Annual report on railway traffic safety

2013

Contents

Foreword

This report has been written to satisfy the obligation imposed on EPSF by Article 17 of amended decree 2006-1279 of 19 October 2006 to draw up and send a report on railway traffic safety for the past calendar year to the Ministry of Transport, BEA-TT (Land Transport Accident Investigation Bureau) and the European Railway Agency before 30 September.

It is based on the information received each year before 30 June from the railway undertakings and infrastructure managers in their respective annual safety reports, and on the information collected by the EPSF departments regarding their own activities.

In order to facilitate its preparation EPSF sent all the operators a data analysis template in January 2014, and put in place a meeting timetable to enable a fruitful exchange of information.

This report is published in the 'Les données chiffrées de la sécurité' (Quantified safety data) section of the EPSF website at the following address: www.securite-ferroviaire.fr

1. Introduction

The year 2013, and more particularly the month of July, was marked by four serious railway accidents worldwide, including the accident on 12 July 2013 at Brétigny-sur-Orge in France.

The following accidents occurred outside France (listed in chronological order):

- The Lac-Mégantic railway accident which occurred on 6 July 2013 in the Estrie region of Quebec (Canada). The derailment of a runaway train with 72 rail tankers containing light crude oil caused explosions and a fire that destroyed around forty buildings in a 2-sq.km zone in the town centre, leading to the death of 47 of the town's inhabitants.
- The derailing of a high-speed train on 24 July 2013 just outside the Santiago de Compostela station in Spain. The final death toll stood at 79, along with 140 people injured. This accident is considered to be the second most serious in the country's history, after the Torre del Bierzo disaster in 1944. It was also the first accident on a high-speed line in Spain.
- Non-compliance with the signalling caused a head-on collision between two trains in Switzerland, one coming from Payerne and the other from Lausanne on 29 July 2013. The final toll of one death and 35 people injured made this the most serious train accident in Switzerland since 2003.

And on the French railway network:

- Derailment of a Paris-Austerlitz to Limoges Intercités train on 12 July 2013 in Brétigny-sur-Orge station, 28 km to the south of Paris. Owing to the failure of a splice plate, a metallic part joining two consecutive rails together, several of this passenger train's cars derailed causing the death of seven people and seriously injuring thirty people. In human terms this was the most serious accident to have occurred in France since the Allinges[1] accident in 2008 which also caused the death of seven people.

In 2013, the number of people killed or seriously injured rose to 157 on the French railway network (RFN), compared with 111 in 2012 and 141 in 2011. This result is the combined consequence of the Brétigny-sur-Orge accident and of the increase in two categories of people suffering accidents, that is to say level-crossing users and unauthorised people. The total outcome regarding the consequences for human life (deaths and serious injuries) also shows that the performance for 2013 was lower than the national baseline value (defined in Annex 1). This performance is nonetheless considered to be at an acceptable level in terms of the European assessment principles.

The number of significant accidents in 2013 totalled 146 compared with 126 in 2012. The level of safety also deteriorated slightly regarding this point, the relative number of significant accidents per million train-km amounting to 0.29 in 2013, for 0.27 in 2012 and 0.31 in 2011. All the same, 2012 was a reference year with the number of significant accidents per million train-km falling below the 0.3 accident mark. The deterioration observed in 2013 – also in terms of the number of accidents – was the result of the upward trend not only in the accidents involving people caused by rolling stock in movement but also in the accidents at level crossings.

The safety record for railway traffic in 2013 is presented in Chapter 3, providing the players in the railway sector with information that they must take into account with a view to improving railway traffic safety.

[1] Allinges: collision on 2 June 2008 between an Evian-Geneva TER regional express train and a bus carrying schoolchildren. The bus was immobilised on a level crossing in the Allinges district. There were seven deaths and 33 people injured, three of whom seriously. All the victims were passengers on the bus.

2. Description of the network and traffic

As the French national safety authority, EPSF carries outs its verification and supervision missions on the French railway network and on the lines listed in decree 2010-1201 of 12 October 2010, that is to say the French part of the international section between Perpignan and Figueras.

2.1. National railway network

RFN (Réseau Ferré National - National Railway Network), which is owned by RFF (Réseau Ferré de France – French Railway Network), totalled 36 550 km of lines at the end of 2013, including 29 784 km of lines open to commercial traffic made up of the basic sections published by RFF.

This network is characterised by a highly developed system of high-speed lines totalling 2 162 km. These lines are dedicated to passenger traffic and correspond to the main flows in the country. This high-speed network is connected to the conventional network thus making it possible to serve a large part of the country and provide international connections, particularly to England and northern Europe.

About half (15 781 km) of the network's lines are electrified, 9 827 km by means of 25 000 V catenaries, 5 827 km by 1 500 V catenaries and 127 km by a 3rd rail.

The RFN network essentially consists of UIC (International Union of Railways) standard gauge lines, along with some special metric-gauge lines that are operated separately from the rest of the network:

- the Blanc-Argent line between Salbris and Luçay-le-Mâle;
- the Saint-Gervais – Vallorcine line.

Every year RFF publishes its *Document de référence du réseau* (Network Reference Document) describing the technical characteristics of its network and presenting the entry, path allocation and pricing terms and conditions. This document is available on its website: www.rff.fr

2.2. Perpignan – Figueras international section

The Perpignan-Figueras international section – licensed to the TP Ferro company by the Spanish and French governments – is part of the trans-European network. This line is about 45 km long and is connected to the two countries' national networks.

The part of this section on French territory consists of:

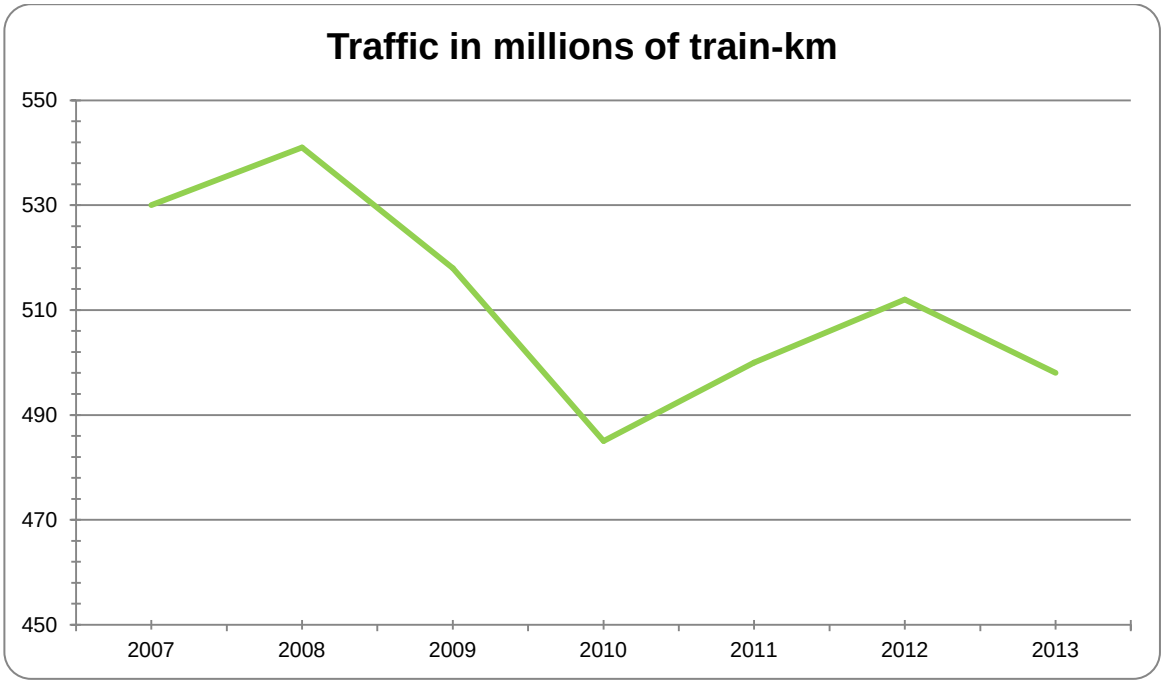
- Two one-way tracks for the connections to the conventional French network at Le Soler;
- A 17.2 km open-air double-track section running from Le Soler to the entrance to the Tunnel du Perthus;
- a 7.4 km cross-border twin-tube tunnel (Tunnel du Perthus).

Every year TP Ferro publishes its *Document de référence du réseau* (Network Reference Document) in order to provide general information on TP Ferro's railway infrastructure to the undertakings wishing to access its infrastructure. This document is available on its website: www.tpferro.com

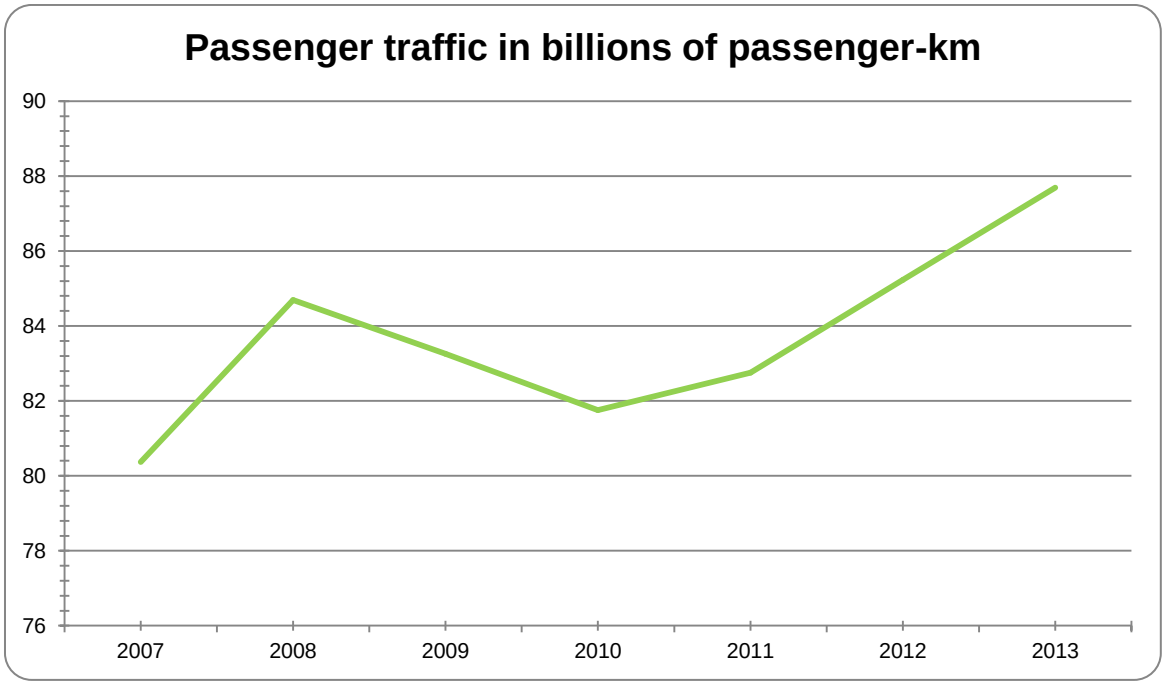
2.3. Network access and traffic data

At the end of 2013, 29 railway undertakings had a safety certificate and were therefore approved to carry out rail transport operations on RFN (see Annex 5). A total of 23 of them actually used the network during the year 2013.

The number of millions of train-km in 2013 fell by 2.7% with respect to the previous year.



The 'passenger' traffic expressed in billions of passenger-km rose by 2.8% with respect to 2012. This continuous growth since 2010 places the passenger traffic at its highest level for the last seven years.



3. Safety record for 2013 and feedback

3.1. Accidents and serious incidents

24 January
Wagon runaway from a freight train in MODANE (73): further to emergency braking on a slope, the pull-apart of the last wagon loaded with tree trunks caused it to run away and hit a parked vehicle. Three staff members suffered slight injuries. BEA-TT has launched a technical investigation into this accident.

16 April
Collision between a TER regional express train and a breakdown lorry in L'ESTAQUE (13): as it came out of a bend a TER hit a breakdown lorry immobilised on level crossing PN1 at a speed of 22 km/h. The train driver sent out a radio alert and triggered emergency braking. Thirty passengers were slightly injured. BEA-TT has launched a technical investigation into this accident.

26 June
Derailing of a passenger train between Lyon-Part-Dieu and Lyon-Perrache (69) further to an axle breaking. EPSF has asked for measures to be taken to inspect the fleet of axles of the same type, and has monitored the accomplishment of these measures through to completion. BEA-TT has launched a technical investigation into this accident.

12 July
Derailment of a passenger train in Brétigny-sur-Orge (91): an SNCF Intercités train running on the Paris-Austerlitz to Orléans line derailed at the level of the fourth car at a speed of 137 km/h after passing over a switch in which a metallic part (splice plate) was jammed. The death toll stood at seven, with 30 people suffering serious injuries. EPSF asked for and followed up protective measures that consisted of extra monitoring of switches passed at high speed and carrying out a tap-testing campaign on the butt-ends of these switches' diamonds. BEA-TT has launched a technical investigation into this accident.

15 October
Collision between a TGV high-speed train and a lorry, between Sillé-le-Guillaume and Crissé (72): a TGV hit at a speed of 155 km/h a flat-bed trailer transporting a tractor stuck on level crossing PN 129. Vehicles over six tonnes are prohibited from using this level crossing. The train driver sent out a radio alert and triggered emergency braking. Four passengers suffered slight injuries. BEA-TT has launched a technical investigation into this accident.

26 November
Rail break between Longages-Noé and Carbonne (31) and discovery of a 1.29 m gap by a staff member in the framework of a search for a failure. EPSF asked the delegated infrastructure manager (SNCF) to take protective measures that consisted of checking switches of the same type as those involved in the breakage. It then followed up the accomplishment programme. BEA-TT has launched a technical investigation into this incident.

3 December
Wheel breakage on a tram-train running on the line between Lyon-Saint-Paul and Sain-Bel (69). A design defect was identified by the manufacturer. EPSF suspended the authorisation for commercial operation of tram-trains of the DUALIS U52500 and U53500 types. This suspension was lifted on 16 January 2014, further to acceptance of the proposed modifications and corrective actions.

18 December
TER regional express train runaway between Ax-les-Thermes and Mérens-les-Vals (09) further to an adherence failure on a steeply sloping track. BEA-TT has launched a technical investigation into this incident.

23 December
Derailment of a wagon transporting radioactive material at Le Bourget (93) marshalling yard. The integrity of the wagon transporting the dangerous goods was not affected. BEA-TT has launched a technical investigation into this accident.

3.2. Brétigny-sur-Orge accident

The following description explains the sequence of events as they were presented in the BEA-TT's interim investigation report and the actions taken since July 2013 by EPSF and SNCF.

Description of the accident[2]

On 12 July 2013 at 5.11pm, the last four cars of the Intercités train No 3657 that was running in the Limoges direction on track 1 of the Paris to Orléans railway line derailed in the switch zone located at the northern entrance to Brétigny-sur-Orge station. The first two derailed cars remained on track 1, ending up lying on their right-hand side. The third derailed car swung round sideways between tracks 1 and 3, sweeping along platform 3 over a length of about 100 metres. The last car came to a halt on track 3, remaining upright.

This accident caused the death of seven people: three passengers on the Intercités train and four people standing on platform 3. Thirty other people, including one person on the platform, were seriously injured.

The interim report drawn up by BEA-TT and published on 10 January 2014 presents the analysis making it possible to adopt a first evidence-based approach to the causes of this accident. These causes must still be confirmed, examined in greater depth and completed in particular on the basis of the data that will be provided by the expert metallurgical appraisal currently being carried out.

The derailment occurred about 150 metres upline from platform 3, on double-slip crossing 6/7/8/9, and more precisely on the right running edge of this point's diamond. It was caused by the obstruction of this diamond's flange groove by joint 1's inner splice plate attaching it to a switch. Before lodging itself in this flange groove, this splice plate had pivoted around the headless body of the fourth bolt of the rail joint concerned, when train No 3657 passed.

In order for this to occur this joint's other three bolts must have already come out of their housing. This disassembly was in all likelihood the consequence of a crack that had been developing over several months in the web of the diamond's butt-end in question, until a piece broke off from it, causing abnormal forces in the third bolt of the joint splice plate concerned. This bolt's head broke off under the effect of these forces. The other three bolts then gave way, one by becoming unscrewed and the other two because their heads broke off.

On the face of it, only the failure of the third bolt on the joint splice plate concerned would have been detectable at the time of the inspection round carried out on 4 July 2013. The lesser degree of attention paid to problems affecting nuts and bolts with respect to other point defects – which are considered to be more critical – added to the limits inherent to any visual inspection, especially when carried out on tracks that are in service, may have contributed to the fact this failure went undetected.

These hypotheses must still be confirmed in the framework of the current judicial investigation.

At this stage of the investigation, BEA-TT made three recommendations to SNCF in January 2014:

[2] Source: BEA-TT interim report published on 10 January 2014

- make an overall improvement on the level of control exercised over the bolted point assemblies by focussing on different factors, notably:
    - the technical specifications and quality of the components,
    - the bolt locking devices,
    - compliance with the bolt tightening instructions and, more generally speaking, compliance with the specifications and best practices at the time of assembly and of the maintenance operations on these assemblies,
- clarify and strengthen the rules relative to the measures to be taken should any problems be detected affecting the bolts on switches. In this framework, the maximum length of time after any engineering works or tour of inspection must be stipulated, during which all the nuts and bolts must be present and tight. Likewise, a similar time must be stipulated for the second-level attaching parts;
- identify the switches or groups of switches that have special features requiring extra maintenance or early regeneration with respect to the general instructions. Provisions must be put in place in the general maintenance organisation or on the organisation of the establishments, to ensure these special features are taken into account in a reliable and auditable way.

Actions taken

The Brétigny-sur-Orge accident was a very serious event affecting the network which prompted EPSF to take special steps aiming to determine the need for protective measures independently from the technical and legal investigations.

The day after the accident in view of the information provided by the various stakeholders and of its own analysis EPSF asked SNCF, in its capacity as delegated infrastructure manager, to explain 'the precise nature, scope and timetable' for the announced programme of immediate verifications and to submit to it the results once this programme has been completed.

Since then EPSF has implemented regular inspection and monitoring initiatives:

- noting, after having received the results of the immediate verification campaign, that slightly more than half of the switches were in a perfectly 'nominal' condition (all the attaching parts and all the bolts were present and tightened) and that the other switches did not, in view of the SNCF maintenance baselines, present any problem of a type that could jeopardise safety. These results highlighted a strong correlation between the condition of the nuts and bolts, the amount of traffic and the presence of 'dancing' (vertical sleeper movements).
- Actively monitoring the SNCF campaign of additional observations on the crossings passed at high speed; SNCF chose to include switches that are known locally to be difficult to maintain, and 180 crossings (about 7% of the total number) were monitored for 5 weeks. At the end of this 5-week period 70 switches that presented greater changes than what is considered normal were kept in the reinforced observation scheme, which came to an end when a directive letter came into force strengthening the monitoring of certain switches. 60% of these switches were more than 25 years old.
- Requesting a systematic tap-testing campaign of the diamonds' butt-ends of all of the main track crossings. This was because the information obtained, from BEA-TT in particular, evidenced cracks – on the face of it dating back to before the accident – in the diamond of the defective Brétigny-sur-Orge switches. This campaign ended at the beginning of December: out of the 10 800 point diamonds checked it was found that 28 diamonds needed to be replaced within nine months at the most, and two of them had to be replaced as a matter of urgency. Forty six diamonds were placed under special surveillance. There too, it was on switches subject to the greatest utilisation that problems were most often detected.

On completion of these checks, SNCF proposed a special action plan for the crossings:

- extra training concerning the maintenance of crossings;
- extra spot checks (in the field) on the correct application of the content of the maintenance sheets;

- improved traceability regarding the accomplishment of the tours of inspection and of their results;
- systematise the 15-day periodicity of the tours carried out on foot for some of the TJ/TO concerned;
- cut the renewal tours' deadline to 18 years (in-depth checks of the switches' condition making it possible to set their renewal date). These tours of inspection will be performed in 2014 on the 70 'evolving' switches;
- put in place an outline plan to do away with the crossings concerned within 20 years.

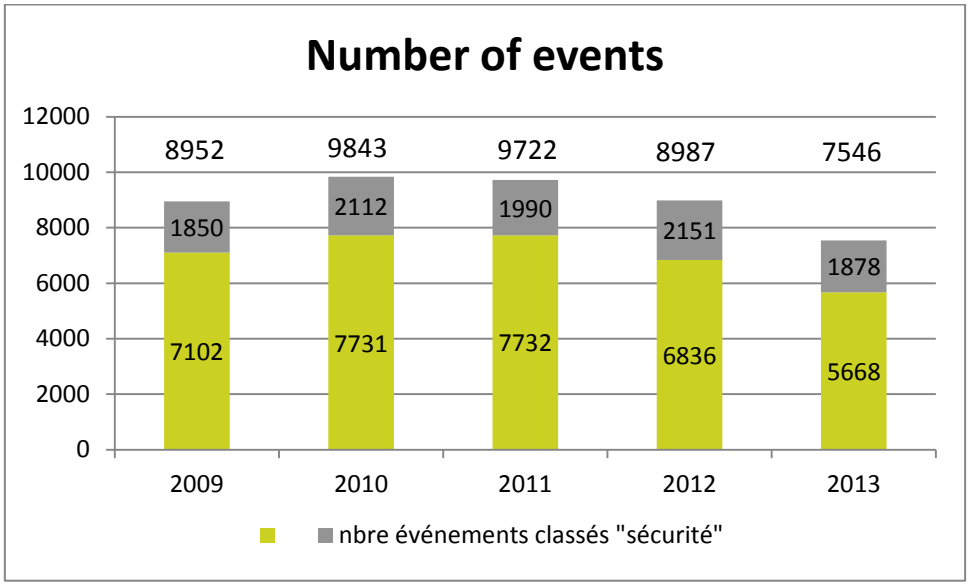
This action plan – requested by the Ministry of Transport and called VIGIRAIL – has now been integrated in RFF and SNCF's more general plan. It was made public in October 2013. The plan requires faster renewal of the switches, the modernisation of the maintenance tools and practices through the introduction of automatic track surveillance equipment, the provision of digital tools for the surveillance personnel, the development of computer-assisted maintenance management along with the introduction of innovative training tools for the maintenance personnel. These initiatives will have a positive effect on quality and on the effectiveness of infrastructure monitoring and maintenance. The VIGIRAIL plan has been amended and completed to include actions that meet the recommendations made by BEA-TT (in particular regarding its first recommendation, SNCF has launched a specific study programme with a view to ensuring compliance). It will be modified again and strengthened gradually as the on-going technical analysis progresses.

Lastly, beyond what is recommended by BEA-TT this plan provides for the 'strengthening and simplification of the maintenance baselines'. This is because the current baselines have become complex and difficult to access over time for the staff responsible for applying them and are therefore a potential source of error.

Besides checking that the BEA-TT recommendations and the monitoring of the SNCF action plan have been implemented, and with a view to better appreciating the effectiveness of the maintenance process, EPSF adapted its verification programme in the second half 2013, and in 2014 it is implementing a systematic audit campaign on the maintenance process for the infrastructure in its entirety, from its design through to its construction.

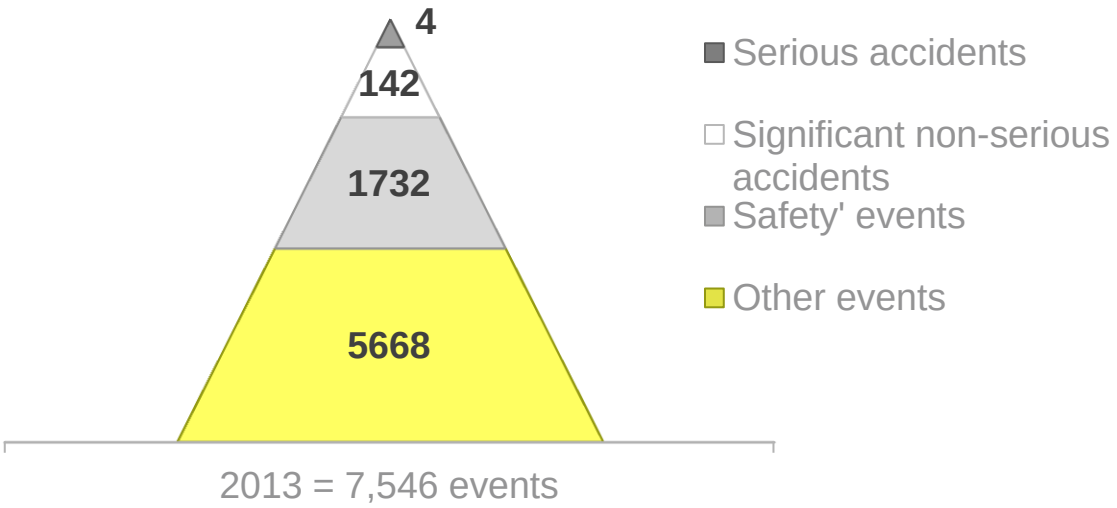
3.3. Safety monitoring and feedback from 2013

3.3.1. Safety monitoring results



In 2013, EPSF recorded 7 546 events relative to operations, 1 878 of which directly concerned safety. This represents a fall with respect to past years. All the information is sent to EPSF by its sources of information, i.e. the infrastructure manager (RFF), delegated infrastructure manager (RFF) and railway undertakings.

The gathering, analysis and exploitation of the information on the safety-related incidents that have occurred on the railway network make it possible to monitor the level of railway traffic safety. This monitoring is used to orient, prepare and manage 'system' feedback.



With reference to the pyramid of events processed by EPSF presented in Annex 4 of this report, the number of events is as follows. More than 7 500 events were reported to EPSF, 1 878 of which

classified safety-related with regard to their real or potential consequences. For 2013, 146 events were classified as significant accidents, four of which classified as serious. The four serious accidents that occurred on RFN in 2013 are included among those for which a BEA-TT technical investigation was triggered. These accidents were:

- wagon pull-apart, its runaway and collision with a locomotive in Modane station (73), on 24 January 2013;
- collision between a TER regional express train and a breakdown lorry on 16 April 2013 in Marseille (13);
- derailment of an Intercités train, on 12 July 2013, in Brétigny-sur-Orge (91);
- collision between a TGV high-speed train and a lorry, on 15 October 2013 in Saint-Rémy-de-Sillé (72).

The annual type-by-type breakdown of significant accidents is given in the table below:

	2009	**2010**	**2011**	**2012**	**2013**
Collisions	7	15	12	18	10
Derailments	21	20	13	16	11
Accidents on level crossings	49	36	40	38	42
Accidents caused by rolling stock in movement	64	64	76	51	64
Fires in rolling stock	16	6	2	1	8
Other	14	14	11	14	11
Total	**171**	**155**	**154**	**138**	**146**

Amongst the safety-related events, the derailment that occurred on 3 December on the Ouest Lyonnais network led EPSF to suspend the commercial operation authorisation (AMEC) for the DUALIS U52500 and U53500 type trams. This suspension was lifted on 16 January 2014 after an agreement had been reached on the proposed modifications and corrective actions.

The quantified data presented below enter into the framework of the **common safety indicators** (CSI – see Annex 1) such as they are defined by Directive 2004/49/EC. In line with these definitions, the accident indicators given in this paragraph only concern significant accidents. Where necessary, corrections have been made in order to take new events into account or clarify any classification imprecision discovered after publication of the 2012 safety report.

Annex 2 of this report details all the comparative data required by the European regulations.

People killed or seriously injured

The tables below show the number of people killed or seriously injured at the time of a railway accident according to the CSI categories:

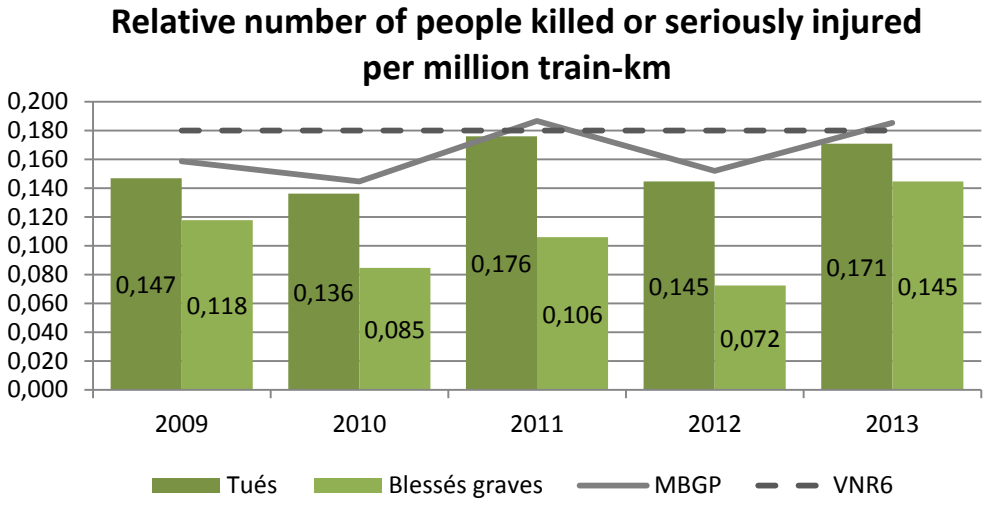
Changes in the number of people killed or seriously injured between 2009 and 2013

	People killed				
	2009	2010	2011	2012	**2013**
Passengers	7	1	7	2	**4**
Personnel	1	1	2	6	**3**
Level-crossing users	36	27	29	33	**29**

Unauthorised	31	37	50	33	**45**
Other	1	0	0	0	**4**
Total	**76**	**66**	**88**	**74**	**85**

	People seriously injured				
	2009	2010	2011	2012	**2013**
Passengers	14	7	14	6	**31**
Personnel	3	4	5	6	**2**
Level-crossing users	22	17	9	10	**19**
Unauthorised	21	11	23	11	**16**
Other	1	2	2	4	**4**
Total	**61**	**41**	**53**	**37**	**72**

In 2013, the total number of people killed or seriously injured increased, amounting to 157 on RFN, compared with 111 in 2012 and 141 in 2011. This result is the consequence both of the Brétigny-sur-Orge accident and of the increase in two categories of people involved in accidents: level-crossing users and unauthorised people. The trend in the relative number of people killed or seriously injured per million train-km, presented in the graph below, shows the same increase.

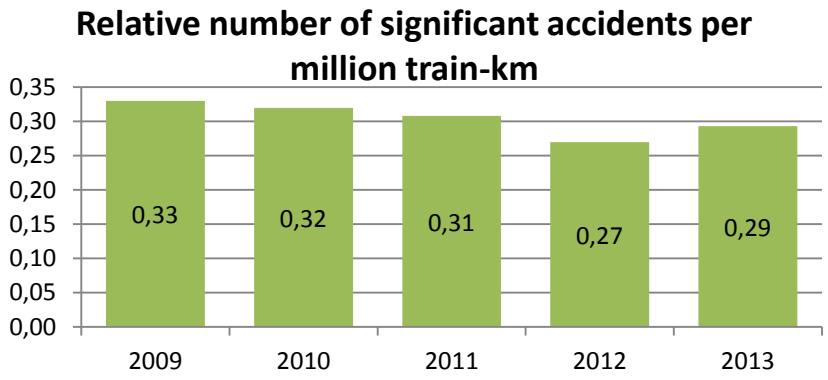


FR	*EN*
Tués	Killed
Blessés Graves	Seriously injured

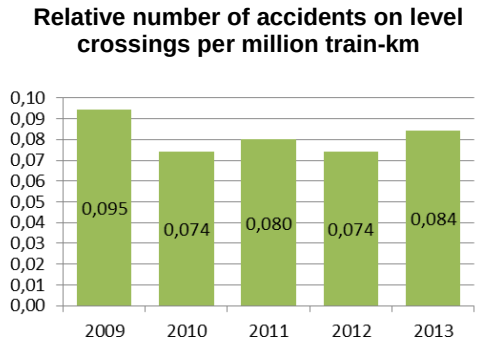
MBGP	WDSI
VNR6	NBV

The graph above also shows the trend since 2009 for the 'Weighted Deaths Serious Injuries' indicator (WDSI indicator – see definition in Annex 1) used to assess the common safety objectives (CSO). In 2013, just as in 2011, the indicators corresponding to the risk for unauthorised people and to the risk to society as a whole are higher than the national baseline value (NBV). The NBV 6 indicated corresponds to the NBV of the risk to society for France set at 1.8.10-7 by the decision of the Commission of 23 April 2012 relative to the second series of CSOs. The 2013 value of the WDSI/train-km is above this baseline value but remains well below the community target for this risk category which is set at 25.9.10-7.

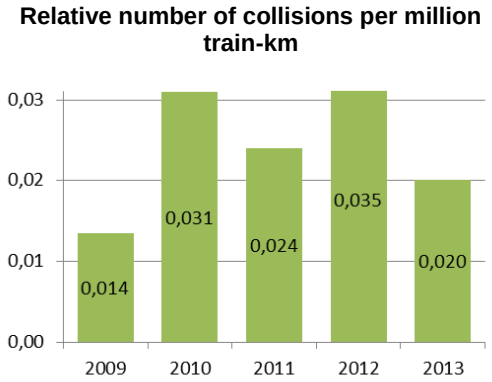
Significant accidents

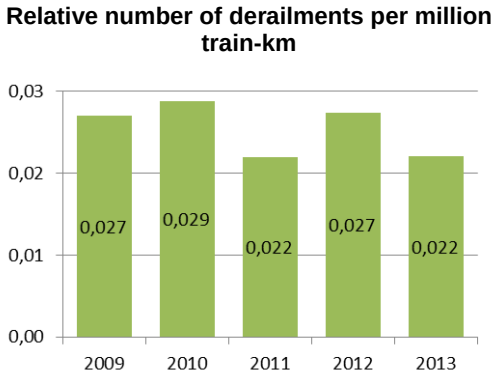


The relative number of significant accidents in 2013 was 0.29 accidents per million train-km. Although this figure has been falling continuously since 2009, it increased slightly in 2013. This deterioration mainly concerns events relative to level-crossing accidents, those relative to accidents to people caused by rolling stock in movement and fires on rolling stock. The graphs below show the trends for these indicators:

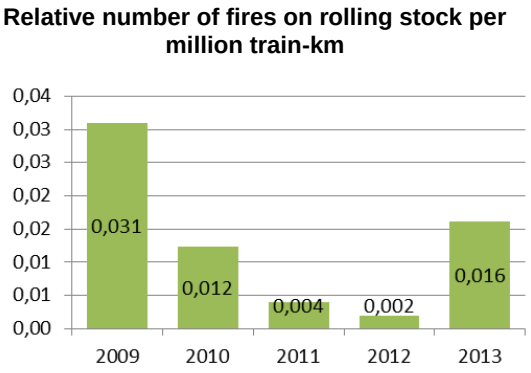


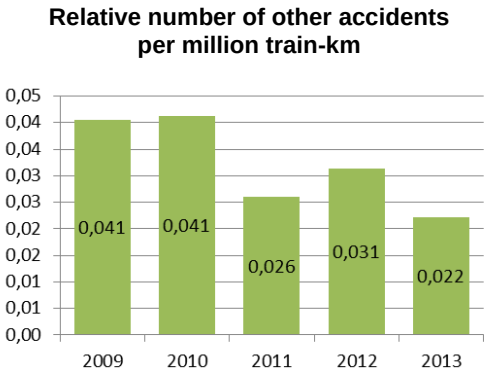
The increase in the number of accidents on level crossings is essentially linked to the increase in the number of collisions with road vehicles, whereas the number of people struck on level crossings remained more or less constant.





With respect to 2012, a decrease can be seen in the relative number of collisions and a more moderate fall in the relative number of derailments.

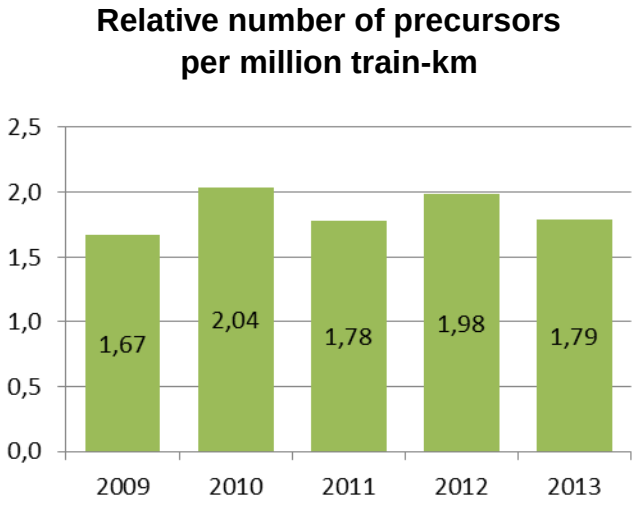




The year 2013 saw a worsening in the number of fires on rolling stock, but a fall in the number of “other” accidents. The latter have continued to decrease since 2009.

Precursors

Amongst the CSIs there is a category dedicated to collision and derailment precursors – including rail breakages, track buckling, signal failures, unauthorised passing of signals on danger and breaking of rolling stock wheels and axles in operation – whether they caused an accident or not.



The relative number of precursor events per million train-km observed in 2013 (1.79) showed an improvement with respect to 2012 (1.98).

The actions taken in 2012, in the framework of the 'rails files hautes' (*high-side rails*) plan, have made it possible to reduce the number of rail breakages in 2013. Thus, despite the multiple breakage at Longages-Noé, the number of impassable breakages has been halved with respect to 2012.

The number of cases of track buckling fell back to the 2011 level. This improvement comes further to the measures taken by RFF and SNCF concerning geometry management on the lines identified as being problematical.

The upward trend in the number of signal failures observed since 2008 has continued. These failures essentially concern failures of medium seriousness where a safety barrier remained present. These failures must nonetheless give rise to appropriate actions and the increase in number these events is the subject of a set of measures that have been presented to EPSF.

Lastly, it should be noted that in 2013, essentially in the second half, there was a rise in the total number of times stop signals were passed. This increase can be explained in part by mistakes made by inexperienced drivers. This has led the operators to integrate this factor in their skills management process.

3.3.2. Feedback regarding accidents and serious incidents

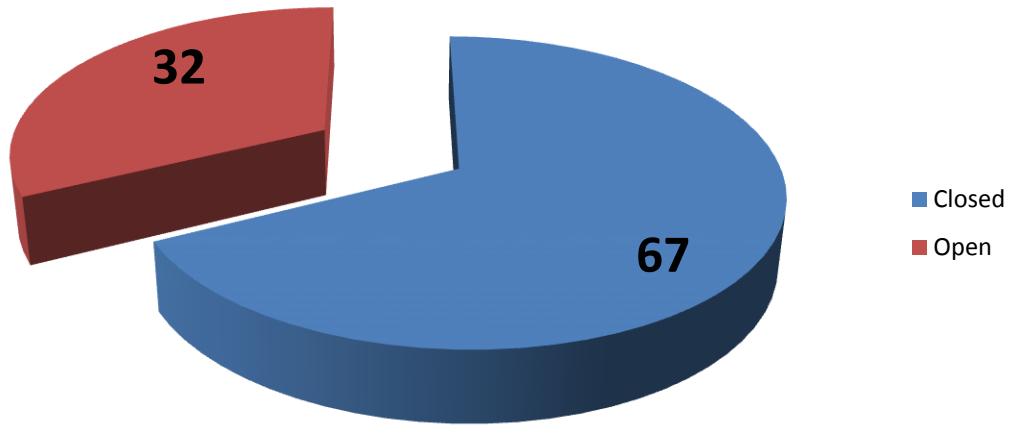
The feedback provided by BEA-TT regarding accidents and serious incidents gave rise, within the scope of this report, to four technical investigation reports being issued on accidents that occurred between December 2011 and July 2012. These reports were as follows:

- Technical investigation report published in June 2013 on the collision between a TER regional express train and a car on 4 December 2011 in Breuil;
- Technical investigation report published in June 2013 on the impact between a railcar and an insulator hanging from a catenary on 1 February 2012 in Sevran;
- Technical investigation report published in August 2013 on the derailment of a TER regional express train that occurred on 22 May 2012 in Mercuès;
- Technical investigation report published in July 2013 on an engineering works vehicle being struck by a passenger train that occurred on 4 July 2012 in Lachapelle-Auzac.

BEA-TT launched technical investigations into the following accidents and serious incidents:

- wagon pull-apart, its runaway and collision with a locomotive in Modane station (73), on 24 January 2013;
- collision between a TER regional express train and a breakdown lorry on 16 April 2013 in Marseille (13);
- derailment of a TER regional express train in Lyon (69), on 26 June 2013;
- derailment of an Intercités train, on 12 July 2013, in Brétigny-sur-Orge (91);
- collision between a TGV high-speed train and a lorry, on 15 October 2013 in Saint-Rémy-de-Sillé (72);
- rail breakage on 26 November 2013 in Carbonne (31);
- runaway TER regional express train on the Toulouse - Latour-de-Carol line on 18 December 2013 in Mérens-les-Vals (09);
- derailment of a wagon transporting radioactive material on 23 December in Le Bourget shunting yard (93).

Concerning the monitoring of the initiatives taken further to the recommendations made by BEA-TT in technical investigation reports, the pie chart below shows the situation regarding each of the recommendations: closed or still open.



Situation regarding the recommendations made by BEA-TT since 2006

For the first time, an exhaustive assessment of the situation regarding each of the recommendations made by BEA-TT to the players in the railway sector is given in this report in Annex 3. The forthcoming issues of the annual railway traffic safety report will include the updates of this assessment.

3.3.3. Alerts given by EPSF

EPSF gave six safety alerts, the subjects of which are indicated in the table below, further to the recurrent nature of an incident or to the need to inform all the railway undertakings, wagon holders and other national safety authorities (NSA) quickly owing to the seriousness of the events, requiring the implementation of recommendations or of preventive measures.

Subject of the alert	Date	Sent to
Loss of a crash buffer made by Axtone on a ERMEWA wagon	04/03/2013	RU/IM and holders
Defective axle box on GEFCO car transporter wagon	22/04/2013	RU/IM, holders and ECM
Deformation of AFR 22 bogies	31/05/2013	RU/IM, Millet - Colas rail - Ermewa and NSA
Loss of a brake link rod on a wagon fitted with Y27 GC bogies, reported by the Italian NSA (holder and ECM CTC)	24/06/2013	RU/IM
Breaking of a 9052 type axle (Saintes derailment)	31/07/2013	Holders and NSA
Failure on an item of ERTMS/TVM bi-standard equipment (defective BTM)	08/08/2013	NSA

RU (railway undertaking) – IM (infrastructure manager) – DIM (delegated infrastructure manager)

3.3.4. System feedback

In 2013 EPSF pursued its initiative to organise 'system' feedback. Four feedback meetings were held making it possible to bring together all the representatives of the railway undertakings authorised on RFN, IMs, as well as representatives of the Ministry of Transport and of BEA-TT.

The exchanges at these feedback meetings made it possible in particular to:

- share the best practices identified;
- share the feedback further to the presentation of the incidents or accidents;
- discuss mutual problems.

Besides the triggering of alerts and the feedback meetings, the organisation of "system" feedback was materialised by:

- the issuing of 12 monthly information bulletins (MIB) on the most significant safety-related events;
- the triggering of seven 'system' feedback initiatives on the local level.

In 2013, 'system' feedback made it possible in particular to trigger actions in order to avoid derailments further to the removal of anti-runaway chocks being forgotten before the departure of trains, improve communications between the staff working for different railway undertakings and clarify the alert process.

4. Changes to the legal framework

4.1. Amendments to the regulations in the European Union

Directive

Directive 2013/09/EU of 11 March 2013 amending Annex III of directive 2008/57/EC to add an essential requirement on accessibility.

This directive defines a new essential requirement regarding access for people with reduced mobility. It amends Annex III of directive 2008/57/EC defining the essential requirements in order to integrate the conditions required regarding accessibility. This directive has been transposed into French law by decree 2014-121 of 11 February 2014.

Regulations

Regulation No 321/2013/EU of 13 March 2013 relative to the technical specification for interoperability concerning the 'rolling stock – freight wagons' sub-system of the railway system in the European Union repealing decision 2006/861/EC.

This regulation concerns the revision of the 'Wagons' TSI. The content of the TSI has been changed from a 'product' approach, listing in the previous TSI (Decision No 2006/861/EC) the requirements in detail and exhaustively, to a 'functional' approach (Regulation No 321/2013) aiming to not hinder technical innovation. Furthermore in its chapter 7.1.2, the TSI details the requirements that must be met to enable a mutual recognition of the first authorisation by all the Member States.

This regulation came into force on 1 January 2014. It should be noted that this regulation was amended before it came into force by Regulation No 1236/2013/EU of 2 December 2013 (see below).

Regulation No 402/2013/EU of 30 April 2013 concerning the common safety method on risk evaluation and assessment and repealing Regulation No 352/2009/EC (revision of the common safety method on risk assessment).

This regulation concerns the revision of the common safety method (CSM) on risk evaluation and assessment applying to any significant change in the railway system. It will come into force on 21 May 2015 and on that same date will repeal the previous version of the CSM, Regulation (EC) No 352/2009. However the provisions of regulation (EC) No 352/2009 continue to apply to projects that are, on the date this regulation comes into force, at an advanced stage of development within the meaning of Article 2(t) of Directive No 2008/57/EC. The revision covers the requirements regarding qualifications (by inclusion of a system of recognition and accreditation) applicable to the evaluation organisation in view of its role in the CSM, in order to clarify the system and avoid implementation disparities between the Member States, given the interfaces with the authorisation, approval and certification procedures already in place at the level of the Union in the railway sector.

Regulation 1236/2013/EU of 2 December 2013 amending Regulation No 321/2013/EU relative to the 'Freight Wagons' TSI: introduction of a one-year transitional period for the certification of the 'Tail Light' interoperability component and updated further to the publication of standards since the first version.

This regulation modifies Regulation No 321/2013/EU in order to correct certain requirements and update certain references to the technical standards and documents called up by the TSI and

published since regulation EU 321/2013 was adopted. Article 8 has also been amended to introduce a one-year transitional period before the obligation to cover the 'train tail light' interoperability component with an EC declaration comes into force. This regulation will come into force on 1 January 2014, as will Regulation No 321/2013/EU which it amends.

Regulation 1273/2013/EU of 6 December 2013 amending Regulation No 454/2011/EU relative to the 'Telematic applications for passenger service' TSI further to completion of phase 1 (development of the specifications) and detailing the governance outline for phase 2 (implementation by the players).

This EU Regulation No 1273/2013 amends Regulation (EU) No 454/2011 "relative to the technical specification for interoperability concerning the 'telematic applications for passenger service' sub-system of the trans-European railway system" of 5 May 2011. The purpose of this regulation is to update technical documents describing the specifications for the data exchange systems for passenger service. These amendments were made further to completion of phase 1 which concerned the definition of the IT specifications and of the outline plan and also aims to introduce provisions detailing the governance system to be implemented for phase 2 concerning the development of the telematic application systems in compliance with the TSI's specifications. The conditions for making the pricing information available are also amended. This regulation came into force on 8 December 2013.

Decision

Decision 2013/710/EU of 2 December 2013 amending decision 2012/757/EU relating to the 'Operation and traffic management' TSI

This decision amends Annex A of the TSI relative to 'Operation and traffic management' (decision 2012/57/EU) to take into account the introduction of the specifications for baseline 3 of the ERTMS system in the TSI relating to the 'control-command and signalling subsystems of the trans-European rail system' (decision 2012/696/EU of 6 November 2012). This decision comes into force on 1 January 2014.

Furthermore, as some of the European Union's acts of law voted in 2013 had not yet been published in the OJEU of 31 December 2013:

- revision and extension of the scope to the whole network of the TSI relating to 'high-speed rolling stock' (decision 2008/232/EC) and 'Loc&Pas' (decision 2011/291/EC) which are replaced by a single 'Loc&Pas' TSI;
- revision and extension of the scope to the whole network of the TSI relating to 'Safety in railway tunnels' (decision 2008/163/EC);
- revision of Annex III of the "Interoperability" directive 2008/57/EC in order to add an essential noise-related requirement.

4.2. Amendments to the national regulations

Law

Law No 2013-1089 of 2 December 2013 authorising approval of the agreement between the Government of the French Republic and the Government of the Italian Republic (of 30/01/2012) concerning the construction and operation of a new railway line between Lyon and Turin.

Order

Order of 20 December 2013 has just amended the order of 29 May 2009 concerning the transport of dangerous goods by land (so-called 'TMD order'). These amendments concern: Article 6 (the annual report), Annex II (definition of 'transport'), the applicable conditions relating to the parking of empty wagons that have not been cleaned). The amended order came into force on 1 January 2014.

4.3. Preparation and redrafting of the safety rules

TEXTS RELATIVE TO THE 'OPERATIONS' AREA

Order of 19 March 2012 defines and explains the standards-related competencies incumbent on all railway players. These requirements mainly take the form of obligations of results to be achieved by the railway operators while leaving the latter the responsibility for establishing the orders and corresponding operational instructions.

Texts published by RFF (operating documentation and special operating rules)

Annex 4 of the order of 19 March 2012 gives the list of materials subject to the operating documentation published by RFF. RFF also publishes special operating rules, that is to say those concerning trains running outside of the access rights.

In 2013, RFF thus proposed thirteen texts for which EPSF has expressed an opinion. Eight of these thirteen texts concern operating rules on subjects such as: rail-wheel contact, hot-box detectors, information for drivers regarding modifications to signalling, measures to be taken by the driver after having perceived a radio or light alert signal. The other texts are special operating rules essentially relative to the running of engineering trains.

With the exception of two texts relative to historic trains for which an exemption has been obtained from the ministry, these works have enabled RFF to meet the deadlines set by the order, respectively the 28 February and 31 December 2013.

Texts published by EPSF (recommendations, technical documents and best practices)

In parallel, where necessary EPSF has taken up the provisions that were not kept in the operating documentation pursuant to Annex 4 of the order of 19 March 2012. The goal of this work is twofold: ensure the completeness of the texts and harmonise their publication.

Each draft text has been submitted to a working group bringing together representatives of the railway sector in order to draw up a final draft to be submitted to the sector as a whole for consultation. At the end of 2013, two working groups have completed their works on subjects such as: train composition, shunting, hot-box detectors, etc.

These working groups have made it possible to draw up draft texts regarding, as the case may be, recommendations, best practices or technical documents some of which have the status of acceptable means of compliance (AMC).

The draft texts drawn up by EPSF in 2013 (around ten texts) make it or will make it possible among other things to repeal in the first half 2014 eight texts relating to Article 3 of the order of 23 June 2003. This result puts us in a position to comply with the future deadline set at the end of 2015 to complete the works in this area.

TEXTS RELATIVE TO TECHNICAL DOCUMENTATION (rolling stock acceptance specifications)

Independently from the works relative to ensuring compliance with the texts relating to operations with the order of 19 March 2012, EPSF is pursuing the redrafting of the recommendations regarding the technical rules relative to the authorisation of rolling stock. Eleven working groups were set up in 2013 with different organisations such as the Union des transports publics (UTP – Public Transport Union), Fédération des industries ferroviaires (FIF – Federation of Railway Industries) and SNCF's Centre d'ingénierie du matériel (CIM – Rolling Stock Engineering Centre). The subjects examined in 2013 concern among other things: ground-train radio, crosswinds, contact brushes, eddy current brakes, recognition of test results, emergency couplings and rail-wheel contact lubrication by the rolling stock.

Further to these works, two recommendations counting as AMCs – crosswinds and wayside-train radio communications – were published in September 2013 after consultation, the others being scheduled for publication in 2014.

ASSISTANCE FOR THE OPERATORS REGARDING THE ISSUE OF TEXTS

Ensuring compliance with the texts also has an impact on the operators that have to implement the new RFF and EPSF publications.

To help them put these new texts into practice, EPSF has introduced an assistance scheme, and in 2013 meetings were held to give a comprehensive presentation of the changes at the time of each feedback meeting, along with an awareness-raising day dedicated to the latest regulatory developments (24 October 2013). The scheme will be completed in 2014 by information meetings and presentations of the new publications.

MONOGRAPH

Pursuant to the note of 19 March 2012 detailing the framework, application and follow-up conditions for the order of 19 March 2012 setting the safety targets, methods and indicators along with the technical regulations relative to safety and interoperability that apply on RFN, EPSF must draw up a monograph that is as clear and accessible as possible on all the standards (other than each railway operator's operational orders and instructions) governing the safety of railway traffic. This monograph must enable anyone who needs to consult them to easily find the community and state texts and the AMCs via the EPSF website or, where texts drawn up by RFF are concerned pursuant to Article 10 of the above-mentioned decree 2006-1279, direct them towards the corresponding link in the RFF website.

The end of 2013 saw the materialisation of this goal with the definition of the new EPSF website including the possibility of theme-based searches on:

- regulatory texts;
- the texts appended to the order of 23 June 2003 still in force;
- the recommendations, best practices, technical documents, whether they have AMC status or not;
- the texts with a national scope relative to the operating documentation (RFF).

4.3.1. Implementation of the order of 19 March 2012

Pursuant to the note of 19 March 2012 'detailing the framework, application and follow-up conditions for the order of 19 March 2012 setting the safety targets, methods and indicators along with the technical regulations relative to safety and interoperability that apply on the national railway network', EPSF is tasked with submitting a report to the Minister of Transport at least once a year on the conditions under which the order is implemented. EPSF submitted its second report in July 2014.

To do this, EPSF has launched a written consultation with 140 entities involved in all the areas of activity covered by the order: infrastructure manager, railway undertaking, entities in charge of maintenance (ECM), approved training centres, approved qualified organisations (AQO), representative organisations, other organisations (BEA-TT, ARAF).

The report presents the works that have been accomplished since the first report was submitted: ensuring compliance with the operating rules scheduled for 31 December 2013, in line with the order; along with the reminder of the various information, consultation and assistance initiatives put in place in the sector. It also includes the contributions received from the sector and from EPSF. These contributions include considerations of a general nature, along with remarks specific to certain articles.

Regarding the considerations of a general nature, the report emphasises that the order of 19 March 2012 has made it possible to clarify the situation by detailing the major orientations defined in decree 2006-1279: a regulatory approach that favours requirements focussing on results rather than on the means; the area of competence of the entities (RFF and EPSF) that wrote the texts for the implementation of the order and lastly the architecture of the texts governing railway operations, the design of rolling stock and infrastructure (with the creation of texts that have AMC status in the railway sector). Owing to their innovative nature, these orientations initially caused a certain degree of perplexity. However, one year later, it appears that the players in the railway sector have now better grasped the provisions of the order.

In parallel, it must be highlighted that on some subjects this order has caused a division in the drafting responsibilities between RFF and EPSF, creating a certain degree of complexity.

Ensuring the compliance of the operating rules has led to a heavy workload not only for the two drafting entities but also for the railway operators which have been obliged to verify their operating instructions and amend them whenever necessary with relatively tight deadlines.

Regarding the remarks specific to certain Articles, it should above all be noted that it was suggested that clarifications were required concerning the data on incidents or accidents that must be sent to EPSF (Article 24); and also concerning the Article relative to the language used on RFN (Article 56).

Difficulties have been reported concerning compliance with the requirement leading to an extension of the KVB equipment (Article 49), and concerning the interaction between the technical specifications for interoperability (TSI), the national technical rules and signalling such as currently imposed by Annex VII and the operating documentation.

5. Managing system changes

5.1. Significant authorisations

14 February
Renewal of RFF's safety approval in its capacity as infrastructure manager, and of SNCF's safety approval in its capacity as delegated infrastructure manager.

25 March
First approval of an organisation in charge of the exams conducted at SNCF's CFPT – Traction Production Training Centre in Lille allowing it to organise the exams relative to general professional knowledge concerning train driving.

25 June
Safety certificate issued to SECURAIL to allow it to ensure freight transport services on the national railway network. SECURAIL is planning to operate whole trainsets and fragmented trains (individual wagons) of conventional freight as well as running whole trains of the materials (ballast, sleepers, rails) required for carrying out railway engineering works or repairing the national railway network's tracks.

28 June
Safety certificate issued to Transports de Martigny et Régions (TMR) to allow it to provide passenger transport services between the Swiss frontier and Vallorcine station. In partnership with SNCF, this company ensures the Mont-Blanc Express service between Saint-Gervais-Le-Fayet (France) and Martigny (Switzerland) passing via Chamonix, Vallorcine and Le Châtelard (French-Swiss border) among other places.

2 August
Authorisation to put the S100F high-speed railcar into commercial service to run on the national railway network's conventional 1.5 kV lines and on the French part of the Perpignan-Figueras international section. This rolling stock, derived from the S100 series only operated in Spain by RENFE, has been modified to become the S100F so it can run on the Spanish and French railway networks alike.

23 September
Safety certificate issued to FER ALLIANCE to allow it to provide freight transport services on the national railway network. FER ALLIANCE is planning to operate whole trainsets and fragmented trains (individual wagons) of conventional freight as well as running whole trains of the materials (ballast, sleepers, rails) required for carrying out railway engineering works or repairing the national railway network's tracks.

17 December
Authorisation to put the level-2 ERTMS control-command and signalling sub-system into commercial service superposed over the TVM 430/SEI on the phase-1 East European LGV high-speed line between Vaires (Seine-et-Marne 77) and Baudrecourt (Moselle 57). The East European LGV is the first high-speed line to function in France with level-2 ERTMS.

5.2. Issuing of authorisations by EPSF

EPSF issues various types of authorisations according to the end-purpose of the projects that are submitted to it.

Safety certificates

In order to provide railway transport services on RFN, a railway undertaking must have a safety certificate issued by EPSF. A safety certificate is divided into two parts:
- Part A which corresponds to the safety management system put in place by the undertaking;
- Part B which consists of the operational implementation, specific to a network, of the processes and procedures described in Part A.

In compliance with directive 2004/49/EC, the Part A issued by a Member State is valid on the whole of the European Union's network provided:
- the services considered are equivalent to those provided in the country of origin (type, amount of activity, etc.);

– the provisions presented in Part A are not contrary to the requirements of the national regulations, otherwise a modification to Part A would be required, this modification being processed in collaboration with the national safety authority of the country of origin.

The processing activity for safety certificate applications is summarised in the table below:

	Total number of certificates
Number of safety certificate Parts A issued during past years and valid for 2013	16

		Total number of certificates
Number of safety certificate Parts B issued during past years and valid for 2013	Number of safety certificate Parts B for which the Part A was delivered in France	16
	Number of safety certificate Parts B for which the Part A was delivered in another Member State	10

Summary of the undertakings that hold a safety certificate on 31 December 2013 is given in Annex 2.

			Requests accepted	**Requests rejected**	**Applications in progress**
Number of new requests for safety certificate Parts A submitted by railway undertakings in 2013	6	New certificates	2[(1)]		
		Updated/modified certificates	2[(2)]		1[(4)]
		Renewal of certificates	1[(3)]		

(1) Fer Alliance – Sécurail / (2) Thello – TSO / (3) TSO / (4) CFR

			Requests accepted	**Requests rejected**	**Applications in progress**
Number of new requests for safety certificate Parts B submitted by railway undertakings in 2013	When the Part A was issued in France	New certificates	2[(1)]		
		Up-to-date/modified certificates	2[(2)]		1[(3)]
		Renewal of certificates	1[(4)]		
	When the Part A was issued in another Member State	New certificates	1[(5)]	1[(6)]	
		Up-to-date/modified certificates	7[(7)]		
		Renewal of certificates			

(1) Fer Alliance – Sécurail / (2) Thello – TSO / (3) CFR / (4) TSO / (5) TMR / (6) Transfesa
(7) SVI (x2) – Trenitalia (x2) – Renfe – Comsa Rail Transport – Nord Cargo

→ The only application for a safety certificate that was rejected by EPSF in 2013 was the one made by the Spanish undertaking Transfesa whose application did not conform to the provisions of the order of 14 April 2008.

No safety certificate Parts A or B were suspended, restricted or withdrawn in 2013.

Safety approval

The infrastructure manager must ensure the maintenance of the infrastructure, management of the traffic and development of the infrastructure. It must also draw up the operating regulations while guaranteeing in a fair way the right of access to its infrastructure for all the railway undertakings that make the request.

All of the corresponding provisions are presented in the safety management system (SMS) that the applicant must have established.

In order to obtain the authorisation to carry out its activities, an infrastructure manager must hold a safety approval issued by EPSF. This approval is equivalent to approval of the SMS.

By issuing this approval, EPSF recognises the applicant's aptitude to meet the regulatory safety requirements and control the risks linked to the management and operation of the infrastructure open to public traffic.

In 2013, RFF and SNCF, acting in their capacity as delegated infrastructure managers, obtained the renewal of their safety approval as managers of the infrastructure for a period of five years.

Authorisation to put into commercial service

- Rolling stock (excluding wagons)

In total, 15 authorisations to put into commercial service (AMEC) were issued in 2013, eight of which relative to substantially modified rolling stock and four relative to rolling stock whose operating area had been changed.

Three concern rolling stock already authorised in another Member State of the European Union. This rolling stock was authorised on the basis of the application of the mutual recognition agreements between EPSF and the national safety authorities of other Member States. This concerned the TRAXX F140 DE locomotive (Germany) and the S100 F** high-speed railcar (Spain).

(**) Two AMECs were issued for this rolling stock, one for running on conventional 1.5 KV lines, the other for running on lines powered with 25 KV and on LGV high-speed lines.

→ One suspension was pronounced concerning DUALIS U52500 and U53500 tram-train rolling stock further to the derailment of one of them in December 2013, caused by a mechanical failure at the level of the axles.

- Wagons

There were eight successful applications for an AMEC. Four applications concerned new types of rolling stock, and the other four substantial modifications to existing rolling stock.

Approval for transporting dangerous goods

A new type approval for a rail tanker designed for transporting butane gas was issued per the 2011 version of the RID regulations (*Regulations concerning the International carriage of Dangerous goods*

by rail), in compliance with the amended order of 29 May 2009 relative to the transport of dangerous goods by land, the so-called "TMD order" – Article 15.

Independently from the safety dossier presented to EPSF by the applicant to obtain the authorisation to put the new rolling stock project into commercial service, the manufacturer of the rail tanker submitted an application to EPSF to have the dossier examined in order to obtain a type approval per § 6.8.2.3 of the RID in force.

Furthermore, in accordance with point 7 of Article 15 of the TMD order, EPSF received two requests for modifications to rail tankers used for transporting dangerous substances.

Authorisations for exceptional traffic

These authorisations are issued by EPSF further to a proposal made by RFF to permit a train to run when its characteristics do not comply, on all or part of the route, with the operating technical and safety regulations. The applications for exceptional traffic are submitted by RFF according to the provisions of Article 10 of the amended decree 2006-1279. As a general rule they concern new or substantially modified rolling stock.

In 2013, 80 exceptional traffic authorisations were issued for performing tests on the RFN. These tests concerned new or modified rolling stock, or rolling stock that was going to run on a modified infrastructure.

Infrastructure system and sub-system projects

For 2013, 14 infrastructure system and sub-system projects were authorised in this category.

Three projects concerned the modernisation or modification of existing lines:
- modernisation of a section of line between Chamonix and Argentières. This first phase of the project to increase capacity on the Saint-Gervais – Vallorcine line consisted of a modernisation of the metric track and of civil engineering works (excluding the Montets tunnel);
- modification of the section of line between Antibes and Cagnes-sur-Mer with the creation of a third track and the introduction of two-way operation on the three tracks in order to increase their capacity;
- modernisation of the section of line between Serqueux and Gisors to enable trains to run at a speed of 100 km/h.

Ten projects relative to the deployment of computerised signal boxes 2006 (PAI 2006) were authorised: eight for signal boxes with PC technology (PIPC), two for integrated locking systems (SEI) and one AMEC for a "smart locking" system (SLOCK).

Lastly, on 17 December 2013, EPSF issued an authorisation to put into commercial service for the level-2 ERTMS control-command and ground signalling sub-system superposed over the TVM 430/SEI on the phase 1 East European LGV high-speed line between Vaires (Seine-et-Marne 77) and Baudrecourt (Moselle 57).

Besides these projects for which the authorisation to put into commercial service was issued, EPSF examined:

- The preliminary safety dossier for the following projects:
  - construction of the Part 2 Southern Europe Atlantic LGV high-speed line (Juxtaposition of level 2 ERTMS and TVM 300 SEI);
  - construction the Brittany – Pays de Loire Titre 2 LGV high-speed line (railway and operating equipment);
  - construction of the Nîmes and Montpellier bypass, Civil Engineering Part;

- reopening of the Sorgues – Carpentras line for passenger traffic;
- reopening of the Oloron – Bedous line for passenger traffic;
- reopening of the Nantes – Châteaubriant line for passenger traffic.

● The safety dossiers for the project to reopen the Nantes – Châteaubriant line for tram-train traffic (1 line dossier and 8 PAI 2006 – AMEC dossiers at the beginning of 2014).

Other actions

Three opinions were notified on the basis of the safety design dossiers (DCS) for the following rolling stock:
- Type DE 12 diesel-electric locomotive designed for transporting goods;
- Type DE 18 diesel-electric locomotive designed for transporting goods;
- VELARO EUROSTAR high-speed trainset.

An opinion was notified by EPSF to the Channel Tunnel Intergovernmental Commission (IGC) concerning car-carrier wagons that conform to the Vehicle Register (RIV) and that are registered on the German National Vehicle Register running in the tunnel.

Two requests for waivers from the technical specifications for interoperability and a waiver from Annex VII of the order of 19 March 2012 were also examined.

Two opinions were notified to the Prefect of Ile de France Region and to STRMTG respectively on:
- the DDS relative to the project to split off the T4 tram to Clichy Montfermeil;
- the DPS relative to the Médoc Sector B tram-train project.

Time required to process requests for authorisation (safety certificates and approvals)

The table below summarises the average time required in 2013 to process a dossier once its completeness had been checked.

	New	Updated/ modified	Renewed
Application for safety certificate Part A in 2013 (in days)	107	119	34(3)
Application for safety certificate Part B in 2013 (in days)	107(1)/68(2)	114(1)/78(2)	34(3)
Application for safety approval for the infrastructure managers in 2013 (in days)	-	-	118

(1) Excluding access to the frontier section
(2) Including access to the frontier section
(3) TSO – renewal processed on the basis of the modification dossier

Besides these times, which only concern the processing of dossiers once they had officially arrived at EPSF, the applicants were permanently provided with assistance and follow-up of the authorisations issued by the officials who examined them. In particular, this follow-up makes it possible to detect any substantial organisational modifications to an entity that would then have to give rise to an update or a new application for authorisation.

5.3. Changes made excluding the issuing of authorisations

In view of the application of the common safety method relative to the evaluation and assessment of risks, the railway operators, manufacturers, ECMs and holders of rolling stock have had to manage changes not requiring the issue of authorisations by EPSF but which may have been brought to its knowledge in order to seek its opinion or for information.

Among other things these changes concerned:
- installation of the GSM-R on the locomotives running on RFN and covered by the SNCF's safety certificate - modification of the cabradio version 1H19;
- request for an opinion on obtaining authorisations to run on RFN for TGV trains 2N2, POS, PBA, PBKA and DASYE equipped with the new software version V7.2.5 of the TVM bi-standard in complete mode under ERTMS;
- request for an opinion on the non-significant nature of the modification relative to the updating of the BCU software on the EURO 4000 locomotive type II;
- request for an opinion on the substantial nature of the project to build 100 flat wagons in addition to the previous series but equipped with a new type of brake shoe;
- request for an opinion on the substantial nature of the modification of a Series-2 EX hopper wagon with change in the design of the bodywork;
- request for an opinion on the requirements relative to the installation of the ETCS with the KVB functionalities on the rolling stock;
- request for an opinion on the substantial nature of the modification of 20 rail tanker wagons for transporting ammoniac between France and Spain;
- request for an opinion on the substantial nature of the modification of the project to build hopper wagons with the brake equipment integrated in the bogies;
- request for an opinion on the non-substantial nature of the modification to the "ebula" consoles and of the sanding-ejectors on BB37000 and BB75100 locomotives;
- request for an opinion on the non-substantial nature of the modification relative to the "winterisation" of BB36000 locomotives.

In addition, the railway undertakings have taken into account the provisions relative to the application of the risk evaluation and assessment CSM (CSM 352/2009) in their procedures relative to change management.

Several cases have been dealt with in compliance with these provisions, concerning the following for instance:
- installation of a reverse beeper device (VFLI);
- opening of the operational CFL cargo platform on the Blainville-Damelevières site (CFL Cargo);
- dematerialisation of the documentation (Colas rail);
- continuous training for drivers (ECR).

6. Monitoring of activities in 2013

6.1. Monitoring of the railway operators' activities

All the railway operators monitor their own activities by performing verifications, inspections and safety audits.

The **verifications** and **inspections** represent the vast majority of the monitoring actions declared by the operators in their annual safety reports.

Verifications

Most of the railway operators have opted for a two-tier system of verifications, with a first tier of verifications performed by local management who cover all the safety-related tasks and all the staff over the year by means of a **monitoring plan**. The second-tier verifications are performed by sampling performed by middle management, the directors or safety managers depending on the undertakings' size and organisation.

Internal audits

Each railway undertaking or infrastructure manager has declared a total number of **internal audits** performed, depending on its activity. These audits, unlike the verifications and inspections focussing on an operational aspect, are performed to check the conformity of the organisational processes stipulated in the SMS. They usually require the intervention of several auditors over a period of several weeks.

In total, **199 internal audits** were performed by the railway operators corresponding to an accomplishment rate of about 98 % with respect to the annual plan. The railway operators' preferred subjects in the framework of these audits concern management of the SMS, document management, checking on the subcontractors, verification of the driving records and integration of the changes related to the publication of the order of 19 March 2012. Amongst the reasons for the non-accomplishment of these audits, there are the difficulties that the small-scale railway undertakings – which do not have sufficient in-house resources – have finding independent external auditors for performing them.

The implementation of these monitoring plans, however important they may be from the safety viewpoint, can represent a difficulty for a certain number of companies owing to a lack of resources and means. This difficulty in their implementation may result in the notification of deviations and requests for corrective actions when problems are observed by EPSF.

Likewise, the quality of the accomplishment of this monitoring, whether in terms of depth or completeness, may represent a weakness in the area of safety and therefore, in certain cases, give rise to the introduction of appropriate training courses for the people in charge of these verifications.

Actions are being taken to improve operating safety in order to correct these malfunctions. Regular monitoring of these actions is organised by the operators and may lead in certain cases to repeat inspections being performed.

6.2. Monitoring ensured by EPSF

In 2013, EPSF carried out 112 verifications including 62 audits, 45 unannounced inspections and five operational verifications on RFN. The number of verifications was up significantly compared with the 95 inspections performed in 2012.

Number of verifications performed by EPSF in 2013

Type of verifications	IM/DIM	RU	Training Centres	Other	Total
Systematic audits	7	21	20	6	**54**
Circumstance-related audits	6	1	0	1	**8**
Unannounced inspections	14	25	2	4	**45**
Operational verifications	0	5	0	0	**5**
Total	**27**	**52**	**22**	**11**	**112**

Out of these 62 audits performed, 54 were systematic audits and eight were what are known as “circumstance-related” audits.

The systematic audits concerned the following in particular:

- the safety management system of three new railway undertakings further to their first operations. This concerned RDT13, SVI and ETMF;
- a second verification of the safety management system at TP Ferro, TPCF, CFR and TRENITALIA;
- the safety and operating regulation of the major sea port, Dunkirk;
- AMEC for the Ouest Lyonnais tram-train;
- the subject of training and approval was examined six times;
- maintenance of the rolling stock for four inspections;
- twenty training centres.

Amongst the eight circumstance-related audits performed in 2013, six concerned the maintenance of the infrastructure focusing on:

- training and approval;
- engineering works accomplished further to accidents involving the personnel of the delegated infrastructure manager (SNCF) that occurred in 2012.

The increase in the number of inspections performed in 2013 (50 compared with 39 in 2012) is the result of an increase in the number of repeat inspections and verifications triggered further to changes regarding incidents. Let us mention for example the inspections performed on the rolling stock immobilisation procedures further to the deviations recorded at the beginning of the year.

Certain subjects found to be fragile at the time of the verifications performed in 2013 are the subject of greater vigilance on behalf of the railway undertakings and of the infrastructure manager and are being taken into account in EPSF’s inspection schedule for 2014.

These subjects concerned:

- the driver's function through the issuing of additional certificates and the introduction of a register of these certificates;
- accomplishment of rolling stock maintenance;
- infrastructure maintenance.

Amongst the subjects identified as being fragile, those concerning rolling stock and infrastructure maintenance must be highlighted. Regarding the rolling stock, the goals of the audits performed on this subject were to verify the conformity of application and effectiveness of the provisions specified in the safety certificate concerning maintenance of the rolling stock used by the railway undertakings. The main deviations noted concerned:

- non-compliance with the maintenance schedule drawn up by the entities in charge of maintenance;
- scheduling of the technical transfer inspections;
- insufficiency of the monitoring of operations performed by subcontractors;
- lack of technical precision when drawing up orders for spare parts and the lack of quality control on reception of these spares.

The verifications carried out on the subject of infrastructure maintenance found deviations regarding:

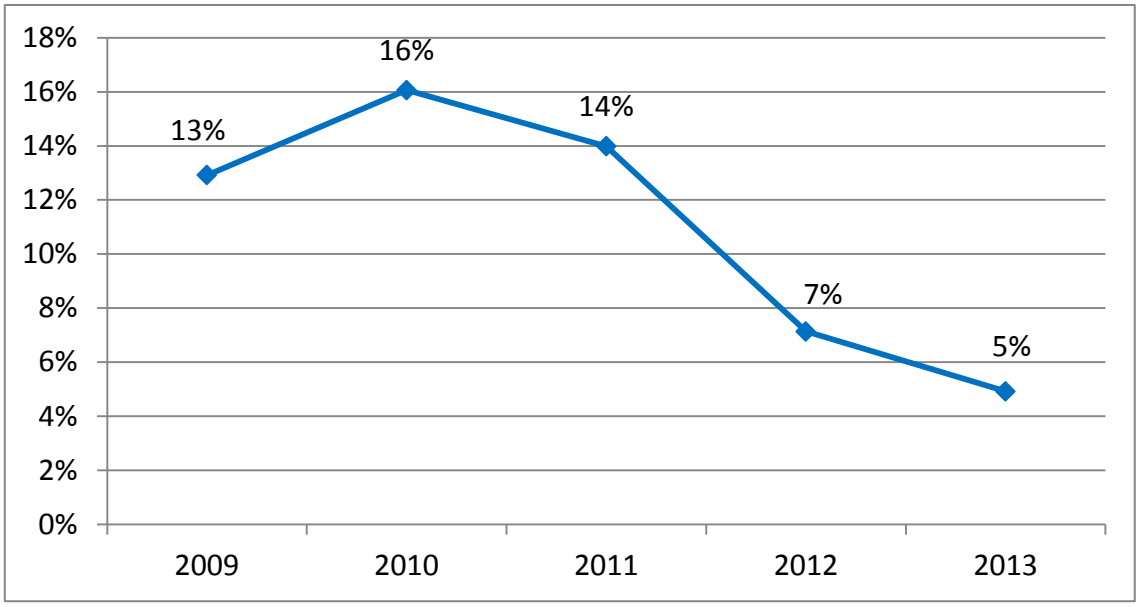
- drafting and updating of the operational orders and instructions;
- monitoring of the activities accomplished through verifications and in-house audits;
- taking into account the risk analysis of modification management.

Furthermore, in 2013 EPSF began its first verification of the operating safety regulations (RSE) in line with the measures taken by the major sea ports which must meet the requirements of Article 2 of the amended decree 2006-1279 of 19 October 2006 whose application area covers RFN and other railway networks such as port tracks. This first verification made it possible to assess compliance of the application and effectiveness of the measures concerning the way safety is taken into account in the organisation of the major sea ports corresponding to the approval of the operating safety regulation by EPSF.

Lastly, the first operational verifications were carried out to check compliance with the requirements on the trains in operation. At the end of 2013, after completion of these first verifications EPSF subcontracted out to two companies the task of performing these operational verifications. Professional experts from these companies assist the people at EPSF who are responsible for these verifications for the on-site observation part according to a predefined list of subjects:

- recognition of transport aptitude (RAT);
- verification of the technical inspection or the technical transfer inspection performed by the train's railway undertaking;
- verification of the documents made available to the driver;
- verification of the information concerning the train placed at the driver's disposal;
- verification of the signalling, safety and protection systems placed at the driver's disposal;
- verification of the ground staff's approval cards and/or of the driver's additional certificate;
- signalling of a train;
- marking and validity of the vehicles' operating approval.

The 112 verifications resulted in 320 deviations, including 72 major deviations and 248 reservations being notified to the inspected entities. In proportion to the number of reports, the ratio of the number of deviations observed with respect to the number of verifications performed shows a slight fall.



Trend regarding the number of deviations not closed on the target date

As shown in the graph above, the number of deviations not closed on the target date has fallen markedly since 2010.

Annex 1 – Definitions: safety targets and indicators

Directive 2004/49/EC introduced the notions that make it possible to evaluate in a standardised way the level of railway traffic safety and the performance of the operators at the Community level and in the Member States. The evaluation principles can be described around the following three points.

Common safety Indicators (CSI)

The CSIs are calculated in each country on the basis of observable data. Annex 1 of the directive, and its appendix, establish these indicators which are defined on a common base. In particular this includes the number of people killed or seriously injured at the time of railway accidents broken down into the following five types of people:

- passengers;
- personnel, including sucontractors' personnel;
- level-crossing users;
- unauthorised people trespassing on railway property;
- 'other' people.

For each type of person, it is possible to calculate the MBGP (Weighted Deaths and Serious Injuries) indicator corresponding to the sum of the number of people killed with 0.1 times the number of people seriously injured.

Common safety objectives (CSO)

Eight risk categories are defined and calculated on the basis of the MBGP of the five categories of people in proportion to the amounts of activity (train-km, passenger train-km and passenger-km) or indicators describing the infrastructure (number of level crossings and number of kilometres of track).

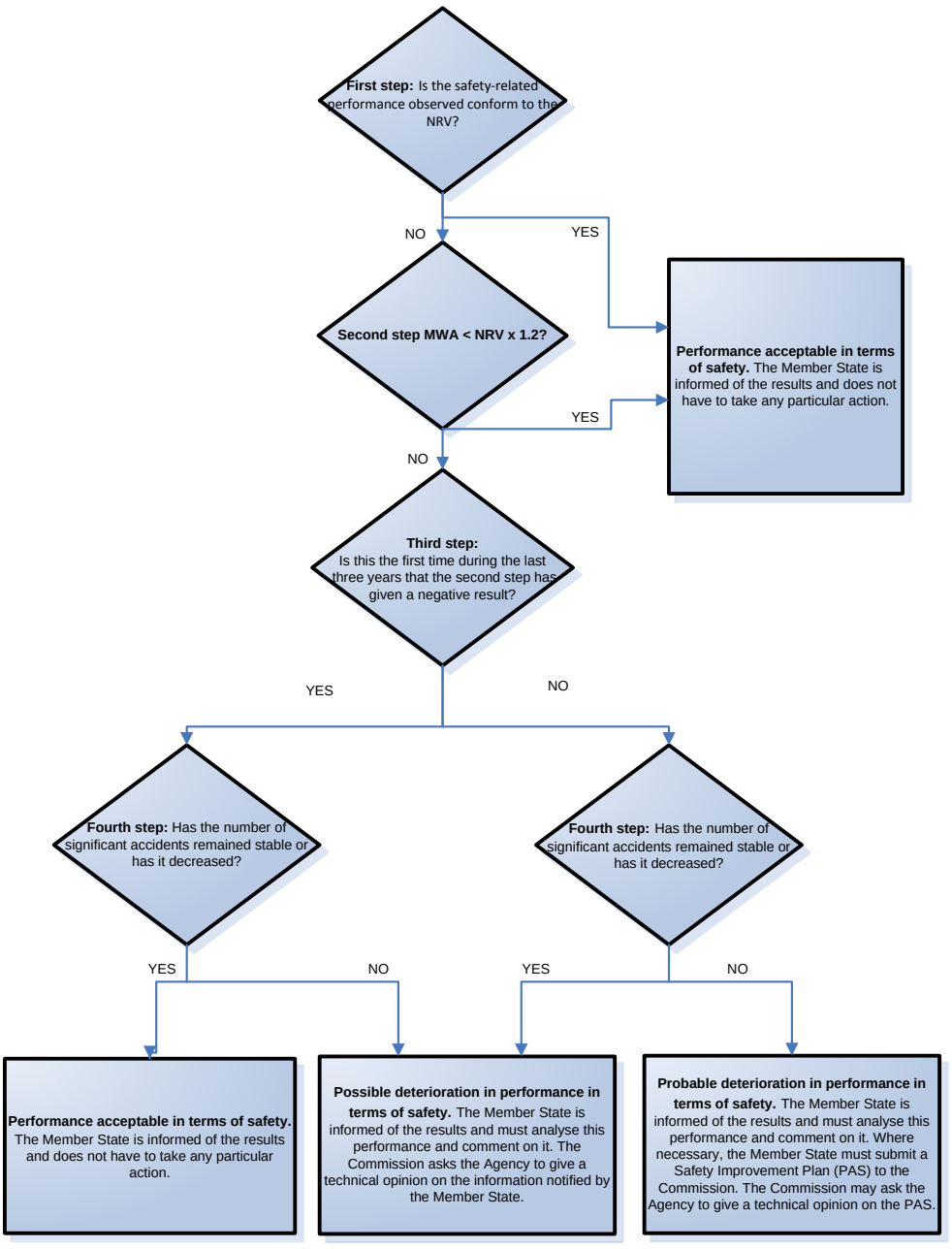
Risk categories	Measurement unit
1.1 Passengers	MBGP passengers / passenger train-km
1.2 Passengers	MBGP passengers / passenger -km
2. Personnel	MBGP personnel / train-km
3.1 LC users	MBGP LC users / train-km
3.2 LC users	MBGP LC users / [(train-km * number of LCs) / track-km)]
4. Others	MBGP "other" people / train-km
5. Unauthorised people	MBGP unauthorised people / train-km
6. Society as a whole	MBGP total / train-km

The eight CSOs are therefore "objective" values corresponding to the risk categories. These "objective" values are calculated in compliance with the CSM described in European Commission Decision 2009/460/EC of 5 June 2009. In particular they introduce national reference values (NRV), including the risk categories, which are the "objective" values making it possible to quantify the current performance regarding the safety of the railway systems for each Member State.

Evaluation of NRV and CSO accomplishment

The principles for evaluating the accomplishment of the NRVs and CSOs are described in the same decision 2009/460/EC and in particular in its Annex 2. The flowchart below makes it possible to evaluate for each “objective” value relative to a risk category (NRV or CSO) the safety-related performance: “Acceptable”, “Possible deterioration” or “Probable deterioration”.

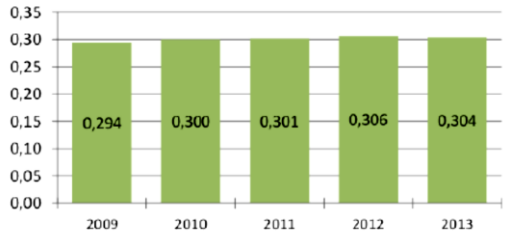
Decision flowchart



Annex 2 – Common safety indicators

This Annex presents the common safety indicators (CSI) defined by directive 2004/49/EC. It concerns the annual changes calculated by means of moving averages over five years. The value for 2013 therefore corresponds to the average of the values for 2009 to 2013. In comparison, the data presented in the graphs in section "3.3.1 - Safety monitoring results" are not the result of moving averages.

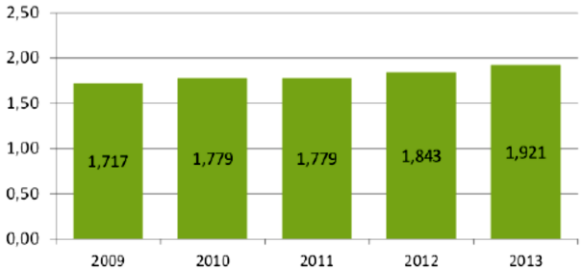
Moving average over 5 years of the relative number of accidents per million train-km



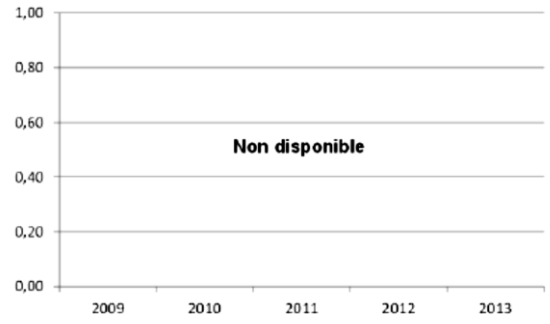
Moving average over 5 years of the relative number of people killed per million train-km

Moving average over 5 years of the relative number of people seriously injured per million train-km

Moving average over 5 years of the relative number of precursors per million train-km



Total costs in € million per million train-km

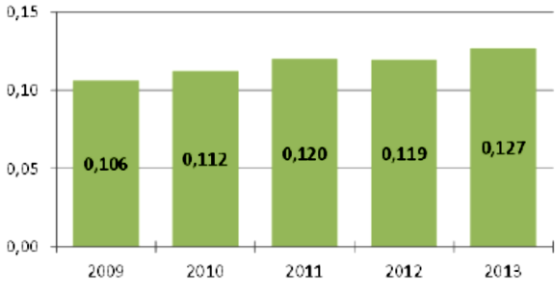


Non available

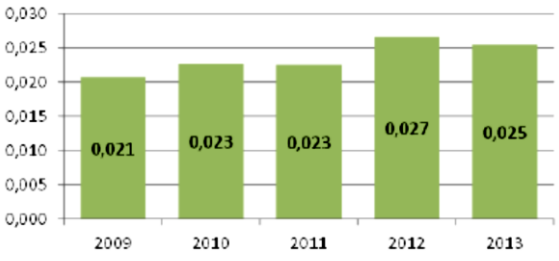
Accidents presented per type

Moving average over 5 years of the relative number of collisions per million train-km

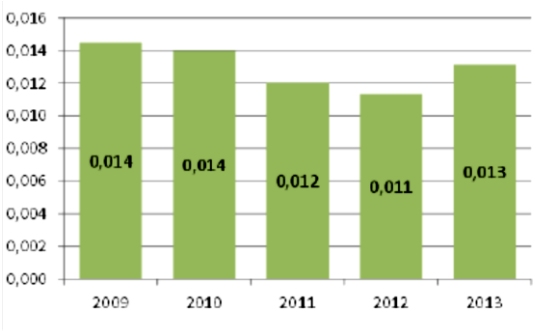
Moving average over 5 years of the relative number of accidents to people caused by rolling stock in movement per million train-km



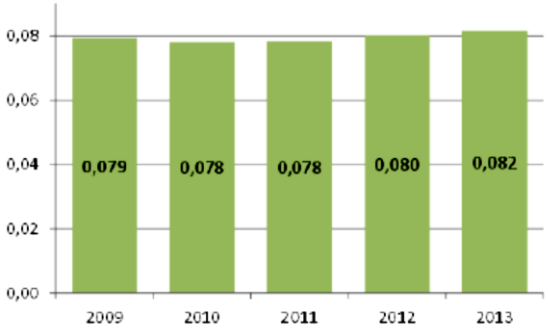
Moving average over 5 years of the relative number of derailments per million train-km



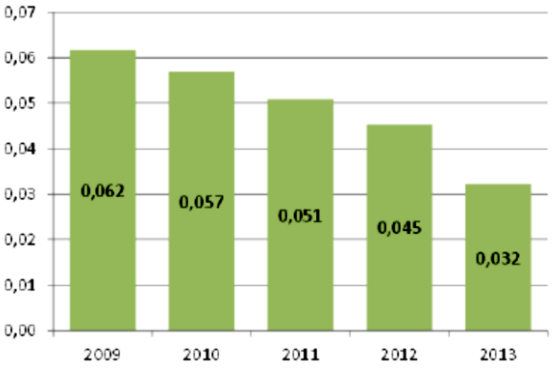
Moving average over 5 years of the relative number of fires on rolling stock per million train-km



Moving average over 5 years of the relative number of level-crossing accidents per million train-km

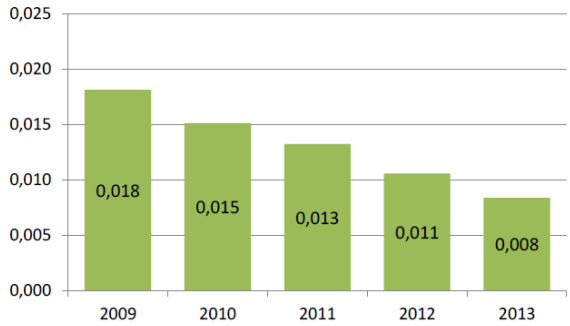


Moving average over 5 years of the relative number of other accidents per million train-km

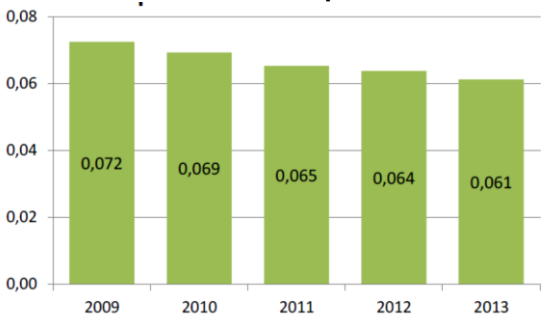


Deaths broken down per type of person involved

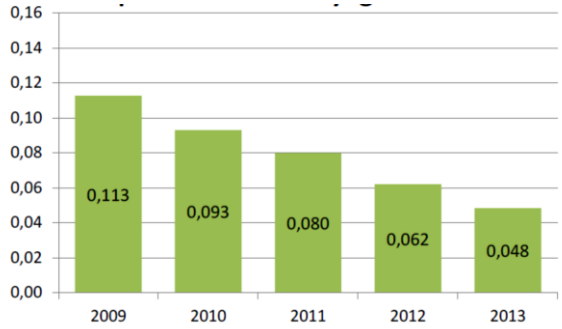
Moving average over 5 years of the relative number of passengers killed per million train-km



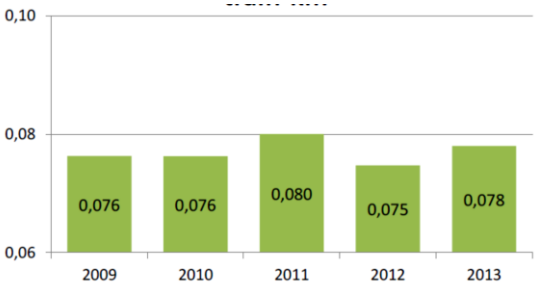
Moving average over 5 years of the relative number of LC users killed per million train-km



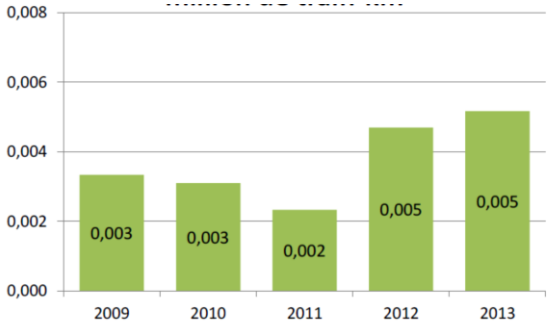
Moving average over 5 years of the relative number of passengers killed per million passenger-km



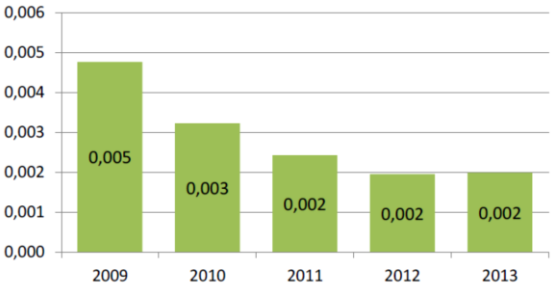
Moving average over 5 years of the relative number of unauthorised people killed per million train-km



Moving average over 5 years of the relative number of employees killed per million train-km

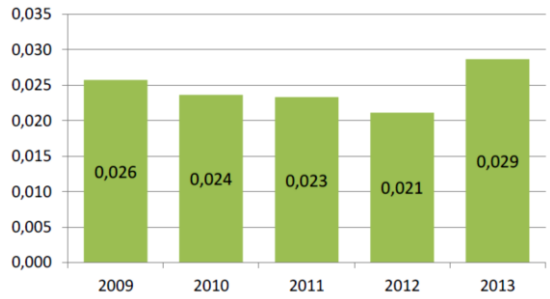


Moving average over 5 years of the relative number of other people killed per million train-km

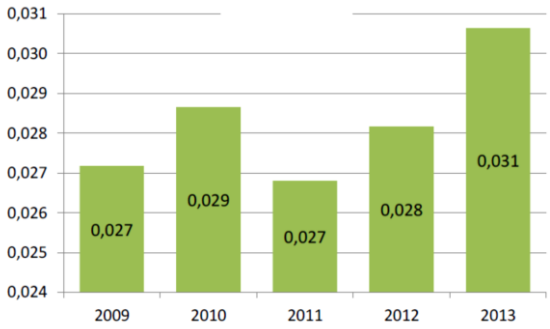


Number of serious injuries broken down per type of person involved

Moving average over 5 years of the relative number of passengers seriously injured per million train-km

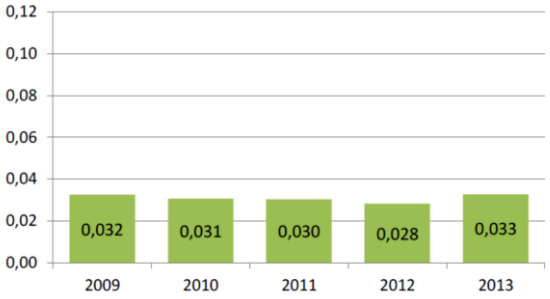


Moving average over 5 years of the relative number of LC users seriously injured per million train-km

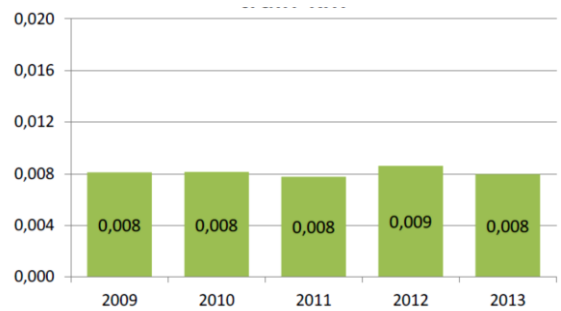


Moving average over 5 years of the relative number of passengers seriously injured per million passenger-km

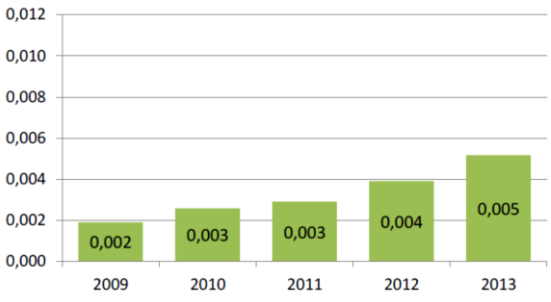
Moving average over 5 years of the relative number of unauthorised people seriously injured per million train-km



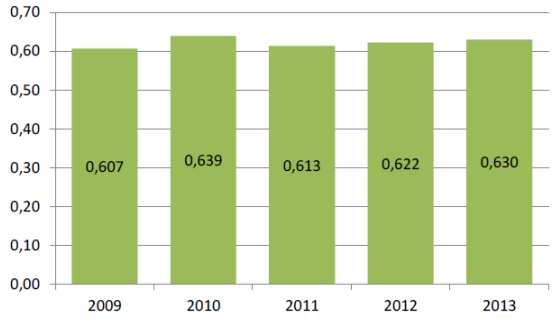
Moving average over 5 years of the relative number of employees seriously injured per million train-km



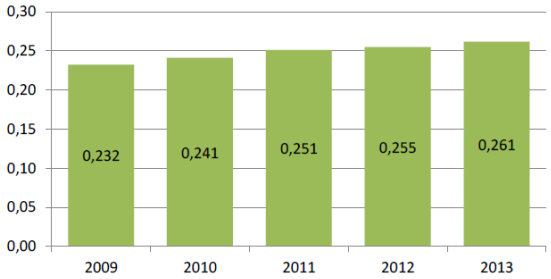
Moving average over 5 years of the relative number of other people seriously injured per million train-km



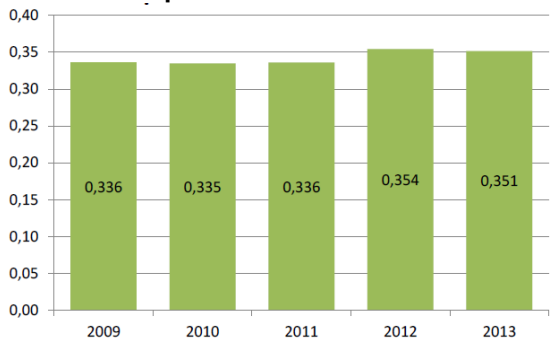
Moving average over 5 years of the relative number of broken rails per million train-km



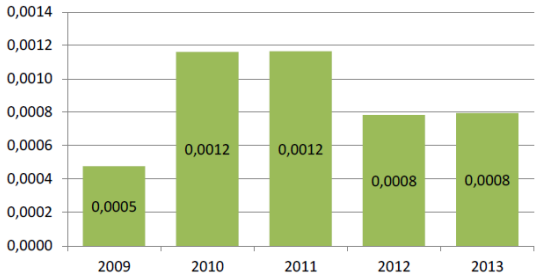
Moving average over 5 years of the relative number of signals passed at danger per million train-km



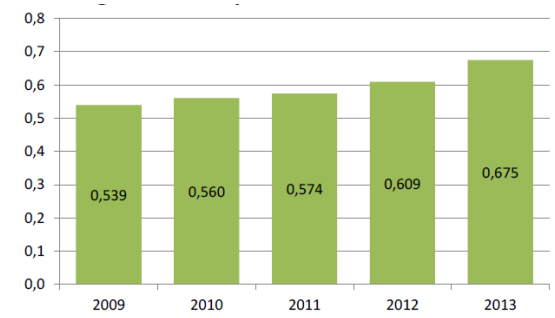
Moving average over 5 years of the relative number of cases of track buckling per million train-km



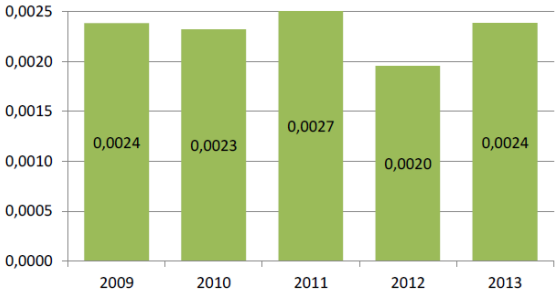
Moving average over 5 years of the relative number of broken wheels on rolling stock in service per million train-km



Moving average over 5 years of the relative number of signalling failures per million train-km



Moving average over 5 years of the relative number of axles broken on rolling stock in service per million train-km



Annex 3 – Monitoring of the BEA-TT recommendations

This Annex summarises the monitoring performed on all the recommendations issued by BEA-TT to the players in the railway sector. This monitoring starts with the reports published in 2006, the year EPSF was created.

Reports published in 2006

Legend: C = Closed - O = Open

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
12/2006	Collision between a TER regional express train and a lorry on a level crossing in Saint-Laurent-Blangy (62) one 09/06/2005.	R1	Pursue the examination of the solutions (on-site change of level or new route) making it possible to do away with this LC, in order to arrive at a decision and accomplishment as soon as possible.	RFF	Elimination is planned for 2017. Meanwhile, installation of a crossing radar is scheduled for 2014.	O
		R2	For the time being, look for specific modification or operating measures for this LC to make it possible to better control the risks of collision that could arise further to a traffic incident on this level crossing.	SNCF	Action closed	C
				RFF	Action closed	
11/2006	Derailment of a Corail train in Saint-Flour (15) on 25/02/2006.	R1	Establish a methodology making it possible to define on lines equipped with DC rails “special zones” where train speed limits would be set at a level making it possible to avoid derailments in the case of a rail breakage, in particular according to the track equipment, condition, routing, topography, and type of signalling,.	SNCF	Action closed	C
		R2	In the case of a defect being found in the DC rail requiring the replacement of the unsound part, insofar as possible the rail must be replaced in its entirety rather than being repaired by welding.	SNCF	Action closed	C
				RFF	Action closed	
		R3	On the sections of lines equipped with DC rails, prefer the massive replacement of sleepers, and only proceed with these massive replacements when associated with a raising of the ballast.	SNCF	Action closed	C
				RFF	Action closed	
		R4	Establish a programme to bring up to standard the lines open to passenger traffic and equipped with DC rails. In the longer term, organise the gradual replacement of the DC rails with Vignole rails given the aging of this equipment pool, the growing cost of its maintenance and the high risk of derailment in the case of a rail breaking.	SNCF	Action closed	O
				RFF	The programme to do away with DC rails is being pursued. In 2006, there were 1,538 km. The forecast for 2016 is 411 km of DC rails still present.	

Reports published in 2007 Legend: C = Closed - O = Open

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
09/2007	Derailment of a freight train in Ferté-sur-Chiers (08) on 13/06/2006.	R1	When a wagon that has suffered an accident is being repaired and an intervention is necessary on the Lenoir damping system (detection of an insufficient "A" dimension), specify the number of the axle boxes concerned, both on the level of the initial expert assessment and of the repair.	SNCF	Action closed	C
		R2	On the national railway network, look for track geometry situations similar to that of pk 190,200 on the Nord-Est route in June 2006 (close and regular succession of dressing and cant defects that could cause a dynamic resonance effect; simultaneous presence of an out-of-true defect at an alert value in addition to the out-of-true inherent to the parabolic easement coming out of the curve). Draw up rules for interventions on the track to correct these situations (reworking of the dressing according to quantified values after detection of repeated and periodic dressing defects coming out of curves).	SNCF	Action closed	C
				RFF	Action closed	
		R3	Remind the staff directly concerned by train traffic of the usefulness in emergency situations of the wayside-train train radio and of the implementation of emergency actions for staff present on the tracks.	SNCF	Action closed	C
				RFF	Action closed	
11/2007	Near-catchup of two trains in Tencin-Theys station (38) on 28/06/2006.	R1	Move the pedal for Pg2 as close as possible upline of switch V2/V4 and examine all the equivalent situations on the whole of the National Railway Network in order to apply measures of the same type, after a local analysis of the shunting operations.	SNCF	Action closed	C
				RFF	Action closed	C
		R2	Modify the disk D2 command circuit making it close automatically when at least one of the two track 2 zones in Tencin-Theys station is occupied.	SNCF	Action closed	C
				RFF	Action closed	
		R3	Remind the station inspectors that as long as they have not handed over at the end of their shift, they must coordinate all the interventions, clearly and explicitly explaining everyone's tasks.	SNCF	Action closed	C
11/2007	Passenger accident in Chaville-Rive-Droite station (92) on 10/11/2006.	R1	For the rolling stock that is going to undergo a significant maintenance operation in the workshop, examine the modifications making it possible to slave the possibility of manual door opening, after activation of an intercom alarm signal (SAI), to a speed threshold lower than the lowest detectable speed; establish a programme to implement these modifications.	SNCF	Actions adopted currently being deployed. Concerning modifications to trainsets that have to be performed in the workshop, accomplishment is spread out over a long period of time and is not planned for certain series owing to scrapping being planned in the more or less short term. On 31/12/2011 the "Inhibition of access door unlocking above a speed threshold" Modification Order had been 84 % accomplished for the Z20500 and 3 % accomplished for the Z5600 and Z8800.	O
		R2	Review and clarify the regulations applicable to mission changes, by strictly limiting the cancellation of regular halts, especially after the departure of the train from its originating station.	SNCF	Action closed	C
12/2007	A Transilien train struck the track 21 buffer in Paris-Est station (75) on 05/04/2007.	R1	Raise the awareness of railcar drivers regarding the different types of brake command, particularly for the "full application" and "emergency applications", this initiative should be included in the driving baselines and in the content of continuous training.	SNCF	Action closed	C
		R2	For the design of future railcars, concerning the "braking system" part, adopt a braking controller configuration that integrates the same emergency	SNCF	Action closed	C

			application command as that equipping modern railcars (MI2N, AGC, Z-TER).			
		R3	Improve the responsiveness to the safety lessons learnt from feedback: shorten the time required to make corrections to the driving manuals, particularly when the subject concerns a safety function such as braking; shorten the time required for implementing awareness-raising initiatives with the drivers on the subjects highly concerned by traffic safety (subjects dealt with at the time of accompanied driving and of continuous training days).	SNCF	Action closed	C
		R4	On Z2N railcars, examine the feasibility of lowering the speed threshold below which the passenger access doors unlock before the train comes to a halt. If this is feasible, modify the whole fleet of Z2N railcars.	SNCF	Action closed	C
		R5	For the tracks in the Paris-Est station receiving trains made up of Z2N trainsets, examine the relevance and feasibility of installing a system making it possible to absorb a significant proportion of the energy of a train arriving at the buffers at low speed.	SNCF RFF	Action closed Action closed	C

Reports published in 2008 Legend: C = Closed - O = Open

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
04/2008	Derailment of a maintenance vehicle in Carcassonne station (11) on 27/02/2007.	R1	Remind the station inspectors of the importance of keeping the staff taking part in the shunting operations in the station fully informed, especially the staff who are the least familiar with the station's installations.	SNCF	Action closed	C
		R2	Examine the installation of a single derailer on track 4 between switches 120b and 118a.	SNCF	Action closed	O
				RFF	There is a project to create an origination – terminus in Carcassonne station with transformation of track 4 into a main track. Accomplishment has been postponed owing to a lack of funding. The protective measure consisted of prohibiting parking on the track for all the vehicles fitted with a guard-iron. In the absence of any notification of this prohibition by the IM to the DIM, DCF (railway traffic directorate) is imposing this prohibition via the Carcassonne CLE (Local Operating Instruction).	
03/2008	Person struck in Villeneuve-Triage station (94) on 01/03/2007.	R1	Take care to install a sufficient number of "Do not cross the tracks" signs or any other equivalent system, and keep them clean so they stay legible.	SNCF	Document RFN-IG-TR 01 C-02 No 001 "Public safety at stopping points, track crossing places and on platforms – Equipment and operating principles" was published on 27/06/2011 replacing baseline IN01724. A diagnosis of the equipment in each establishment is being carried out, and for the 3,026 stopping points identified, 1,714 have been dealt with to date and brought up to standard where necessary.	O
				RFF	Action closed	
		R2	Install on the route taken naturally by passengers in Villeneuve-Triage station at least one sign indicating the presence of an underpass and that it must obligatorily be taken to go to the other platforms.	SNCF	Action closed	C
				RFF	Action closed	
06/2008	Derailment of a train in Pertuis (84) on 09/11/2007.	R1	Perform a checkup of the thermit welds on the high rail of the curve for the CWR territory between Aix-en-Provence and Manosque, limited to the sections identified (from pk 361,850 to pk 345,495 and from pk 345,495 to pk 347,266). The inspection method will be clarified: visual inspection of the underneath of the rail base using an appropriate system or inspection of the rail base by ultrasound inspection.	SNCF	Action closed	C
				RFF	Action closed	
		R2	Through the annual feedback of rail breakages, define relevant indicators (of the breakages per km type) making it possible to reveal the sections requiring a checkup of the rail welds according to the procedure stipulated by recommendation R1 (or equivalent procedure). on the sections of line on the National Railway Network potentially presenting similar risks (same context as in Pertuis),	SNCF	Action closed	C
				RFF	Action closed	

		R3	Carry out a feasibility study for a catalogue of sounds representative of an “abnormal impact” in order to train the ear and sensation of the drivers of the different railway undertakings subject to such a situation (perception of the sound emitted according to the rail’s defect, the locomotive’s axle load and the nature of this locomotive, its running speed).	RFF	Action closed	C
03/2008	A Transilien train struck the track 3 buffer in Versailles Rive Gauche station (78) on 13/08/2007.	R1	On Z2N railcars, examine the feasibility of lowering the speed threshold below which the passenger access doors unlock before the train comes to a halt. Should this be feasible, modify the whole fleet of Z2N railcars.	SNCF	Action closed	C
		R2	For dead-end tracks in stations receiving trains made up of Z2N cars, examine the relevance and feasibility of technical provisions making it possible to prevent the buffer from being impacted or, should that happen, to minimise the consequences for people on-board the train or on the platform. It would then be possible to evaluate and compare the beneficial effects of putting in place: - A damper device designed to slow down a train that risks coming into contact with the buffer, - and/or a final speed control device (at an agreed distance from the buffer and controlling at a speed of about 4 km/h) to cause an additional deceleration of the train, or even stop it.	SNCF	Action closed	C
				RFF	Action closed	
12/2008	Derailment of an engineering train in Culoz (01) on 24/07/2006.	R1	When transporting specialist equipment by rail (approved railway engineering works) incorporated in an engineering train from the works area to the parking place and vice-versa, make departure conditional on the prior remittal of a “train in starting order” certificate duly signed by the representative of this specialist equipment’s operator to the marshalling official responsible for issuing the departure authorisation. (He can then send the “train ready for departure” information to the Delegated Infrastructure Manager’s official who may then authorise access to the network by opening the corresponding signal).	SNCF	The “train in starting order” certificate (AMOR) trialled in the SNCF Chambéry region has been extended to the SNCF as a whole and should be taken into account in an S9B16. The text is still in the draft stage.	O
				RFF	Action closed	
		R2	For future track works vehicles with a complex architecture covered by baseline IN 1418, check the ability to pass out-of-true track and apply for the on-line test the protocol specified by sheet UIC 518 for new-technology vehicles which, in particular, stipulates the measurement of the wheel/rail Y and Q interaction forces. In the case of a train with architecture similar to that of the P21/95, submit at least the working unit’s axle to such measurements.	SNCF	Action closed	O
				RFF	The recommendation is applied in the framework of the drafting of the special operating rules CG MR3A No 3 and CG MR3A No 5. The drafts have been submitted to EPSF which made its remarks at the end of January 2014. These remarks include the request that all new equipment should be fitted with KVB. The publication of both rules has been delayed awaiting a decision from DGITM.	
		R3	Revise the baseline relative to engineering train traffic; when these trains run outside their work routes on lines fitted with wayside-train radio, and whatever the accompanying staff member’s equipment, provide an analog RST or GSMR RST type wayside-train radio link on-board the train,.	SNCF	Action closed	C
				RFF	Action closed	
12/2008	Staff member hit by a train at LC 37 in Bayard (52) on 26/02/2008.	R1	Remind the staff that the security regulations must be applied strictly and must not be interpreted.	SNCF	Action closed	C
		R2	Examine a modification to the regulations for engineering works in the immediate vicinity of an LC no longer stipulating the use of manning resumption lights, but	SNCF	Action closed	O
				RFF	The regulation concerned by this	

			the use of flashing red road lights to alert the announcer that traffic is approaching so that he can emit an announcement signal.		recommendation is IN 1461 relative to fixed installations that could be used to alert the announcer or lookout of approaching traffic – Annex 3, Article 2, LC at SAL It is part of the professional documentation relative to maintenance, whose drafting and approval come under the sole responsibility of SNCF DIM, in compliance with chapter 3 of the part common to RFF and SNCF DIM of the SMS, approved by EPSF on 27 February 2008.	

Reports published in 2009

Legend: C = Closed - O = Open .

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
01/2009	Brake failure on a VEOLIA freight train in Montauban station (82) on 26/04/2008.	R1	When drawing up the “vehicles” rota, indicate the moment of the ordinary preparation of the locomotives before the freight train shunting and marshalling phases.	VEOLIA	Action closed	C
		R2	Have the exactness of the’ train composition’ note (included in the consignment note) checked by the marshalling official.	VEOLIA	Action closed	C
		R3	Strengthen managerial control (and control in the framework of the contractual relations) exercised by the railway undertaking on the training and train driving operators and make it more effective.	VEOLIA	Action closed	C
		R4	Systematise, the accomplishment of the “braking efficiency test” for each train going out on to the line as close as possible to its departure point.	VEOLIA	Action closed	C
02/2009	Collision between a passenger train and a freight train in Zoufftgen (57) on 11/10/2006.	R8	Examine the feasibility of extending the SAAT to Bettembourg, displaying the first train announced on the TCO.	SNCF	Action closed	C
				RFF	Action closed	
		R11	Modify the wayside-train radio installations so that the radio alert and radio-telephone communications transmitted by the Bettembourg and Thionville stations are received on the installations in the blocks located on the other side of the border.	SNCF	Action closed	C
				RFF	Action closed	
		R12	Examine in the case of a radio failure a stiffening of the regulations by requiring that the problem should be remedied (replacement of the locomotive, installation of a portable radio, etc.) according to more stringent criteria.	SNCF	Action closed	C
				RFF	Action closed	
				EPSF	Action closed. EPSF performed an audit in 2012. Amongst the 21 recommendations made by BEA-TT further to the Zoufftgen accident on 11 October 2006, 4 concerned SNCF. These recommendations concerned SAAT, RST, emergency cut-outs and safety management. These recommendations have been implemented on the Thionville – Bettembourg line, however these recommendations have only rarely been implemented on the other lines audited.	
		R14	Put telephone links in place that would be useful for cutting out the power quickly in emergency situations on the French frontier - Thionville section of the line when requested by the Bettembourg Control Centre.	SNCF	Action closed	C
				RFF	Action closed	
		R18	For officials with safety-related responsibilities, ensure preparation for the emergency situations that are most likely to occur with, in particular: - identification of the risks to be dealt with; - formalisation of the response scenarios; - training and exercises.	SNCF	Action closed	C
				RFF	Action closed	
12/2009	Collision between a TER regional express train and a	R1	Examine and implement measures likely to make it easier for lorries to cross this level crossing and pass each other while crossing it (redesign or operating, road or rail measures).	RFF	Action closed	C

	lorry on the level crossing in Saint-Médard-sur-Ille (35) on 26/11/2007.	R2	Integrate in the texts governing SNCF project management, consultation with the regional level crossing expert for all the worksites likely to affect the safety of a level crossing.	SNCF	Action closed. EPSF carried out a DIM inspection of lines 7 and 9AV in 2012. The measures indicated in the answers from RFF and SNCF DIM to the BEA-TT recommendations have still not been passed on to the various players concerned who therefore cannot implement them.	C
12/2009	Collision between a TER regional express train and a lorry on the Roche-en-Brenil level crossing (21) on 07/07/2008.	R1	Remind the railway operating services that when they are aware of significant modifications to the road traffic on a level crossing, they must: - verify that the safety conditions are upheld, in particular with respect to the criteria set by the order of 18 March 1991; - then, where applicable, alert the players concerned and the responsible authorities so they can take the appropriate measures for restoring safety on this level crossing.	SNCF RFF	Action closed Action closed	C
12/2009	Group of people hit at Stade-de-France-st-Denis (93)	R3	Set up organisations and closing specifications making it possible to guarantee that the doors and gates providing access to railway property are reasonably dissuasive for third parties while remaining easily accessible for authorised people.	SNCF RFF	Action closed The working group mentioned has not met. The action was relaunched further to the IM/DIM review with EPSF in January 2014.	O
		R4	Remind the staff on the track maintenance teams of the importance of checking the good condition of the fences and accesses when they do their inspections. Explain the service that is expected of the SUGE staff on their surveillance rounds, particularly concerning the correct locking of the accesses when it is decided to assign this mission to them.	SNCF	Action closed	C
		R5	Review the installation policy for the signs prohibiting access to railway property and indicating the associated hazards, at the level of the doors and gates providing access to railway platforms. Define the implementation conditions for this policy.	RFF	The zones considered as being similar to Stade de France (where crowds gather from time to time) have been identified and are being dealt with. The revision of the safety policy regarding the delimitation of railway property has been included in the RFF safety targets for 2014.	O

Reports published in 2010 Legend: C = Closed - O = Open.

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
08/2010	Collision between a freight train and a lorry in Laluque on 25/09/2009.	R2	Put in place an organisation guaranteeing the establishment of a safety protocol for all road transport to and from a railway site. *Note: This organisation must be effective even in the case of subcontracting.*	SNCF	Action closed	C
		R3	Indicate in the documents organising joint activities on railway sites which entity must accomplish the host company missions for establishing the safety protocols.	SNCF	Action closed	C
		R4	In the framework of the multi-year road transport contract for the Infrastructure Activity's products, agree on a safety protocol template including a systematic reminder of the specific features of the railway sites and level crossings. *Note: This document could contribute to the driver training mentioned in recommendation R1*.	SNCF	Action closed	C
		R5	Formalise the process for putting into operation railway sites that are intended to receive deliveries by road transport in order to guarantee that the conditions required for the safety of road traffic inside and near the site is ensured as soon as the site comes into service.	SNCF	Action closed	C
				RFF	Action closed	
09/2010	Collision between a bus and TER regional express train at level crossing 34 in Nevers (58) on 03/02/2009.	R3	Proceed with an evaluation of the advantages and drawbacks of the fixed automatic obstacle detection devices on the level crossings implemented operationally abroad (particularly in Israel and Japan) and organise a technological watch on this subject.	SNCF	Action closed	C
				RFF	Action closed	
12/2010	Derailment of two wagons transporting dangerous goods in Orthez station (64) on 24/11/2009.	R1	Examine the appropriateness of introducing a periodic measurement of the camber and a strict rule on the maximum camber taking into account, where applicable, the value of the transition slope.	SNCF	Action closed	C
				RFF	Action closed	
		R2	Have the relevance of the maintenance rules relative to the body-bogie connections of rail tankers with a large wheelbase checked by the entities in charge of maintenance, and have the instructions relative to the traceability of interventions on these components strengthened.	VTGF	Action closed	O
				AFWP	A working group has been put in place	
		R3	Have modified and completed by the entities in charge of maintenance, the criteria relative to the play on the transoms of rigid wagons with a large wheelbase, so they are coherent with the standards relative to the track and sufficient to guarantee the wagons' ability to pass out-of-true track.	VTGF	AFWP has been requested to put a common working group in place. Action closed	O
				AFWP	A working group has been put in place.	
		R4	Examine the appropriateness of sending all the national safety authorities recommendations R2 and R3 with a view to implementation in their respective Member States.	EPSF	EPSF did not consider it necessary to forward the alert further to this recommendation.	C
		R5	Introduce a rail greasing policy guaranteeing a sufficient amount of greasing in the zones in which the severe geometric characteristics and the presence of heavy freight traffic create a significant risk of wheel-lift derailment.	SNCF	Currently being deployed: Introduce a rail greasing policy guaranteeing a sufficient amount of greasing in the zones in which the severe geometric characteristics and the presence of heavy freight traffic create a significant risk of wheel-lift derailment. The possibility of fitting certain Infrastructure vehicles with automatically	O

					commanded rail greasers in these zones could be considered.	
				RFF	The baseline IG-IF 2 B-31 No 2 (IN0206) “Greasing the rails by the rolling stock” applies since 04/02/2013. It is associated with the revision of IN 2070 “Monitoring of rails laid on main tracks”.	
		R6	In the drivers’ baseline in the case of derailment or presumed derailment, stipulate the use of precise unambiguous terms, for example “derailment, request for obstacle protection” in the communications with sedentary staff. Also stipulate, where applicable, the explicit reporting by the driver of the presence of dangerous goods on-board the train.	SNCF	Action closed	C
		R7	Indicate in the professional texts for the staff in charge of traffic management (regulators, station inspectors) the emergency measures to be taken in the case of a train accident involving dangerous goods.	SNCF	Action closed	C
		R8	Introduce in the regulator baseline (IN 3790), the emergency cutout of catenary power as a means of stopping trains in the case of an emergency and reduce the risk of an explosion in the case of a dangerous substance leaking. Look for and eliminate the local baselines that could cause confusion or doubt regarding the implementation of an emergency cutout.	SNCF	Action closed	C
12/2010	Collision between a train and the load on an opposing train in the Livernant tunnel (16) on 20/05/2009.	R1	Check the training and awareness of the personnel (loading advisors, trained inspectors) concerned by the sensitive transport process, and stipulate the effective participation of the advisors when loading is carried out by an inexperienced company.	EPSF	Action closed	C
		R2	Complete the text of the “sensitive transport” agreement by adding: – the signature of the loader to certify that he/she is aware of the advisor’s recommendations and undertakes to comply with them; – the indication of the possibility that the loader has of requesting the presence of the advisor whenever necessary at the time of loading.	EPSF	Action closed	C
		R3	Check the initial and continuous training of all the inspectors regarding the verification and inspection of loads during their transport and, in particular, the “sensitive transport” loads.	EPSF	Action closed	C
		R4	Examine the appropriateness of updating the application documents intended for drivers (TT 0057), so that they will presume that the clearance of the opposing train has been engaged when they hear an unusual impact noise when passing a goods train at night or when there is no visibility.	SNCF	Action closed	C
		R5	Examine the conditions making it possible, by adapting regulatory text IN 1514-S2C or by making recommendations concerning the railway undertakings’ professional documents, to ensure that the drivers will presume that the clearance of the opposing train has been engaged when they hear an unusual impact noise when passing a goods train at night or when there is no visibility.	EPSF	Action in progress	O

Reports published in 2011 Legend: C = Closed - O = Open

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
01/2011	Collision between a passenger train and a farm trailer in Boisseuil (87) on 03/07/2009.	R2	Assess **whether** a wayside-train alert radio (SAR) should be installed in the Operational Traffic Management Centres (COGC) and the signal boxes to effectively alert trains in the case of an obstacle on the track or of an imminent danger.	SNCF	An experiment with the radio alert system at the disposal of the regulator has been carried out at the Lorraine COGC, with an extension to the other COGCs equipped with GSM-R. An experiment has been conducted in Nancy to place the radio alert system at the disposal of a station inspector.	O
				RFF	The feedback from the experiment concluded that a change to the ergonomics was required (SAR transmission audible backup), and this has been done. RFF agreed to have this audible backup experiment extended.	
		R3	In the regulator's professional document IN 3790, and in the training courses for the staff at the Operational Traffic Management Centres, introduce the utilisation of the emergency cutout to stop trains should the need arise, in line with document IN 1511 (S2B).	SNCF	Action closed	C
08/2011	Derailment of a freight train in Bully-Grenay station (62) on 29/07/2010.	R1	In the brake manifold repair documents, explain the importance of avoiding any excess bonding and sealing product and, where necessary, of eliminating any such excesses before re-assembling the equipment. Issue these documents and ensure they are implemented.	LORMAFER	No particular action adopted by LORMAFER in response to this recommendation.	C
		R3	Make a comparison with the main European networks of the consistency, density and quality of the monitoring and problem detection systems for trains in operation (except on LGV high-speed lines) and look for innovative systems in the project or experimental phase. Share the results with the main safety stakeholders on the national railway network and learn the useful lessons for this network's equipment.	RFF	No data on the benchmark mentioned.	O
10/2011	Collision between a TER regional express train and a lorry on an unmanned level crossing in Gimont (32) on 27/09/2010.	R1	In application of the plan to secure level crossings adopted in June 2008, ensure the unmanned crossbuck level crossings where the trains run at speeds higher than 40 km/h without exceeding 90 km/h are equipped with an automatic light and sound signalling system with or without a barrier, within the deadlines announced, that is to say by 2013.	RFF	Action closed	C
		R2	Quickly secure the access road to the hamlet of Julias, either by doing away with level crossing No 76, or by equipping this crossing with a light and sound signalling system, and straightening minor road No 10 as it approaches the crossing.	RFF	The Prefectural order to do away with the LC was published on 4 June 2012. The LC was fenced off, the removal works are scheduled to be completed in April 2014 (subject of a deviation in the EPSF audit on the complete implementation of the BEA-TT recommendations).	O

Reports published in 2012

Legend: C = Closed - O = Open.

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
01/2012	Derailment of a freight train fret in Neufchâteau station (88) on 22/05/2010.	R1	Intervene with the European Railway Agency (directly for EPSF, through the intermediary of the Joint Sector Group (JSG) for SNCF and of the European Railway Wheels and Wheelsets Association (ERWA) for Valdunes) in order to promote a study and test campaign making it possible to evaluate the real loads railway tanker running gear are subjected to on line and when being shunted, as well as the interactions between these loads, with a view to taking them into account in the wheel design standards.	SNCF	Action closed	O
				EPSF	This recommendation did not appear to be particularly effective, so no action has been planned.	
				Valdunes	No information on this action.	
		R3	Awaiting a satisfactory change to the standards concerning the design and manufacture of wheels with roughcast wheel plates, recommend to the holders of wagons registered in France and the entities in charge of maintenance certified in France, that they should no longer mount new wheels with roughcast wheel plates on their wagons. Inform all the national safety authorities of this so that similar measures can be taken in the other states.	EPSF	This recommendation did not appear to be particularly effective, so no action has been planned.	C
		R4	Ask the railway undertakings operating on the national railway network to heighten and then maintain the vigilance of their staff in charge of inspecting wagons in operation and of checking them after repairs have been made regarding the detection of cracks in the wheel plates. Also ask them to include explicitly, if necessary, this search in the professional manuals concerned.	EPSF	This recommendation did not appear to be particularly effective, so no action has been planned.	C
		R5	Intervene with the European Railway Agency to have the inspection of the wheel plates included in the visual inspection protocol for axles (EVIC).	SNCF	Action closed	C
				EPSF	This recommendation did not appear to be particularly effective, so no action has been planned.	
		R6	Intervene with the GCU Bureau to have crack detection operations on wheel plates at the time of replacement technical inspections and of verifications after repairs more clearly stipulated in Annexes 9 and 10 of the General Contract for Use.	SNCF	Action closed	O
				NACCO	No information on this action	
				VTG	Action closed	
		R7	Act with the entities in charge of maintenance established in France and the foreign national safety authorities to promote the improvement of the crack detection procedures on wheel plates at the time of under-vehicle axle inspections performed at the time of wagon overhauls.	EPSF	This recommendation did not appear to be particularly effective, so no action has been planned.	C
		R8	Act with the entities in charge of maintenance established in France and the foreign national safety authorities to ensure that the axles of rail tankers with roughcast wheel plates should be the subject of improved crack detection procedures on wheel plates at the time of axle overhauls and other operations on removed axles; and of a specific maintenance scheme, coherent with the crack propagation speed.	EPSF	Letter sent to the entities in charge of maintenance established in France and to the other NSAs.	C
		R9	Act on the national level and with the European Railway Agency to ensure that the holders of wagons and the entities in charge of maintenance set up organisations and tools allowing them to know both the condition and situation of their fleet of wagons and axles and guarantee the traceability of the maintenance operations. In this framework, act for the implementation of the	EPSF	This reminder of the general obligations of the holders and of the ECMs regarding traceability has not required any particular action.	O
				AFWP	No information on this action	

			European wheel traceability (EWT) guidelines.			
07/2012	On-line derailment of two wagons in Artenay (45) on 09/03/2011	R1	As an entity in charge of maintenance, introduce in its own maintenance documents and apply the same under-vehicle shaft inspection criteria as defined in the European Visual Inspection Catalogue (EVIC); as a member of the Vereinigung der Privatgüterwagen Interessenten (VPI), intervene to have the criteria in this professional association's maintenance manual aligned with those of the EVIC.	NACCO	No information on this action	O
07/2012	Collision between a TER regional express train and a lorry on level crossing No 11 in Saint-Médard-sur-Ille (35) on 12/10/2011.	R1	Complete as quickly as possible the implementation of the measures to secure level crossing No 11 announced in November 2011, notably the installation of radars making it possible to detect inappropriate passing of the flashing red R24 lights and moving the outlet from minor road No 10 on to RD 106 moved further away from the level crossing.	RFF	Action closed	C
11/2012	Catch-up between two freight trains in Maillé (37) on 01/02/2012.	R1	Ensure the recording and traceability of the regulators' and station inspectors' safety communications from their service landlines. *Furthermore, BEA-TT invites the railway operators operating on the national railway network to remind their drivers of the safety requirements relative to sight-running traffic more particularly in terms of vigilance and control of their train's speed, so they are in a position to stop before any signal or obstacle.*	SNCF	Will be dealt with when the GSMR radio communication system is deployed	O
				RFF	Actions in progress	
11/2012	Derailment of 3 wagons of a freight train and collision with an opposing TGV in Valence d'Agen on 20/10/2011.	R1	Examine the appropriateness of introducing a new track-geometry monitoring parameter or improve exploitation of the existing parameters with a view to effectively detecting long transverse levelling defects and trigger the necessary alerts, interventions or traffic restrictions in due time.	SNCF	Action closed	C
				RFF	Action closed	

Reports published in 2013 Legend: C = Closed - O = Open.

Report date	Investigation title	No	Wording of the recommendation	Entity	Action status	Code
06/2013	Collision between a TER regional express train and a car in Breuil on 04/12/2011.	R3	Take the necessary measures for doing away with level crossing No 65 on the Lozanne to Paray-le-Monial railway line and, meanwhile, strictly limit access to it solely to local residents, by all appropriate means. *Furthermore, without making any formal recommendations, BEA-TT:* - *invites the railway undertakings to ensure compliance by their drivers with the "S" signs and, more generally with the rules regarding the utilisation of their warning horns;* - *draws Réseau Ferré de France's attention to the fact that the environment around some crossbuck level crossings makes the trains' warning horn difficult to hear, thus increasing the risk run by road users, and invites it to take this into account in the programme to make these level crossings secure.*	RFF	The study deliverable and the costing of automation are expected in March 2014.	O
06/2013	Impact between a railcar and an insulator in Sevran on 01/02/2012.	R1	Monitor the number of breakages of Vt 200223 type ceramic insulators. In the case of a significant increase in this number, remove the insulators of this type used in mainline catenaries from positions in which they could be impacted by railway traffic in the event they break.	SNCF	Actions in progress	O
				RFF	Actions in progress	
		R2	Identify the characteristics of the frontal windscreens and window-heaters equipping the rolling stock, as well as these window-heaters' utilisation rules. For rolling stock fitted with windscreens that do not comply with European standard EN 15152 or French standard NF F 15-818 or equivalent national standard, examine the possibility and appropriateness of improving the protection in cold weather against the penetration of projectiles into the driving cabs, for example by clarifying the window-heater utilisation rules or by planning the replacement of the windscreens with elements offering better resistance to impacts in cold weather.	All RU	Actions in progress	O
		R3	Ensure that any changes to European standard EN 15152 relative to front windscreens of rolling stock take into account the temperature-related variability in the resistance to impacts on windscreens and guarantee the same level or even improve the protection of the drivers throughout the whole temperature range commonly encountered on the national railway network and more particularly at negative temperatures. *In addition to this last recommendation, BEA-TT also invites the railway undertakings other than SNCF to work in the same direction in the national or international standardisation bodies in which they take part.* *Furthermore, BEA-TT invites the AGC Glass and Saint-Gobain companies to acquire, through tests, studies or any other means, a real knowledge of the impact resistance of the glass used for windscreens on rolling stock throughout the whole temperature range commonly encountered on national railway network, including in hot weather with the window-heater in operation and to share this knowledge in the framework of the works to revise the EN 15152 standard.*	SNCF	Actions in progress	O

07/2013	Collision between a train and an engineering works vehicle in Lachapelle-Auzac on 04/07/2012.	R1	In the framework of the feedback regarding the application worksite insurance processes and in order to avoid deviant practices appearing, examine the conditions that would make it possible to facilitate, in complete safety, the utilisation of equipment guarantee processes at the time of unforeseen engineering works that have a low impact on railway traffic.	SNCF	Actions in progress	O
		R2	Remind the staff in charge of engineering works on railway lines of the essential need for strict compliance with the closing and protection measures guaranteeing the absence of trains that would not be in a position to come to a halt ahead of worksites.	SNCF	Actions in progress	O
		R3	Ensure the recording of all operations-related communications from the station inspectors' service telephones. *Furthermore, BEA-TT invites SNCF to obtain feedback on the utilisation of the new LOR'AXE type catenary maintenance vehicles and on their drivers' training conditions.*	SNCF RFF	Actions in progress Actions in progress	O
08/2013	Derailment of a passenger train in Mercuès on 22/05/2012.	R1	Define and implement combined works monitoring procedures and methods making it possible to monitor those engineering works in their entirety, particularly when they include a construction on land presenting a risk.	SNCF RFF	Actions in progress Actions in progress	O
		R2	In the knowledge of the constructions' environment and the definition of the monitoring procedures, systematically take into account the data contained in the various information and prevention documents relative to major natural hazards established by the authorities (*Départemental* dossiers on major hazards, district information dossiers on major hazards, natural hazard prevention plans, district safeguard plans).	SNCF RFF	Actions in progress Actions in progress	O
		R3	Develop simple, real-time railway traffic alert systems – taking their inspiration from national and international road and rail systems – that could be implemented quickly awaiting long-term measures in the case of dangerous disorders affecting constructions.	SNCF RFF	Actions in progress Actions in progress	O

Annex 4: Railway traffic safety principles and players

The railway system: a complex system

The railway system is defined as a whole made up of railway infrastructure used for the public transport of passengers and goods, rolling stock of all categories and origins using that infrastructure, personnel responsible for operating and maintaining this equipment and rolling stock, along with the procedures used for that purpose.

This definition – which is given in Article 2 of the order of 19 March 2012[3] – makes it possible to consider the railway system as a coherent set of components that interact in different ways with different dynamics. In this respect, the railway system can be considered to be a complex system in the same way as the systems found in high-risk sectors (nuclear, chemicals, aeronautics, etc.). The central role played by humans constitutes one of the essential characteristics of the railway system. This is translated into the regulatory framework by the definition of safety operator certification and approval requirements. The positive (righting of inappropriate situations) or negative (error or inappropriate conduct) role played by people is often found when incidents are analysed.

Railway system players

The players in the railway system in France comprise all the institutions, organisations, railway operators and entities operating or contributing to the operation of railway traffic on the RFN network and on other networks that have comparable operating characteristics.

Concerning safety, the responsibilities of each of the players, and their respective roles are clearly identified.

- The State sets the safety goals and defines the way they are to be achieved. It is responsible for the regulations and ensures they are applied.
- EPSF issues the authorisations, performs the audits and inspections, takes part in drawing up the safety rules and contributes to the harmonisation of the European rules.
- The networks' infrastructure managers design and maintain the installations, manage the traffic and intervene in the case of incidents and accidents on the networks. Within the scope of the RFN, the infrastructure manager RFF has entrusted the operation of the network to SNCF, as the "delegated infrastructure manager". RFF also draws up the operating documentation that must be applied by the railway undertakings.
- The railway undertakings use their equipment, train their personnel, and define their operational orders and instructions in compliance with the regulations and operating documentation. They check that they are applied.
- The emergency services also intervene to limit the consequences of accidents, particularly in the case of fire or of hazards for people.
- BEA-TT carries out investigations in the case of railway accidents. It plays a role that is distinct from but complementary to the role played by EPSF.

[3] Order of 19 March 2012 setting the safety targets, methods and indicators, along with the safety and interoperability technical regulations that apply on RFN

The railway system's legal framework

The reshaping of the railway system's regulatory organisation was born from the political will to develop trans-European railway transport, particularly through the directives of the first railway package which, as early as 2001, changed the rules for accessing the infrastructure, granting licenses to the railway undertakings and allocating train paths. This opening up of the railway market to competition could not, however, be organised without taking the safety- and interoperability-related challenges into account.

The *Treaty on the Functioning of the European Union* (TFEU) gives the European institutions the powers for taking measures making it possible among other things to improve transport safety, whereas 171 1. §1 of the TFEU stipulates that the Union "shall implement any measures that may prove necessary to ensure the interoperability of the networks, in particular in the field of technical standardisation". These measures are determined by means of acts of law (regulations and directives) by the European Parliament and the Council, on the basis of propositions made by the European Commission.

In order to adapt to technical advances and changes in the sector, powers may be delegated to the Commission allowing it to adopt non legislative acts of a general nature. This often concerns regulations or decisions regarding the TSI that complete certain aspects of the act of law.

In this context the role of ERA is not to create the applicable law but rather to support the works of the European Commission.

In compliance with the regulatory set-up and the pyramid of standards, national law intervenes to transpose the directives of the European Union, or to complete or clarify the laws of the Union. Concerning the railway system, most of the provisions – laws and ordinances – are now codified in Transport Law and EPSF publishes all the regulations applicable to the sector on its website.

Further to the opening up of markets to competition, law 2006-10 relative to the creation of EPSF aims to satisfy the functions devolved to the national railway authority in the sense of directive 2004/49/EC. EPSF accomplishes missions relative to the regulatory framework in the area of railway safety and interoperability. EPSF therefore accomplishes a synthesis mission in order to guarantee the coherency of the regulatory framework through a coordinated approach because of the overlapping of the national and European provisions. This is essential in the current period of reshaping of the legal and regulatory framework.

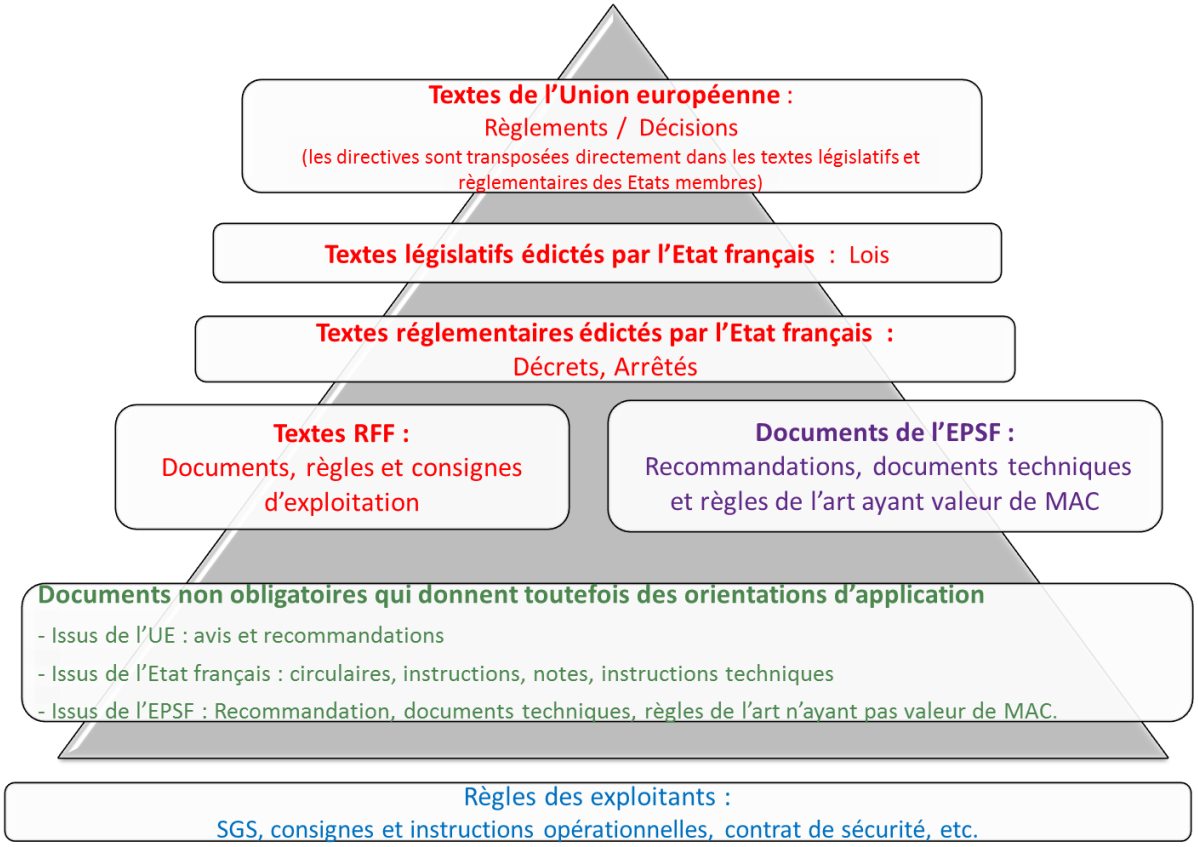
In this respect EPSF has been tasked with helping the State to draft the national regulatory texts (this may involve the transposition of directives), taking part at its request in the works of the ERA, and drawing up and publishing recommendations, technical documents and best practices, some of which constitute approved means of compliance (AMC) with the regulatory provisions.

Furthermore, the order of 19 March 2012 has completed the French regulatory system, specifying in particular what powers are devolved on the sector's different players in the area of instructions. EPSF has been entrusted with a mission to verify the operating documentation and special operating rules published by RFF in respect of Article 10 of decree 2006-1279; it can demand the withdrawal or modification of any rule that does not make it possible to uphold the level of safety.

The railway operators, whether they are railway undertakings or infrastructure managers, must comply with the provisions of law, whether European or national. They must take them into account in the drafting of their operational instructions and take every necessary measure, particularly in order to operate in complete safety. In their capacity as economic players, they are responsible, both in civil and criminal law, for the risks inherent to their activity.

EPSF must play an increasingly important role aiming to assist the operators, in order to share a common understanding of the regulations and facilitate the creation of interfaces between operators for the implementation of their SMS and their respective operating instructions.

To summarise, the pyramid below will help to understand the hierarchy of legal standards that the railway operators must comply with:



Legend:

Red: texts that must obligatorily be applied

Violet: texts that are not obligatory but compliance with which makes it possible to establish a presumption of compliance with the texts of a higher level in the pyramid of legal standards

Green: non-obligatory texts

Blue: texts specific to each operator, that are obligatory for the operator concerned and its co-contractors as may be necessary

European Union texts: Regulations / Decisions (the directives are transposed directly to the legal and regulatory texts of the Member States)	
Legal texts enacted by the French state: Laws	
Regulatory texts enacted by the French state: Decrees, Orders	
RFF texts: Operating documents, rules and instructions	**EPSF documents:** Recommendations, technical documents and best practices that have the standing of AMC
Non-obligatory documents that nonetheless provide application orientations - Published by the EU: opinions and recommendations - Published by the French state: circulars, instructions, notes, technical instructions - Published by EPSF: recommendations, technical documents, best practices that do not have the standing of AMC.	
Operators' rules: SMS, operational orders and instructions, safety contract, etc.	

Change management

In order to control developments in the railway system, each change whether of an operational, organisational or technical nature is processed in a way that differs depending on the case and/or the requesting entity.

Any requesting entity (infrastructure manager, railway undertaking, rolling stock manufacturer, entity in charge of maintenance, holder, etc.) that is considering making a change in the area that concerns it must carry out a safety study pursuant to the requirements of regulation EC No 352/2009 of 24 April 2009.

When this study has been completed the requesting entity must have determined whether the change being considered is:

- **minor** from a technical viewpoint or that its processing is already covered by the existing provisions of the SMS of the railway operator concerned;
- **significant**, in the sense of regulation EC No 352/2009, meaning that a safety study will have to be conducted to ensure its "innocuousness" in terms of implementation safety, but which will not require any further request for EPSF authorisation;
- **substantial**, in the sense of amended decree No 2006-179 of 19 October 2006 *relative to the safety of railway traffic and railway system interoperability*. A further request for authorisation will have to be submitted to EPSF.

In particular, this must be appreciated in view of the impact of the changes made to interfaces with the other components of the railway system and with its environment.

It should be noted that, in the case of railway undertakings, certain changes are identified by the regulations as being substantial. They are presented in point III of Article 6 of the amended order of 14 April 2008 *relative to the safety certificate required as regards railways*.

Concerning changes of a technical nature, the following are in principle considered to be substantial. Changes:

- requiring a further demonstration of safety as presented in the initial safety dossier that enabled EPSF to authorise the entry into commercial operation of the system concerned on RFN;
- leading to a notable modification of the safety functions;
- requiring the use of new technologies;
- presenting safety-related technical characteristics;
- concerning the utilisation area of an item of rolling stock, or its special operating instructions or, possibly, maintenance if the technical utilisation limits for safety-critical components are put into question.

Pursuant to the provisions of Article 4 of the order of 19 March 2012 *setting the goals, methods, safety indicators and technical regulations regarding safety and interoperability that apply on the national railway network*, the requesting entity may choose to inform EPSF of the change made to railway system components placed under its control or of the person that it authorises to intervene on the national railway network.

EPSF may ask for the corresponding safety analysis to be submitted to it prior to implementation of the envisaged solution.

Concerning qualification of the modification, EPSF may:

- either, keep the qualification defined by the requesting entity;

– or, requalify the modification, in which case the requesting entity will have to do the study again, or even apply to EPSF for a new authorisation.

Concerning the actual change, EPSF may:
– accept the proposed change, or
– request a review of the change, or
– refuse implementation of the change.

In practice, EPSF observes that changes are managed differently depending on the size and internal organisation of the entities. Those that have significant internal resources generally have in-house experts who are capable of assessing the risks linked to the different types of change. Small entities, however, usually call on external experts and have to seek the opinion of EPSF to a greater extent. In any case, the changes must be the subject of a risk assessment, which must be formalised in a dossier to ensure traceability. EPSF may consult this dossier in the framework of the verifications that it performs.

Be that as it may, the examination of these changes usually involves permanent exchanges between the requesting entity and EPSF, just like for the initial requests for authorisation.

Activity monitoring

Monitoring system

In order to obtain an authorisation, each railway operator must integrate the operational orders and instructions in its SMS and procedures, to describe the organisation that it is putting in place to ensure the follow-up of its activities. This follow-up is based not only on verifications, inspections and audits but also on a feedback system. These different elements constitute a **monitoring system** that allows the operator to verify its level of safety, detect any malfunctions and remedy them by taking appropriate corrective actions. These principles are described in Articles 9 and 23 of the order of 19 March 2012.

The verifications constitute the most operational part of the monitoring system. By “verifications” we mean:
- the checks carried out in the field by local management aiming to ensure that the activities are performed in compliance with all the safety rules;
- the verifications making it possible to guarantee the quality of the checking activity carried out in the field.

The monitoring system also relies on inspections. These inspections are usually performed unannounced. They are triggered on a specific subject when events have drawn the operator’s attention to that subject.

In order to complete its system, the company must also schedule and perform internal audits covering every aspect of its SMS over a predefined period of time.

For example, this may include:
- safety management organisation;
- documentation ;
- staff training and approval;
- verifications;
- control of subcontractors;
- feedback.

Role of EPSF

As the national safety authority, EPSF is tasked by the State with ensuring compliance by all the operators – which are each responsible for their share of the safety of their actions – with the rail transport safety and interoperability-related rules.
To achieve this EPSF draws up and implements a strategy for monitoring the players that have an authorisation, in particular a safety certificate or approval, such as provided for by Article 3 of Commission Regulation (EU) No 1077/2012 of 16 November 2012 applicable since 7 June 2013.

This monitoring exercised by EPSF over the railway undertakings, infrastructure managers, approved training centres and qualified organisations represents one of the measures making it possible to ensure compliance with the safety objectives. By verifying that each player masters the safety of its activity, identifying areas for improvement and asking them to take corrective measures if necessary, or even pronouncing administrative penalties (withdrawal, suspension, limitation of authorisations), EPSF can guarantee that the CSO are achieved, and that the national baseline values that apply in France are maintained.

The **monitoring strategy** explains how to define the subjects of the monitoring activities and sets their priorities for establishing an **annual verification programme**. While ensuring fair treatment between all the entities, these priorities are set taking into account the appreciation of the level of risk. This appreciation is based on the following criteria:

- "safety" performance in the sense of the common safety indicators that are found in the annual safety reports of the railway undertakings and infrastructure managers;
- incident/accident analyses;
- amount and nature of the entity's activities;
- results of the pervious verifications;
- evaluation made when the authorisation dossiers were examined;
- change in the scope of the safety certificate, approval or accreditation.

This monitoring strategy is reviewed annually.

The annual verification programme is drawn up and validated by the director general of the EPSF before the beginning of each year. This programme is based on several types of verification backed up by a validated procedure that is published on the establishment's website:

- **systematic audits** scheduled to check periodically that the conditions under which the various types of authorisations issued by EPSF continue to be met ;
- **circumstance-related audits** triggered according to the feedback on incidents or further to any significant changes;
- **unannounced inspections** designed to check what is actually done in the field;
- **operational checks** aiming to check the conformity of the trains formed before their departure.

This programme is reviewed and adapted monthly to take the latest developments into account.

In order to accomplish its monitoring mission, EPSF has approved inspectors who are tasked with carrying out these verifications. They may be assisted for certain aspects of a verification by experts from subcontractor companies.

All of these verifications, performed both by the operators and EPSF, make it possible to monitor continuously the level of railway traffic safety.

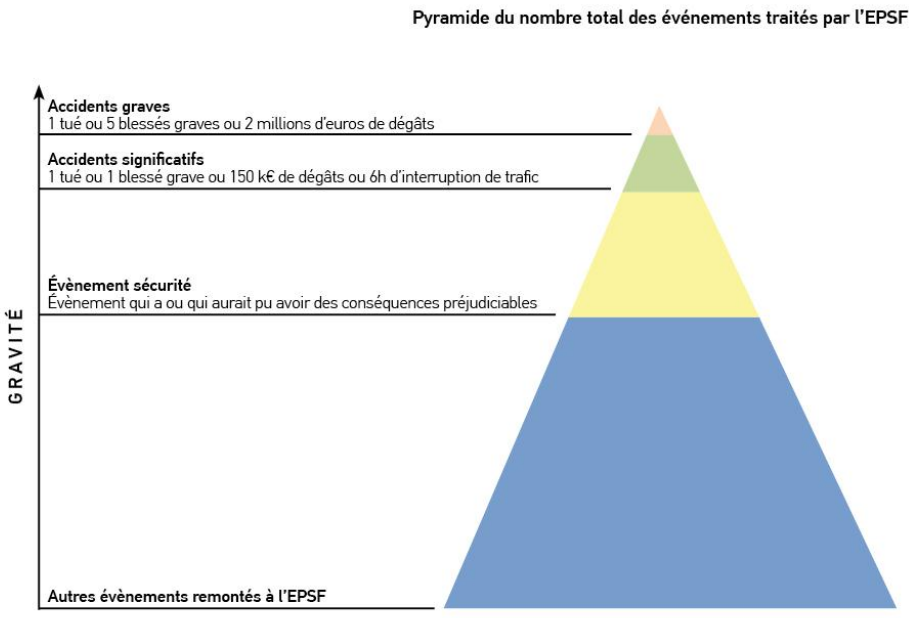
Safety monitoring and feedback

The activity monitoring ensured by means of the verifications is completed by follow-up of the safety level and a feedback process.
Safety level follow-up must enable each operator to measure the effectiveness, implementation and management of its SMS. This follow-up is carried out on the elements of the railway system placed under its control. The scope for each operator is that of its activity as a railway undertaking or infrastructure manager. As for EPSF, it ensures overall monitoring of the system as a whole.

The table below presents the risk categories and units of measurement used to calculate the CSO and NRV (see definition in Annex 1):

Risk category	Unit of measurement
1.1 Passengers	passengers / passenger train-km
1.2 Passengers	passengers / passenger-km
2. Personnel	personnel / train-km
3.1 LC users	LC users / train-km
3.2 LC users	LC users / [(train-km * number of LCs) / track-km)]
4. Other	'other' people / train-km
5. Unauthorised people	unauthorised people / train-km
6. Society at large	total / train-km

Pyramid of events processed by EPSF



FR	*EN*
Pyramide du nombre total des événements traités par l'EPSF	Pyramid of the total number of events processed by EPSF
Gravité	Seriousness
Accidents graves 1 tué ou 5 blessés graves ou 2 millions d'euros de dégâts	**Serious accidents** 1 person killed or 5 people seriously injured or €2 million damage

Accidents significatifs 1 tué ou 1 blessé grave ou 150 k€ de dégâts ou 6h d'interruption de trafic	**Significant accidents** 1 person killed or 1 person seriously injured or €150 k damage or 6-hr traffic interruption
Évènement sécurité Évènement qui a ou qui aurait pu avoir des conséquences préjudiciables	**Safety-related event** Event that had or could have had harmful consequences
Autres évènements remontés à l'EPSF	**Other events reported to EPSF**

Safety level follow-up is used to orient and feed the system feedback process. This process is implemented by each operator in order to make the most of the experience acquired by identifying weak points, analysing them and taking appropriate corrective measures.

Furthermore, EPSF organises the system feedback made necessary by the multiplication in the number of players since 2006. The goals of this approach, initiated at the end of 2007, are to focus on potential weaknesses that could be situated at the interfaces between operators, and share the lessons learnt and everyone's best practices.

➔ The feedback process used by the operators is based on the following steps:

- identify events taking at least those that correspond to the common safety indicators;
- exhaustively collect the facts required to describe and understand the event;
- record and keep the information gathered, along with the documents used for the analysis;
- analyse and highlight all the causes that contributed to the occurrence of the event. When an event could concern several railway operators, the analysis must be carried out jointly;
- use the information and learn lessons from it in order to communicate with all the players concerned.

➔ In addition to the feedback provided by each operator, the system feedback organised by EPSF includes:

- four quarterly meetings during which all the railway undertakings and infrastructure managers authorised by EPSF share the experience gained from the trends observed and from the incidents whose description, analysis and resulting action are presented by the railway operators;
- four quarterly meetings during which the mastery of the level of safety and performance achieved by RFN's infrastructure management is analysed;
- a monthly information bulletin on the most significant incidents sent to all the undertakings and infrastructure managers;
- the "local" feedback for analysis with the players concerned, significant incidents in order to draw all useful lessons on the basis of a joint determination of the causes.
- an annual feedback seminar organised at the beginning of the year, the goal of which is to bring together all the railway operators in order to contribute actively to the development of the feedback initiative.

Lastly, BEA-TT, as an investigative organisation in the sense of directive 2004/49, carries out technical investigations into serious land transport accidents and into all other significant accidents or incidents. It is also responsible for helping to spread knowledge and the lessons learnt from feedback on accidents and can commission studies and research in the areas of feedback and accidentology.

EPSF follows up the recommendations made by BEA-TT in its technical investigation reports, relying on three sources of information:

- The items verified at the times of inspections or audits performed by EPSF in the framework of its mission to verify the authorisations issued. These items may constitute the central theme of the audit or opportunely be analysed at the time of a verification on a different subject.

- The content of the annual report on safety submitted to EPSF by the railway operators. The template for this report indicates that feedback should be provided regarding the implementation of the actions further to the recommendations made by BEA-TT.
- The answer to the questions posed by EPSF on the implementation of the actions specific to a recommendation or accident. These questions may be the subject of a point on the agenda of the quarterly feedback meetings or be the theme of a specific meeting.

Annex 5 – List of the holders of authorisations issued by EPSF

List of railway undertakings that hold a safety certificate on 31 December 2013 on the RFN

RAILWAY UNDERTAKINGS	ISSUE DATE OF THE CURRENT SAFETY CERTIFICATE	PART A	PART B	COMMERCIAL SERVICE LAUNCH DATE
TRENITALIA	31 March 2010		FR 12 2013 0009	22 February 2011
TPCF	19 May 2010	FR 11 2012 0001	FR 12 2013 0001	22 July 2010
CFR	21 July 2010	FR 11 2010 0009	FR 12 2011 0008	19 November 2010
EUROSTAR INTERNATIONAL LIMITED	30 August 2010		FR 12 2012 0020	1er September 2010
ECR	30 September 2010	FR 11 2012 0003	FR 12 2012 0004	13 May 2006
EUROPORTE CHANNEL	29 October 2010	FR 11 2010 0020	FR 12 2010 0021	26 November 2007
OSR FRANCE	18 November 2010	FR 11 2010 0022	FR 12 2011 0004	13 December 2010
CROSSRAIL BENELUX	25 November 2010		FR 12 2010 0024	16 November 2011
SNCB LOGISTICS	14 April 2011		FR 12 2011 0003	14 April 2011
EUROPORTE FRANCE	19 October 2011	FR 11 2011 0018	FR 12 2011 0019	13 June 2005
RENFE	27 June 2011		FR 12 2013 0007	21 December 2010
ETF SERVICES	27 June 2011	FR 11 2011 0006	FR 12 2011 0007	5 July 2011

RAILWAY UNDERTAKINGS	ISSUE DATE OF THE CURRENT SAFETY CERTIFICATE	PART A	PART B	COMMERCIAL SERVICE LAUNCH DATE
COMSA RAIL TRANSPORT	11 July 2011		FR 12 2013 0016	15 June 2012
THELLO	5 April 2013	FR 11 2013 0003	FR 12 2013 0004	11 December 2011 (under the name TVT)
TX LOGISTIK	18 October 2011		FR 12 2011 0017	21 September 2012
RDT 13	17 November 2011	FR 11 2011 0022	FR 12 2011 0023	11 June 2012
COLAS RAIL	29 November 2011	FR 11 2011 0025	FR 12 2011 0026	8 January 2007
SVI	25 April 2012		FR 12 2013 0020	25 April 2012
NORDCARGO	16 May 2012		FR 12 2013 0019	Launch scheduled in 2014
SNCF	24 May 2012	FR 11 2012 0007	FR 12 2012 0008	1938 Prior to the obligation to hold a safety certificate
EGENIE	18 July 2012	FR 11 2012 0013	FR 12 2012 0014	22 June 2013
ETMF	13 August 2012	FR 11 2012 0015	FR 12 2012 0016	20 August 2012
VFLI	16 August 2012	FR 11 2012 0017	FR 12 2012 0018	4 October 2007
CFL CARGO	26 November 2012		FR 12 2012 0023	4 February 2008
NORMANDIE RAIL SERVICES	21 December 2012	FR 11 2012 0024	FR 12 2012 0025	16 November 2013

RAILWAY UNDERTAKINGS	ISSUE DATE OF THE CURRENT SAFETY CERTIFICATE	PART A	PART B	COMMERCIAL SERVICE LAUNCH DATE
SECURAIL	25 June 2013	FR 11 2013 0012	FR 12 2013 0013	10 July 2013
TMR	28 June 2013		FR 12 2013 0015	28 June 2013
TSO	4 July 2013	FR 11 2013 0005	FR 12 2013 0006	29 July 2009
FER ALLIANCE	23 September 2013	FR 11 2013 0017	FR 12 2013 0018	6 February 2014

List of infrastructure managers that hold a safety certificate on 31 December 2013 on the RFN

NAMES	APPROVAL DATE
Réseau ferré de France (RFF)	27 February 2008 renewed on 14 February 2013
SNCF acting in its capacity as delegated infrastructure manager	27 February 2008 renewed on 14 February 2013
TP FERRO	15 December 2010

EPSF
60 rue de la Vallée
CS 11758
80017 Amiens Cedex 1
Phone: 33 (0)3 22 33 95 95

epsf@securite-ferroviaire.fr
www.securite-ferroviaire.fr