.5.2. *Safety management system*, the investigation commission consider that the non-compliance with the provisions of Instruction for the line maintenance no. 300/1982, document associated to the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and relevant requirements within the whole life time of the lines in the maintenance process”, part of the safety management system of CNCF „CFR” SA, generated an unsuitable maintenance of the track superstructure in the derailment area.

Taking into account the contributing factors that are based on the underlying causes, deviations from the practice codes, as well as that oversight of the economic operators from the railway system is the responsibility of Romanian Railway Safety Authority – ASFR, the investigation commission does not consider necessary to issue some safety recommendations.

3.4.30. The railway accident happened on the 23rd January 2016, at 06:00 o'clock, in the railway county București, non-interoperable track section Târgoviște - Pietroșița (non-electrified single-track line), in the railway station Aninoasa, a fire burst in the diesel multiple unit DESIRO 2114, being the passenger train Regio no.9438 (got by the railway undertaking SNTFC „CFR Călători” SA).

The investigation report was finished on the 14th December 2016

Direct cause

The fire happened because the over-heating of the power supply cables from the double radial fan, part of the unit without adjuster from the air conditioning equipment of the wagon no. 2 of the diesel multiple unit Desiro 2114, it leading to the ignition of their insulation and thermic affecting of the very close components.

Contributing factors

- failure (blocking of the rotor) of one of the double radial fans from the composition of the unit without adjuster of the air conditioning equipment of the wagon no.2 of the diesel multiple unit Desiro 2114;
- keeping in operation of the diesel multiple unit Desiro 2114, after achieving the time limit for the performance of the planned repairs.

Underlying causes

One did not comply with the provisions of Chapter 3 – Norms for the performance of the inspections and planned repairs of the railway vehicles and their periodicity (cycle) of the Railway Norm 67-006:2011 „Railway vehicles. Types of inspections and planned repairs. Norms of time or norms of run km for the performance of 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:

- - subparagraph 3.1, that is the diesel multiple unit Desiro 2114 was not withdrawn from running at the achievement of the norm of time stipulated for the performance of the planned repairs;
- - table 3.1, letter A, position no.10, that is one did not meet with the cycle of planned repairs for the diesel multiple unit Desiro 2114.

Root causes

None.

Additional remarks

In the investigation process one found out differences between the Book for the maintenance of the diesel multiple unit Desiro SR 20 D and the Technical Specification Code ST 12-2005 „Planned inspections type IS200, F1, F2, F3, F4, F5 at the multiple unit Desiro SR20D”, concerning the type of the inspections consisting in controls of the double radial fans, that is:

- in the book for maintenance there are stipulated controls for all types of planned inspections, respectively from IS200=R1 to F5=R6;
- in the technical specification there are stipulated controls only for the planned inspections type F3=R4, F4=R5 și F5=R6.

Taking into account this issue, the investigation commission considers useful to re-analyze the criteria that consisted basis for taking out the inspections at the double radial fans within the planned inspections type IS200=R1, F1=R2, F2=R3 and eventually the supplement of the present technical specification.

During the investigation, one also identified the next deficiencies without relevance for the accident causes:

- one does not comply with the provisions of art. 44 from the Instructions for the activity of the locomotive staff no.201, that is one does not perform at the diesel multiple unit/units Desiro - Siemens the intermediary inspections;
- the time norm stipulated for the performance of the planned inspections type R5 and R6 at the diesel multiple units diesel hydraulic Desiro – Siemens, according to the provisions of the Railway Norm NF 67-006:2011 „Railway vehicles. Types of inspections and planned repairs. Norms of time or norms of run km for the performance of 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 from the 30th of August 2012, is not in accordance with the norm of km. So, for the performance of the planned inspections type R5 and R6 the norm of time is established for 1 day , respectively 2 days, and the norm of km 160 thousands, respectively 320 thousands of km.

Measures taken

Following this railway accident, the railway passenger undertaking SNTFC „CFR Călători” SA took the next measures:

- to submit to repair type R8 the multiple unit Desiro 2114;
- additional inspection of the electric equipment from the roof of the diesel multiple units, respectively of the fans,cables and electric contacts.

Safety recommendations

With reference to the railway accident happened on the 23rd January 2016 in the running of the passenger train Regio nr.9438, one found out that the fire happened in the diesel multiple unit Desiro 2114 was generated by the failure of a double radial fan from the air conditioning equipment, part that had to be replaced at the planned repair type R8, repair that the diesel multiple unit had to be submitted starting with the 26th September 2013.

Taking into account that the factors contributing at the accident occurrence were generated by deviations from the practice codes, as well as because the surveillance of the economic operators from the railway field is the responsibility of Romanian Railway Safety Authority – ASFR, the investigation commission does not consider necessary to issue some safety recommendations.

3.4.31. The railway incident happened on the 25th January 2016, at 09:08 o'clock, in the railway county Iași, in the railway station Suceava, consisting in the collision during the coupling of the locomotive DHC 615 at the rake of wagons no.5604 (got by the railway undertaking SNTFC „CFR Călători” SA), consisting in the routing and running with technical problems of the wagon no.50532068004-2, being in the composition of the train no.5604 from the 25th January 2016.

The investigation report was finished on the 7th July 2016.

Direct cause

The direct cause is a human mistake consisting in the maladjustment of the locomotive speed, so the vehicles can be stopped in the established place, without their damaging or degradation and the load movement. So, during the coupling operation, the locomotive was not stopped at least 2 m before the first wagon of the train.

Contributing factors

The driver did not pay attention to the operation of coupling at the rake of wagons, consisting in 6 wagons, arrived as passenger train no.5601.

Underlying causes

Infringement of the provisions from Instructions for the driver activity no.201/2007, Part VI, chapter II, art.179, paragraph (3) and Part IV, chapter I, art.115, paragraph (3), consisting in the maladjustment of the locomotive speed at the real one, necessary to stop at least 2 m before the rake of wagons.

Root causes

None.

Additional remarks

Putting into service of a damaged coach, following the serious collision between this and the shunting locomotive during the coupling with the stopped rake of coaches, was possible because the infringement by the involved staff of the railway passenger undertaking S.N.T.F.C. „Calatori” SA, of the national norms specific to the railway network for the notification of the railway accidents-incidents and of the own procedures got by the railway undertaking made in accordance with the assessment criterion Q from the annex II of the Regulations (UE) 1158/2010, of the conformity with the requirements for the granting of the safety certificate.

So, after the incident occurrence in the railway station Suceava Nord, it was not notified in accordance with the provisions of the Investigation Regulations by the driver and/or the head of the train crew that coupled the locomotive LDH 615 at the rakes of coaches no.5601-5604. At the technical inspection of the rakes of coaches no.5601-5604 in the group of tracks Suceava, at the shunting of this rake of coaches for dispatching from the group of tracks in the railway station Suceava Nord, at the performance of the full brake test and the coupling of the locomotive EA 679 at the train by the examiner V, as well at the delivery of the coaches by the conductor in the railway station Suceava Nord, by the staff with responsibilities in this respect, one did not find the failures appeared at those two wagons.

We specify that, in accordance with the statements of the driver of the hauling locomotive between Suceava Nord – Iași, of the conductor, as well with the interpretation of the data recorded by the equipments IVMS of the locomotives, results that from the departure from the railway station Suceava Nord and up to the arrival of the passenger train no.5604 in the railway station Iași, there were no collisions, hitting, or reactions in train that should generate failures or damages at the train wagons.

In the railway station Pașcani the hauling locomotive EA 666 was uncoupled, the train continuing with the same driver, but in the hauling locomotive EA 769.

According to the provisions of the *of the Regulations for the accident and incident investigation, for the development and improvement of Romanian railway and metro safety*, approved by the Government Decision no.117/2010, the case is classified at the art. 8, group B, point 2.5, as „*incident happened in the shunting activity*”, without being notified by the employees of SNTFC CFR Călători which made the coupling with the train (driver, foreman shunter and those two shunters).

Following all these non-conformities distinguished in the activity of the railway worker (driver, shunting crew, examiners, conductor), the incident happened in the shunting activity from the railway station Suceava Nord was not notified in accordance with the provisions of the *Investigation Regulations*, and the damaged wagon no. 50532068 004-2 could have needed its taking out of service, and its coupling at the passenger train no.5604 from the 25th of January 2015, between Suceava Nord – Iași, when, in slight different conditions could lead to a serious railway accident.

This working way was also possible because at SRTFC Iași:

- the operational procedure PO-0-8.3-08 for the notification, investigation and evidence of the railway accidents/incidents, part of the safety management system of OTF was not known by all employees;
- one did not established the commissions for the assessment of the dangers and risks associated to the railway safety from the own activity, according to the provisions of the Regulations (CE) 402 from the 30th April 2013, just on the 1st of March 2016, the manager of SRTFC Iași issued the decisions for their composition.

A relevant issue of the incident consequences is that the employees of the Coach Inspection Suceava, in the inspection activity from the group of tracks, did not find problems or failures that need removal or repairs, this imposing the wagon stop.

It was possible either the inspection was not perform or the remarked failures were intentionally hidden and implicitly were not notified, leading to the coupling of the collied wagon in the train composition ,with damages that, in slight different conditions could lead to a serious railway accident.

Both the non-performance of the technical inspection and the lack of notification of the failures found during the inpection (in case of its performance), are non-compliance with the provisions of the Instruction no.250/2005, for the technical inspection and maintenance of the wagons in operation, requirements of the safety management system.

In the investigation process, the commission found out some deficiencies and gaps in the activity of the involved staff, those not being causes of the incident, as follows:

In the activity of the driver of the shunting locomotive:

- did not assess correctly the collision consequences ;
- did not make the event report when he ended the shift, for informing his superiors about what has happened during his shift;
- did not notify the incident according to the provisions of the art.22 paragraphs (1) and (4) from the Investigation Regulations.

In the activity of the management of depot Suceava:

- did not early follow to have the necessary engine stock to perform in good conditions the activity on the 25th of January 2016, asking, as extreme measure, the performance of the shunting in the Railway Complex Suceava, with the locomotive LDH 615, it being currently used for the hauling of the passenger train on the track section Verești – Leorda – Botoșani;
- the theoretical and practical training of the locomotive staff, both with reference to the instruction provisions and practical skills, were not suitable.

In the shunting activity:

- understating of the effects of a serious collision, that the consequences were not correctly assessed;
- did not make the event report when he ended the shift, for informing his superiors about what has happened during his shift;
- did not notify the incident according to the provisions of the art.22 paragraph s (1) and (4) from the Investigation Regulations.

-

In the activity of the management of the railway passenger station Suceava:

- the unsuitable theoretical training, both with reference to the compliance with the instruction provisions and those for the railway incident notification.

In the activity of the complex gang of RTV in Suceava:

- superficial performance of the duties stipulated in the job description and in Instructions for the technical inspection and maintenance of coaches in operation no.250/2005;
- superficiality in the delivery/reception of the coaches and in the visual inspection of the train;
- untrue statements and answers at questions, unsuitable cooperation with the members of the investigation commission;

In the activity of the management of the Coach Inspection Suceava:

- low efficiency as results of the theoretical and practical training, both with reference to the compliance with the instruction provisions and to the practical skills, consisting in the non-identification of the visible failures at the respective wagon by the workers during their compliance with the tasks from the job description and the specific regulations;
- ineffective monitoring (hierarchical control) of the operation worker activity;

In the activity of the conductor:

- superficiality in the delivery-reception of coaches;
- untrue and contradictory statements, appeared during the investigation, concerning the way to check the inventory and equipments working, before the train departure;

In the activity of the management of the railway passenger station Iași:

- the results of the theoretical and practical training are unsuitable, demonstrated by the poor way to take delivery the train by the conductor;
- ineffective monitoring (hierarchical control) of the operation worker activity;

In the activity of the management of the Wagon Inspection Iași:

- in none of those two documents drawn up after the inspection of the collided wagon, that is the the finding minutes and the telephone note sent at the Department for the Traffic Management, is specified that the technical problems of the wagon are generated by the collision, although the traces are clear;
- irresponsibility in the performance of the duties stipulated in the job description and in the Investigation Regulations, infringing the provisions of art.22, acts that led to the lack of notification of the incident as soon as he took note of its occurrence;

In the activity of the head of the Operation Division:

- did not notify the incident according to the provisions of art.22 paragraphs (1) and (4) from the *Investigation Regulations*, as soon as he took note of its occurrence;
- did not check the implementation of the verbal disposals sent to the subordinated employees;
- after being informed that the phone notification of the incident was not assumed by the movements inspector from the railway station Iași, he did not meet with the job requirements, that is he did not contact by phone the railway station manager, the head of the Regional safety Traffic Department of SRTFC Iași or head of the Regional Safety Traffic Inspectorate Iași, in order to end the notification.

Measures taken

- The wagon no.50532068 004-2 was notified and took out of train, and after the assessment of the failures, one asked the examination of a representative of Electroputere VFU Pașcani, establishing their seriousness and the remedial way. So, in the minutes no.IS2/V1/125/27.01.2016 was established that the coach is for accidental repair, following to be routed for repairs.
- The operational procedure PO-0-8.3-08 for the notification, investigation and evidence of the railway accidents/incidents, part of the safety management system of OTF was sent in order to be known by all employees;
- On the 1st of March 2016, the manager of SRTFC Iași issued the decisions, in accordance with the provisions of the Regulations (CE) 402 from the 30th of April 2013 for the establishment of the commissions for the assessment of the dangers and risks associated to the railway safety for own activity.

Safety recommendations

None.

3.4.32. The railway incident happened on the 23rd January 2016, at 17:35 o'clock and notified on the 22nd of February 2016, in the railway county Craiova, on the track section Băbeni – Piatra Olt, in the running of the freight train no.80450, hauled by the locomotiv DA 1544, the maximum speed, established through the running order, was exceeded.

The investigation report was finished on the 15th of September 2016.

Direct cause

The direct cause : the measures for braking in order to comply with the maximum speeds established for the respective train category through the running order were not taken, because the mile, hectometer posts and the foot brodges were not observed.

Contributing factors

Vegetation on both sides of the track, the mile and hectometer posts could not be seen, the foot bridges could be seen from short distance;

Underlying causes

- running with speeds different from those stipulated in the running order, against the provisions from the Instructions for the locomotive staff no.201/2007, art.79, paragraph (2) point a and paragraph (4), art.80, paragraph (2), art.125, paragraphs (1) and alin.(3) and from the Signalling Regulations no. 004/2006, art.103.
- non-performance of works for the removal of the vegetation from the track bed or the track platform, against the provisions of the operational procedure PO SMS 0-4.07 and the Instruction for the line maintenance no.300/1982, point 3, subpoint 3.1, paragraph 10.

Root causes

None.

Additional comments

During the investigation, the next deficiencies were identified, being without relevance for the incident causes:

- in the adresses no.12/25.01.2016 of the Head of the Line District L2 Drăgășani and no.122306/20/27.01.2016 of the Head of the Track Section L3 Râmnicu Vâlcea

there was mentioned that the speed restrictions of 30 km/h on bridges and footbridges continued not be met, although, before, the papers in this respect were drawn up by the management of the railway county Craiova, no measure been taken;

- the Compartment for the Investigation of Accidents/Incidents and for Solving Divergences Craiova asked Railway County Craiova a situation of the freight and passenger trains running hauled by two or more locomotives from the 1st January 2016 to the 22nd February 2016, on the track section Piatra Olt – Babeni and back, where, following the download and reading of the records from locomotives IVMS memories, one found out that these speed restrictions were not met, as follows:
 - SNTFC “CFR Călători” SA – 8 passenger trains;
 - SNTFM “CFR Marfă” SA – 18 freight trains;
 - SC GRUP FERVIAR ROMÂN SA – 10 freight trains;
 - SC Deutsche Bahn CARGO ROMÂNIA SRL - 13 freight trains;
 - these cases of infringement of the speed restrictions of 30 km/h on bridges and footbridges, stipulated in the running orders, although they were identified during the downloading and reading of the records from IVMS memories of the locomotives hauling those trains, they were not notified as railway incident by the respective railway undertakings.

Safety recommendations

None.

3.4.33. The railway accident happened on the 9th March 2016, at 09:15 o'clock, in the railway county Constanța, km. 133+700, between the railway stations Tulcea Mărfuri and Cataloi, in the running of the freight train no.93311-2 (got by the railway freight undertaking SNTFM „CFR Marfă” SA), consisting in a fire burst in the hauling locomotive DA 1306.

The investigation report was finished on the 14th December 2016.

Direct cause

The fire happened because the over-heating of the power supply cables from the traction motor no.5, it leading to the ignition of their insulation and of the oil wastes resulted from the locomotive operation.

Contributing factors

1. over-operation of the traction motors at values and variations of the current strength, in the conditions of the hauling of the freight train no.93311d-2 on the 9th of March 2016 (high humidity of the air 94%, profile with gradient up to 21.5 ‰, the big tonnage of the train representing 98,35% from the maximum tonnage accepted for this track section);
2. the sanding equipment of the locomotive DA 1306 was out of service;
3. the anti-slide equipment of the locomotive DA 1306 was out of service;
4. put in operation of the locomotive DA 1306 with the equipments for sanding and anti-slide out of service;
5. unsuitable cleaning of the locomotive following the oil leakages, resulted from the sealing areas of the equipments and of the diesel motor;
6. keeping in operation of the locomotive DA 1306 after achieving the time norm for the performance of the planned repairs.

Underlying causes

- infringement of the provisions from the Annex 3 of the Technical Specification code ST-LDE 2100 HP- Rev. edition 2 Revision 0 „Planned inspections type PTAE (Pth), R15, RI, RT, R1, R2, 2R2, R3 and casual repairs type RIT, RIR, RAD, RA at the locomotives Diesel-electric of 2100 HP”, that is, within the planned inspection R15 performed on the 8th of March 2016 one did not make the works stipulated for keeping in good operation condition the sanding equipment of the locomotive DA 1306;
- infringement of the provisions of the Annex 3 of the Technical Specification code ST-LDE 2100 HP- Rev. edition 2 Revision 0 „Planned inspections type PTAE (Pth), R15, RI, RT, R1, R2, 2R2, R3 and casual repairs type RIT, RIR, RAD, RA at the locomotives Diesel-electric of 2100 HP”, that is, within the planned repairs R15 performed on the 8th of March 2016, one did not checked the circuit for the protection against the slide of the locomotive DA 1306;
- infringement of the provisions from the Instructions for the activity of the locomotive staff no.201/2006 approved by Order of the Minister of Transports no.2229/2006, respectively of the art.40 letters c) and h), concerning the equipments whose failures prohibit the exit of the locomotives from the traction units for the train hauling or for shunting;
- infringement of the provisions of Chapter 3 – Norms for the performance of inspections and planned repairs of the railway vehicles and their periodicity (cycle) from the Railway Norm 67-006:2011 „Railway vehicles. Types of inspections and planned repairs. Norms of time or norms of run km for the performance of 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:
 - subparagraph 3.1, that is the locomotive DA 1306 was not withdrawn from running at the achievement of the norm of time stipulated for the performance of the planned repairs;
 - table 3.1, letter A, position no.3, that is one did not meet with the cycle of planned repairs for the locomotive DA 1306.

Root cause

Lack in the regulation framework (procedures, orders, disposals, etc) that establish the periodicity of the works for cleaning and washing of the diesel-electric locomotives, as well as the lack of a contract for these services in accordance with the requirements of the Chapter 3 – Prescriptions for cleaning and washing the diesel-electric locomotives 060 DA DE 2100 HP from the Railway Technical Norm no.67-004 from the 18th of March 2008 "Railway vehicle. Diesel-electric locomotive 060 DA de 2.100 HP. Technical prescriptions for inspection within the technological process at the entrance of the locomotive in the traction units, prescriptions for power supply and fitting-out, as well as for the cleaning and washing the locomotive" concerning the measures that have to be taken for keeping the cleaning condition of the diesel-electric locomotive

Safety recommendations

With reference to the railway accident happened in the running of the freight train no.93311d-2, one observed that within the intermediary inspections, the works stipulated for keeping in good operation condition the sanding and anti-slide equipments were not made and the locomotive DA 1306 was not withdrawn from operation after achieving the time norm established for the performance of the planned repairs.

Concerning the favouring factor consisting in the unsuitable cleaning condition of the locomotive, generated by the lack of a suitable regulation framework, the investigation commission recommends Romanian Railway Safety Authority – ASFR, to be sure that

the railway freight undertaking SNTFM „CFR Marfă” SA supplements its regulations in this respect and shall apply the provisions NTF no.67-004 from the 18th of March.2008 "Railway vehicle. Diesel-electric locomotive 060 DA of 2.100 HP. Technical prescriptions for inspection within the technological process at the entrance of the locomotive in the traction units, prescriptions for power supply and fitting-out, as well as for the cleaning and washing the locomotive" concerning the measures that have to be taken for keeping the cleaning condition of the diesel-electric locomotives.

Taking into account that the factors 2,3,4 and 6 that contributed at the accident occurrence were generated by deviations from the regulations in force as well as the surveillance of the economic operators from the railway field is the responsibility of Romanian Railway Safety Authority – ASFR, the investigation commission does not consider necessary to issue safety recommendations.

3.4.34. The railway incident happened on the 17th May 2015, at 15.40 o'clock, in the activity of SC Metrorex SA, in the metro station Nicolae Grigorescu, consisting in the dispatching of the train no. 3917 in another direction than that stipulated (got by SC Metrorex SA).

The investigation report was finished on the 8th June 2016.

Direct cause

The dispatching of the passenger train no.3917 in another direction than that from the stabling panel, version A1343, following a human mistake in the route achievement.

Underlying causes

- infringement in the train driving of the art. 16, letter c) and d) from the Instructions for the metro traction staff 201M, approved through the Order of the Minister of Transports and Infrastructure no. 395/201, that is the exit route and the direction Combined signal direction and speed according to the Working timetable A1343.
- infringement in the monitoring of the train running of the art.19, letter b) from the Running instructions for metro no. 005M, approved through the Order of the Minister of Transports and Infrastructure no.1620/2012, that is the traffic was not tracked on the display/overhead projector.
- infringement in the monitoring process of the train direction of the paragraph B, letter b) from „Regulations on the movements activity in the stations with Interlocking system, operated by 2 movements inspector in a shift” n0.M.05.501/3465/28.07.2015 – Movement Section.

Root causes

None.

Safety recommendations

None.

3.4.35. The railway incident happened on the 4th July 2016, at 06:52 o'clock, in the railway county Timișoara, in the railway station Caravan, consisting in the passing on danger the exit signal X II and trailing the switch no.2 by the passenger train no.1695, got by SNTFC „CFR Călători” SA.

The investigation report was finished on the 19th December 2016.

Direct cause

Direct cause of the railway incident was a human mistake appeared in the driving of the locomotive hauling the passenger train no.1695, mistake consisting in an infringement of the stop order, for the stabling of the train in the railway station Căvărani, sent by the

position of the exit light signal XII on “red” and its passing in stop position without having the permission.

Contributing factors

- locomotive runing, in the train hauling, with INDUSI equipment out of service;
- the train conductor missing from the driving cab of the locomotive, because he was not notified by driver, in the conditions INDUSI equipment was out of service.

Underlying causes

- infringement of the provisions of the Regulations for the railway technical operation no.002/2001, art.59-(4), concerning the passing of a signal in stop position;
- infringement of the provisions from Signalling Regulations no.004/2006, art.23, paragraph(2), corroborated with the art.21, concerning the compliance with the position of the exit light signal, that was on position,,STOP without passing the signal in stop position” (a light unit on red, to the train);
- infringement of the provisions from Instructions for the locomotive staff no.201/2007, art.127, paragraph (1), letter a) and art.127, paragraph (2) on the obligation of the locomotive staff that, in the train hauling, pay important attention to the position of the fixed signals and take the measures imposed by the remarks made during the route;
- infringement of the provisions from the Instructions for the activity of the locomotive staff no. 201/2007, Annex 2, art.3, paragraph (1), art.4, art.6, paragraph (1) and art.6, paragraph (2), concerning the action way of the driver in the situation of taking out of service of INDUSI equipment, during the route;

Root causes

None.

Additional remarks

During the incident investigation, a lot of non-conformities about the way the locomotive was established to haul the passenger train interregio no.1695, from the 3rd/4th July 2016, was identified ,without connection with the incident occurrence. As follows:

- according to the central working timetable of the passenger train, class II and III, in force, the maximum running speed of the passenger train interregio no.1695 was 120 km/h, and the locomotive EA 369, scheduled for the train hauling,was limited at maximum speed of 100 km/h, because the thickness of the tyres (Regulations for the railway technical operation no.002/2001, art.221, patagraph (7), letter e);
- limitation of the locomotive speed was displayed in the driving cabs of the locomotive, but it was not notified to the Traffic controller centre for the passenger trains;
- the provisions of the Instructions for the locomotive staff no.201/2007, art.40, lit. a), were not met, they forbidding the exit of the locomotive from the engine shed with the braking equipments of any type out of service (the electric traction engine no.3 was taken out of service, it making malfunctional the electruc dynamic brake of the locomotive);
- infringement of the provisions of the Disposal no.40 from the 25th May 1998, of the President os SNCFR, on the improvement of the safety level in the train running on tracks with high gradient, (Balota – Simian), where it is stipulated that, in case of failure, during the route, at the electric dynamic brake at the electric locomotive for the train hauling, the train shall be hauled on running on slopes on track sections with high gradients with two locomotives in front of the train;

- infringement of the provisions from the annex no.1, table 3.1, A1 at the Railway Norm " Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of the inspections and planned repairs", approved by Order of Ministry of Transports and Infrastructure no.315/2011, amended by Order of the Ministry of Transports and Infrastructure no.1359/2012, concerning the planned repairs at the locomotives;
- infringement of the provisions from art.174, paragraph (1), letter c) from the Regulations for the train running and railway vehicle shunting no.005/2005, approved through the Order of the Minister of Transports, Constructions and Tourism no.1816/2005, upon which, in the railway stations where the simultaneous acceptance of trains is forbidden, and, simultaneously, two trains are closing, from which, for one at least is stipulated to stop, the second one shall be accepted in the railway station only after the stabling of the first train.

Safety recommendations

None.

3.4.36. The railway incident notified on the 8th July 07.2016 and happened on the 13th May 2016, at 15:10 o'clock, in the railway county Craiova, consisting in the exceeding of the speed of 40 km/h, stipulated in the working timetable, between Segarcea and Cerăt, by the diesel multiple unit no.932, forming the train no.9135, got by SNTFC „CFR Călători” SA, that ran with speeds between 41 ÷ 61 km/h.

The investigation report was finished on the the 15th September 2016.

Direct causes

Exceeding of the maximum running speed written down in the working timetable of the passenger train regio and in the running sheet.

Underlying causes

Running with other speeds than those stipulated in the Instructions for the activity of the locomotive staff no.201/2007, art.125 paragraph (1) and art. 127 paragraph (1) letter f) and in the Signalling Regulations no. 004 art.7, paragraph (3).

Root causes

None.

Additional remarks

During the investigation, the deficiencies, without relevance for the incident causes, were identified:

At the downloading of the memory of IVMS equipments and after the interpretation of the data, one found out that between Podari and Sălcuța, the maximum running speed was exceeded as follows:

- 401 m with speed between 71-75 km/h against 70 km/h, speed written down in the working timetable and in the running sheet (from km 273+275 to km 273+676);
- 357 m with speed between 71-74 km/h against 70 km/h, speed written down in the working timetable and in the running sheet (from km 274+924 to km 275+281).

IVMS equipment type IVMS-AM-401/99, series 2440/2011, measurement area 0-200 km/h, fitted up on the diesel multiple unit AM 932, is manufactured by SC SOFTRONIC SRL Craiova.

In the Manual for the use of the equipment for recording and measurement of the locomotive speed, type IVMS, version with INDUSI and DSV, drawn out by SC

SOFTRONIC SA Craiova - April 2002, concerning the errors of identification and recording of speed, it is stipulated:

- the speed indication error is between 0/+1,5% in the measurement area;
- the speed record error is maximum $\pm 1\%$ in the measurement area.

The result is that at the device for the speed measurement and recording type IVMS with the measurement area 0-200 km/h, one can register a maximum deviation of 2,5% in the speed measurement area, it being maximum 5 km/h.

Taking into account that in the Regulations, art.8, paragraph 1, point 9 it is mentioned that:

"If the trains exceed the maximum speeds, it is interpreted in accordance with the precision class of the equipment for the speed recording, taking into account the measurement tolerances", results a problem generated by the exceeding of the maximum running speed of 70 km/h written down in the working timetable and in the running sheet with a value up to 5 km/h is in the precision class and tolerances of the diesel multiple unit equipment for the speed measurement, that is why those two cases of exceeding the maximum running speed, above mentioned, can not be classified as railway incidents as it is stipulated at art.8, paragraph 1, point 9 from the Regulations.

Safety recommendations

None.

3.4.37. The railway incident happened on the 23rd October 2016, at 14:53 o'clock, in the railway county Galați, between the railway stations Pufești and Adjud, consisting in the hit of a track inductor by wheel from the system for the operation of the hand brake from the wagon no.81533556487-9 of the train no.71722-1, got by the railway undertaking SC GFR SA.

The investigation report was finished on the 19th December 2016.

Direct causes

Direct cause of the equipment hit was the detachment of the wheel for the operation of the downloading device from the wagon no.31535375188-8, the 6th one from the locomotive of the freight train no. 80312-1, got by the railway undertaking S.C. Grup Feroviar Român S.A. and its fall on the connection pipe between the peg and the track inductor.

Contributing factors

Fastening, without meeting the manufacturer specification, by a welding point against the wheel ensuring with screw and collar;

Underlying causes

- infringement of the provisions from art.6 point (2) and from art.10 point (4) of the Instructions on the the technical inspection and maintenance of the wagons in operation no. 250 approved through the Minister of Transports' Order no. 1817 from the 26th October 2005;
- non-meeting with the technical documentation on the way to fasten the wheels for the operation on the unloading traps on the shaft, during the repairs;

Root causes

None.

Safety recommendations

None

3.5 Accidents and incidents investigated in the last 5 years

Investigations performed between 2012-2016:

Investigated accidents ⁽¹⁾		2012	2013	2014	2015	2016	TOTAL
Accidents (Art.19, 1 + 2)	Train collisions	-	-	1	1	1	3
	Collisions between trains and obstacles	-	-	-	-	-	-
	Train derailments	20	18	16	16	17	87
	Level crossing accidents	1	-	1	1	-	3
	Person accidents generated by the rolling stock in motion	-	-	-	-	-	-
	Rolling stock fires	2	4	1	3	5	15
	Accidents involving dangerous goods	-	-	-	-	-	-
Other accidents (Art.21.6)	Train 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	16⁽²⁾	17	20	26	14	93	
TOTAL	39	39	39	47	37	201	

⁽¹⁾ one took into account the year of the investigation ending;

⁽²⁾ one ended also a structural subsystem failure, not-included in the total number of the incidents ended in 2012.

4 RECOMMENDATIONS

4.1. Brief revision and presentation of the recommendations issued in 2016

Through the issued recommendations, Romanian Railway Investigating Agency aimed to improve the railway safety and to prevent the accidents.

No.	Involved train/ rolling stock		Site of the railway event			Date of the report ending	Type of railway event	
	No. of train	Type of train	Occurrence site	Occurrence date	Hour		8	9
1.	89388	freight	Satu Nou - Biled	07.02.2015	14:15	11.01.2016	accident	Derailment of five wagons
In the running of the freight train no.89388 (got by the railway freight undertaking SC GRUP FERROVIAR ROMÂN SA) in the railway county Timișoara, between the railway stations Satu Nou and Biled on the non-interoperable track section managed by SC RC-CF TRANS SRL Brașov, km 33+800, both bogies of the wagons 5, 6, 7, 8 and the first axle of the wagon 9 derailed, in the running direction.								
		Recommendations issued	1	RC- CF TRANS SRL Brașov, as railway infrastructure manager shall reviewe the procedures of the safety management system, such that, through their application, give assurances that the activities for the track maintenance, identification of the risks associated to the railway operations, working out and establishment of the measures for the risk control, as well as monitoring of the efficiency of the measures for the risk control are made according to the relevant requirements.				
		Non-implemented recommendations (closed)	1	Romanian Railway Safety Authority, through the answer from the paper no.2310/62/22.02.2016, informed with reference to the safety recommendation issued following the investigation of this accident, that it can not be taken into account for the implementation.				
2.	21716	Freight	Tulcea Mărfuri	27.04.2015	03:30	12.01.2016	accident	Fire in the locomotive type DA
In the railway county Constanta, in the railway station Tulcea Mărfuri, in the running of the freight train no.21716, got by the railway freight undertaking SNTFM „CFR Marfă” SA, a fire burst into the hauling locomotive DA 1383								
		Recommendations issued	2	A The supplier of the railway critical services SC IRLU „CFR IRLU” SA shall take the necessary measures in order to avoid the put in service the locomotives without inspection in advance of the power supply relay of the protective relay 76;				

				<p>B. Because the devices SREC and AMRI have no redundancy systems for the operation of the protective relay no.76, SNTFM "CFR_MARFĂ" SA shall take measures for assuring the working of the protections or signalling in real time of its failure</p>				
		Non-implemented recommendations (closed)	2	<p>Romanian Railway Safety Authority, through the answer from the paper no.2310/1019/05.09.2016, informed with reference to those two safety recommendations issued following the investigation of this accident, that does not agree their implementation because they are not safety recommendations.</p>				
		freight	Agigea Nord	15.04.2015	15:30	15.02.2016	accident	Derailment of a bogie of a wagon
		<p>In the running of the freight train no. 82571, got by the railway undertaking SNTFM „CFR Marfă” SA, in the railway county Constanța, in the railway station Agigea Nord, the first bogie, in the running direction of the fourth wagon, derailed.</p>						
3.	82571	Recommendations issued	1	<p>Romanian Railway Safety Authority shall ask CNCF “CFR” SA, like railway public infrastructure manager, within the process of safety management, to analyze again the process for the preparation of the current repairs of the lines and to establish the safety measures that have to be implemented in order to ensure that, within this process, the drawing up of the documentation necessary for this type of works is done taking into account all the specific regulations in force for these type of works.</p>				
		Non-implemented recommendations (closed)	1	<p>Romanian Railway Safety Authority, through the answer from the paper no.2310/312/10.03.2016, informed with reference to the safety recommendation issued following the investigation of this accident, that it can not be followed.</p>				
		passenger	Loamneș-Ocna Sibiului	16.05.2015	17:50	08.03.2016	accident	Derailment a bogie from the diesel multiple unit type ADH
4.	2568	<p>In the railway county Brașov, track section Copșa Mică – Sibiu (non-electrified single-track line), between the railway stations Loamneș and Ocna Sibiului, km 405+962, in the running of the passenger train no.2568, consisting in the diesel multiple-unit ADH 1412, got by the railway undertaking SNTFC „CFR Călători” SA, both axles from the fist bogie, in its running direction, derailed.</p>						
		Recommendations issued	2	<p>A. Romanian Railway Safety Authority ask the railway infrastructure manager to establish the safety measures that have to be implemented in order to ensure that in the process for the line maintenance, both the provisions of its safety management and those of the practice codes are completely met with.</p>				

				B. Romanian Railway Safety Authority ask the railway undertaking SNTFC "CFR Călători" SA the documents on the type of works performed at the type of mentioned diesel multiple unit and, consequently, request the compliance with the provisions of the mentioned government decision.				
		Recommendations in implementation process (opened)	2	Up to the working out of this report, Romanian Railway Safety Authority did not answer on the level and the way of implementation of those two safety recommendations issued following the investigation of this railway accident.				
5.	-	-	Săbăoani	28.04.2015	-	22.03.2016	incident	IDM carried out the duty without having authorization
		In the railway county Iași, in the railway station Săbăoani, one found out that a movements inspector on duty did not get authorization for the operation of the traffic safety equipments SCB.						
		Recommendations issued	1	Romanian Railway Safety Authority shall revise the legal framework for the authorization of the staff with responsibilities in traffic safety, responsible with the operation of some types of traffic safety equipments, so it be clear, suitable and uninterpretable.				
		Recommendations in implementation process (opened)	1	Up to the working out of this report, Romanian Railway Safety Authority did not answer on the level and the way of implementation of the safety recommendation issued following the investigation of this incident				
6.	93754	freight	Filiași	29.11.2015	09:20	07.04.2016	incident	Hit of equipments and constructions by sub-assemblies of the rolling stock
		In the railway county Craiova, in the railway station Filiași, km.285+500, in the running of the freight train no.93754, got by the railway undertaking SNTFM „CFR Marfă” SA, the covers of DAM equipments from the switches no. 4 and 18, and the concrete slabs from the board crossing from the line III of the railway station were hit by parts from the rolling stock in running.						
		Recommendations issued	3	A.Romanian Railway Safety Authority shall ask SNTFM “CFR Marfă” SA, like railway undertaking, within its safety management system, to analyze again the maintenance of the locomotives and to establish safety measures that have to be implemented in order to ensure, within this process, all national safety norms are met, including Railway Norm NF 67-006:2011 "Railway vehicles. Types of inspections and planned repairs. Norms of time and km run for the performance of the planned repairs"				

				<p>B. Romanian Railway Safety Authority shall ask SNTFM “CFR Marfă” SA to add to the documentation on the inspections and planned repairs performed at the electric locomotives of 5100 KW provisions clear on the length of the safety cable of the automatic brake-road adjuster, if it breaks, it not go out the locomotive gauge.</p> <p>C. Romanian Railway Safety Authority shall ask the supplier of railway critical services SC „CFR-IRLU” SA to analyze again the processes of performing inspections and repairs at electric locomotives of 5100 KW, so be sure that within these processes are completely performed the works stipulated in the technical specifications or duty sheets.</p>					
		Non-implemented recommendations (closed)	3	Romanian Railway Safety Authority, through the answer from the paper no.2310/557/05.05.2016, informed with reference to the safety recommendation issued following the investigation of this incident, that that does not agree their implementation because they are not safety recommendations.					
7.		Work train	Tunel	21.12.2015	04:55	07.04.2016	incident	A work train passed a signal on danger	
		In the railway county Cluj, in the railway station TUNEL, in the running of the work train no.38230, consisting in the train PLASSER DGS 62N, the signal Y, on red position was passed on danger, followed by the trailing of the switch no.6.I (joined with the switch no. 4)							
		Recommendations issued	1	In order to avoid some incidents or accidents with similar causes, the investigation commission recommends to provide the heavy track vehicle with some equipments for the authomatic control of the speed, punctual, type INDUSI.					
		Recommendations in implementation process (opened)	1	Up to the working out of this report, Romanian Railway Safety Authority did not answer on the level and the way of implementation of the safety recommendation issued following the investigation of this incident					
8.	14316-2	passenger	Arad -Aradu Nou	03.11.2015	11:30	12.04.2016	incident	A passenger train passed a signal on danger	
		In the railway county Timișoara, between the railway stations Arad and Aradu Nou, in the running of the passenger train no.14316-2 (got by the railway undertaking SC Regiotrans SRL Brașov), the entry signal Y _{FA} from the railway station Aradu Nou was passed on danger.							
		Recommendations issued	2	A. Romanian Railway Safety Authority – ASFR ensure that the railway passenger undertaking SC Regiotrans SRL Brașov shall take the necessary measures for the psychological re-examination of the staff involved in the incident					

				B. Romanian Railway Safety Authority assure that the railway passenger undertaking SC Regiotrans SRL Braşov shall take the necessary measures for the re-assessment of the staff involved in the incident occurrence for the confirmation of its professional competences.					
		Recommendations in implementation process (opened)	2	Up to the working out of this report, Romanian Railway Safety Authority did not answer on the level and the way of implementation of those two safety recommendations issued following the investigation of this incident.					
9.	31652	freight	Caracal	22.05.2015	03:40	06.05.2016	accident	Derailment of all axles of a wagon	
		In the railway county Craiova, in the railway station Caracal, on the line 1, in the running of the train no. 31652, got by SNTFM „CFR Marfă” SA, both bogies of the 18th wagon derailed.							
		Safety recommendations	2	A. Analysis of the safety management system, got by the public railway infrastructure manager CNCF „CFR” SA, by Romanian Railway Safety Authority ASFR, concerning the performance of the maintenance of the infrastructure with heavy vehicles and the disposal to supplement the provisions specific to the performance of the mechanical packing of sleepers on the switches with heavy vehicles type Plasser&Theurer.					
				B. Analysis by Romanian Railway Safety Authority of the process for the training of the staff from CNCF „CFR” SA, in charge with the performance of the mechanical packing of sleepers on the switches with heavy vehicles type Plasser&Theurer and the disposal to include in this process the deadlines for specific training concerning the monitoring of the performance way of this type of works					
		Non-implemented recommendations (closed)	2	Romanian Railway Safety Authority, through the answer from the paper no. 2310/643/24.05.2016, informed with reference to the safety recommendations issued following the investigation of this incident, that they can not be taken into account for implementation.					
10.	50428	freight	Vânători	26.05.2015	06:15	23.05.2016	accident	Derailment of seven wagons	
		In the railway county Brasov, track section Brasov – Sighisoara (electrified double – track line), in the railway station Vânători, km 288+300, in the running of the freight train no.50428 (got by the railway undertaking SC UNICOM TRANZIT SA), 7 wagons, starting with the 23rd to the 29th derailed (the 24th overturned).							
		Recommendations issued	3	A. Romanian Railway Safety Authority ensure the suplement of the regulation framework on the checking and performance of the maintenance of the clamp lockings and of the switch motors from the interlocking turnouts, together the rail track and interlocking gangs, stipulating the tasks and responsibilities for each activity area.					

				<p>B. Romanian Railway Safety Authority ensure establishment of some technical measures in order to assure the maintenance, that do not include the possibility to remove the couplings of the draft and control bars by unauthorized persons.</p> <p>C. Romanian Railway Safety Authority ensure supplement of the safety management system of CNCF,„CFR” SA with procedures on the performance of the biannual inspections at the switch motors and the checking of the not in sight parts of the turnouts by rail track and interlocking gangs, through which one establish the allocation of the staff tasks and its empowerment for their performance.</p>				
		Non-implemented recommendations (closed)	3	Romanian Railway Safety Authority, through the answer from the paper no. 2310/769/24.06.2016, informed with reference to the safety recommendation issued following the investigation of this incident, that they can not be taken into account for implementation				
		freight	Mărășești - Putna Seacă	28.05.2015	22:55	20.05.2016	accident	Overtook and hit of the last wagon of the freight train by a tower wagon
		In the railway county Galati, track section Focsani – Marasessti (electrified double-track line), between the railway stations Mărășești and Putna Seacă, track 1, km 112+000, the train no. 58394 (the tower wagon DP-052, got by Line district LC Mărășești), overtook and hit seriously the rear wagon of the freight train no.41786 (got by SNTFM „CFR MARFĂ” SA).						
11.	58394 + 41786	Recommendations issued	2	<p>A. Romanian Railway Safety Authority dispose the measures necessary to ensure that CNCF,„CFR” SA and SC „ELECTRIFICARE CFR” SA shall analyze the oportunity to provide this type of tower wagons, with equipments for the automatic control of speed</p> <p>B. Romanian Railway Safety Authority dispose the measures necessary to ensure that SC „ELECTRIFICARE CFR” SA shall made a procedure on the position of the manning agent in relation to the running direction of the tower wagon.</p>				
		Non-implemented recommendations (closed)	2	Romanian Railway Safety Authority, through the answer from the paper no. 2310/767/24.06.2016, informed with reference to the safety recommendations issued following the investigation of this accident, that they can not be taken into account for implementation				
12.	21153	freight	Orșova	05.06.2015	02:30	06.06.2016	accident	Derailment of four wagons

		In the railway county Timisoara, track section Strehaia - Caransebeş (electrified single-track line), at the entrance in the railway station Orsova , on the line 2, passing over the the switch no. 5/9, in the running of the freight train no. 21153 (got by the railway undertaking SNTFM „CFR Marfă” SA) hauled by the locomotive EA 492, 4 wagons derailed (from the rear of the train: one bogie of the 4 th wagon, the 5 th one overturn, all axles of the 6 th and 7 th wagons derailed and these wagons reclined at 45°).						
		Recommendations issued	1	I. Romanian Railway Safety Authority shall take care that the administrator of the public railway infrastructure - CNCF „CFR” SA, in the railway infrastructre maintenance, look always at the identification of risks associated to the hazards, of interface risks and risks generated by the changes.				
		Non-implemented recommendations (closed)	1	Romanian Railway Safety Authority, through the answer from the paper no. 2310/744/21.06.2016, informed with reference to the safety recommendation issued following the investigation of this accident, that it could not be taken into account for implementation.				
		marfă	Vălişoara-Valea Timişului	06.09.2016	23:37	01.07.2016	accident	Derailement of six wagons
		In the railway county Timisoara, track section Strehaia - Caransebeş (electrified single-track linie), km 446+250, between the railway stations Vălişoara and Valea Timişului, ,in the running of the freight train no.80368-1(got by the railway undertaking SC Grup Feroviar Român SA), consisting in 26 wagons (loaded with diesel), six wagons of the train derailed (two of them overturned).						
13.	80368-1	Recommendations issued	1	Romanian Railway Safety Authority analyze again the technical norm for the repair of the axle boxes with roller bearings and its supplement with provisions that establish the maximum working life time for the roller bearings of the freight wagons (expressed in run kilometers or years).				
		Non-implemented recommendations (closed)	1	Romanian Railway Safety Authority, through the answer from the paper no. 2310/957/17.08.2016, informed with reference to the safety recommendation issued following the investigation of this incident, that it could be taken into account for implementation, if the entities in charge with the maintenance of the wagons apply voluntary the standards.				
		freight	Balaci-Roşiori Nord	20.07.2015	16:20	19.07.2016	accident	Derailement of three wagons
14.	60812	In the railway county Craiova, track section Costeşti – Roşiori Nord (non-electrified single-track line), between the railway stations Balaci and Roşiori Nord, three wagons loaded with cars, in the composition of the freight train no. 60812 (got by the railway undertaking SC Transferoviar Grup SA) derailed						
		Recommendations issued	1	Romanian Railway Safety Authority ensure that CNCF „CFR” SA, like railway public infrastructure manager, shall re-assess its own measures for the risk control, so be sure that these lead to the decrease of the risks associated to the dangers appeared.				

		Non-implemented recommendations (closed)	1	Romanian Railway Safety Authority, through the answer from the paper no. 2310/770/23.06.2016, informed with reference to the safety recommendation issued following the investigation of this accident, that it cannot be taken into account for implementation.				
15.	80438	freight	Merișor-Bănița	11.08.2015	19:54	04.08.2016	accident	Fire into a locomotive type EA
		In railway county Timișoara, track section Simeria - Livezeni (electrified double-track line), between the railway stations Merișor and Bănița, km 65+670, on the track II, in the running of the freight train no. 80438, got by the railway undertaking SC GRUP FERROVIAR ROMÂN SA, a fire burst in the locomotive EA 085, hauling the train.						
		Recommendations issued	1	Romanian Railway Safety Authority ensure that the railway undertakings shall re-analyze the opportunity to provide their electric locomotives with some equipments for the detection of the smoke release in the critical areas with the possibility of fire burst.				
		Recommendations in implementation process (opened)	1	Up to the working out of this report, Romanian Railway Safety Authority did not answer on the level and the way of implementation of those two safety recommendation issued following the investigation of this incident.				
16.	80413	freight	Valea Florilor	14.10.2015	05:55	12.10.2016	accident	Derailment of six wagons
		In the railway county Cluj, track section Razboieni - Apahida (electrified double-track line), in the railway station Valea Florilor, end X, on the track I, in the running of the freight train no.80413 (got by the railway undertaking SC GRUP FERROVIAR SA), consisting in 18 wagons loaded with diesel, 6 wagons derailed (three of them overturn), being in the train composition from the 12th to the 17th.						
		Recommendations issued	2	A. Romanian Railway Safety Authority be sure that CNCF „CFR” SA, like railway public infrastructure manager, within the safety management process identifies the dangers generated by the deviations from the practice codes, analyzes their associated risks (frequency, seriousness, level of risk) and establishes the safety measures for keeping under control the risks that can appear in the situations where, the documents for the performance of the periodical repair with complete cleaning of the broken stone, are made giving up, completely or partially, some stages of the technological processes stipulated in the practice codes, that are reference documents associated to the operational procedure code PO SMS 0-4.07 „Compliance with the technical specifications, standards and requirements relevant within whole life cycle of the lines in the maintenance processes”.				

				<p>B. Romanian Railway Safety Authority be sure that CNCF „CFR” SA, like railway public infrastructure manager, shall analyze and dispose, if necessary, measures for the detail control of the track bed structure and of the level for repair, on the current line, track I between the railway stations Câmpia Turzii and Valea Florilor, in order to identify the areas where, the compositions of the materials from which these levels are made of are not in compliance with the provisions STAS 7582-91 „Railway works – Track beds – provisions for track design and quality control”.</p>				
		Non-implemented recommendations (closed)	2	<p>Romanian Railway Safety Authority, through the answer from the paper no. 2310/1107/30.09.2016, informed with reference to the safety recommendations issued following the investigation of this accident, that it can not be taken into account for implementation.</p>				
17.	31734-1	freight	Fetești	17.11.2015	23:56	20.10.2016	incident	Routing of a freight train with the braked weight percentage non-ensured
		<p>In the railway county Constanța, in the railway station Fetesti, in the running of the freight train no.31764-1 (got by the railway undertaking SNTFM „CFR Marfă” SA), , the train was routed with the braked weight percentage non-ensured.</p>						
		Recommendations issued	1	<p>Romanian Railway Safety Authority - ASFR be sure that the railway infrastructure administrator CNCF „CFR” SA makes and applies procedures for the use of the manual of the soft application ATLAS and ensures the training of the traffic controllers of BCCTF.</p>				
		Recommendation in implementation process (opened)	1	<p>Up to the working out of this report, Romanian Railway Safety Authority did not answer on the level and the way of implementation of those two safety recommendation issued following the investigation of this incident.</p>				

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