

Annual Report

On Railway Traffic Safety

**2015**

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# Foreword

The annual report on railway traffic safety has been prepared to satisfy the obligation imposed on EPSF pursuant to Article 17 of amended Decree 2006-1279 of 19 October 2006 to draw up and send a report on railway traffic safety on the national railway network (RFN) and other comparable networks for the past calendar year to the Ministry of Transport, BEA-TT and the European Railway Agency before 30 September of each year. This report includes the extension of the list of comparable networks with operating characteristics that are comparable to those of the national railway network fixed by Decree No 2015-84 of 28 January 2015.

This report is drawn up on the basis of the information obtained by the railway undertakings and the infrastructure managers before 30 June of each year in their annual safety reports. It is available on our website[[1]](#footnote-1) under the section ‘quantified safety data’. It is to be read as a supplement to the EPSF activity report 2015, also available on our website in the ‘Communication’ section.

At the time the EPSF published this report, the three texts of the technical aspects of the 4th railway package had been published in the Official Journal of the European Union. These are Regulation (EU) 2016/796 of the European Parliament and of the Council of 11 May 2016 on the European Union Agency for Railways[[2]](#footnote-2), Directive 2016/797 of the European Parliament and of the Council of 11 May 2016 on the interoperability of the railway system within the European Union, and Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety. Directive (EU) 2016/798 amends several provisions concerning the annual safety reports.

Railway operators will have to submit their annual safety report to the national safety authorities (NSA) by 31 May instead of 30 June. Furthermore, the report drawn up by the NSAs should incorporate the experience gained by railway undertakings and infrastructure managers with regard to applying the relevant common safety methods (CSM), as described in the European Union regulations.

# Summary

In general, the level of safety on the RFN and comparable networks improved in 2015 compared to 2014. However, this positive assessment has to be qualified, as the performance of 2014 was not particularly good due to a relatively large increase in ‘significant’ accidents. The increase in the number of railway traffic accidents, as opposed to accidents not essentially caused by railways, and the serious Eckwersheim railway accident , although not on the RFN, also affect this assessment and underline the need to remain alert and continue to strive for improvement.

Regarding the consequences of accidents, the number of people killed declined in 2015 for the second consecutive year. Compared to 2014, the most significant decline is for the ‘unauthorised persons’ category, for whom, taking into account the number of ‘seriously injured’, the risk value calculated for this category becomes consistent with the national reference value (NRV) defined at European level. The overall decline is even more significant in the total number of ‘seriously injured’, where, with the exception of the ‘others’ category, all categories show a decline.

Concerning occurrences, after 2 years of increase, the number of ‘significant’ accidents is decreasing with a rate of 0.30 accidents per million train-km. Nevertheless, this decrease needs to be put into perspective with regard to the increase of two categories of accidents related to railway traffic: collisions and the rolling stock fires. As far as precursor events are concerned, the improvement recorded in 2014 was confirmed in 2015, including for the category of signals passed at danger

The 243 km/h derailment of a TGV test train at Eckwersheim (department 67) on 14 November 2015 during the acceptance tests for the second section of the East European high-speed line is obviously a significant railway event in 2015, although because it did not take place on the RFN, the eleven people killed and the twenty-one seriously injured are not, pursuant to national regulations, included in the evaluation indicators of the safety level of railway traffic.

Several parts of this report present a selection of initiatives and significant steps undertaken by the entire sector to improve railway safety. Several of them highlight again the importance of taking into account organisational and human factors (*facteurs organisationnels et humains*, FOH) and present specific measures taken in this field which was also covered to a large extent during the third rail conference organised by the EPSF in December 2015. The development of the safety culture is also a major focus through these different initiatives and in particular by the process of improving how feedback is given. There will be preparatory work on this in 2015, the aim being that every operator takes into account and reports all its safety events, not only the most significant ones, so as to improve the level of safety.

# Description of the network and traffic

The EPSF, as the national safety authority, carries out its tasks of monitoring and supervising railway traffic on the national railway network and on networks with operating characteristics that are comparable to those of the national railway network, as defined by Decree No 2015-84 of 28 January 2015.

## National railway network

At the end of 2015, the national railway network (RFN), which is owned by the SNCF Réseau, owns 49 715 km of main routes for about 30 000 km of lines open to commercial traffic throughout the territory of France, which makes it the second European network after Germany with regard to track kilometres.

This network consists of more than 2 000 km of high-speed lines. These are dedicated to passenger traffic and correspond to the country’s main traffic flows. This high-speed network, connected to the conventional network, makes it possible to serve a large part of the country and ensure international links with European neighbouring countries.

Nearly 70% of the main tracks of the RFN, i.e. 33 124 km, are electrified. These lines that are mainly powered by a 25 000 V catenary, but also by 1 500 V catenary, or even by a third rail, account for 90% of passenger traffic and 85% of freight traffic.

The RFN is comprised of approximately 36 500 km of double‑track main routes and approximately 12 500 km of single‑track main routes.

There are also about 18 000 level crossings, more than 2 200 signal boxes, about 1 700 tunnels with a cumulative length of more than 600 km, and more than 26 700 bridges and viaducts on the French national railway network.

The RFN, consisting mainly of UIC (International Union of Railways) standard gauge lines, has some special metric track lines whose operation is separate from the one of the network:

* the Blanc-Argent railway line between Salbris (department 41) and Luçay-le-Mâle (department 36) ;
* the Saint-Gervais (department 74) – Vallorcine (department 74) railway line.

Every year SNCF Réseau publishes the National Rail Network Statement, detailing its network’s technical characteristics and indicating the entry, train path allocation and pricing conditions. This document is available on the following website: <http://www.sncf-reseau.fr/en/national-rail-network-statement>.

## Comparable networks

Certain networks, listed in Decree No 2015-84 of 28 January 2015, are considered to have operating characteristics that can be compared to those of the RFN. All these networks together cover a total of 913 km of railways . The Order of 13 April 2015 lays down specific rules for the application of national regulations to these networks to take account of their specific characteristics.

These comparable networks are[[3]](#footnote-3):

* The French part of the international section of the line between Perpignan and Figueras (Spain), whose infrastructure manager is TP Ferro, representing 24.5 km of double-track routes, 7.3 km of which are tunnels.
* The part located in French territory of the railway link between Dudelange-Usines (Luxembourg) and Volmerange-les-Mines (Moselle) with 850 m of tracks.
* The following port railway networks:
* the Grand Port Maritime de Bordeaux : 21 km of tracks on two sites (Bassens, Verdon);
* the Grand Port Maritime de Dunkerque : 202 km of tracks;
* the Grand Port Maritime du Havre: 200 km of tracks;
* the Grand Port Maritime de La Rochelle: 37 km of tracks;
* the Grand Port Maritime de Marseille: 112 km of tracks on two sites (Bassin Esti, Bassin Ouest);
* The Grand Port Maritime de Nantes – Saint-Nazaire: 43 km of tracks on five sites (Nantes, Le Pellerin, Donges, Montoir-de-Bretagne, Saint-Nazaire);
* the Grand Port Maritime de Rouen: 80 km of tracks;
* Autonomous Port of Paris: 52 km of tracks on three sites (Gennevilliers, Bonneuils, Limay);
* Autonomous Port of Strasbourg: 116 km of tracks on three sites (Strasbourg, Lauterbourg, Marckolsheim).

On these port railway networks, infrastructure manager tasks are carried out by the port authority.

## Changes in traffic

At the end of 2015, 34 railway companies held a safety certificate and were therefore authorised to carry out railway transport on the RFN and other comparable networks. Thirty of those have been actually travelling on railway networks during 2015.

The number of million train-km in 2015 was up by 0.8% with respect to the previous year.

Transporting passengers, expressed as passenger-km, increased slightly by 0.38% in 2015, after having declined 3 years in a row.

Railway freight transport accounts for 9.3% of freight traffic in France in 2015, with 32.2 billion tonne-km. After many years of decline since 2008, the trend reversal that began in 2013 is continuing (+ 3.16% between 2014 and 2015), although French railway freight traffic remains about 20% below its level of 2008; this also being the case in other European countries, such as the United Kingdom, Hungary, and Germany. Freight transport is predominantly provided by road transport, which accounts for 85% of the market (source: ARAFER – website June 2016).

# Railway Safety Performance

## Significant accidents and incidents

* 28 January

Derailment of a TGV train empty of passengers in the Lyon station in Paris. At the time of its docking, the train derailed by dual track following the change of the position of a switch while it was running. This accident, which caused no injuries to people but caused significant damage to the infrastructure and stock, was the result of a lack of maintenance of the signalling installations. It forms part of the events taken into account by the study carried out by the Ligeron\* firm on organisational and human factors, commissioned by the BEA-TT and carried out in 2015. BEA-TT launched a technical investigation into this accident.

*\* The report is available on the BEA-TT website.*

* 23 February

A TER almost caught up a stopping TGV at La Possonnière (department 49), due to the untimely re-feeding of the signal control relay by a maintenance agent giving access to the block. While driving at a speed of 116 km/h, the driver of the TER made an emergency stop as soon as he saw the TGV’s rear lights at about 1.5 km in front of his train, thereby avoiding the collision. The BEA-TT started a technical investigation of this incident, which had no consequences but which however revealed several human errors.

* 21 April

Collision between an abnormal load and an intercity train, in Nangis (department 77). The train hit a truck whose low-loader trailer was in contact with the deck of the LC 41, SAL4 [four half barriers] not included in the NSP (national safety programme), after which the derailment occurred. This accident caused three ‘serious injuries’ and 32 ‘light injuries’ among the transported passengers. The BEA-TT initiated an investigation to determine in particular the exact causes of the immobilisation of the road complex on the NP.

* 12 October

Derailment of a TER on the entrance switch of the station of Sainte-Pazanne (department 44), Two-way derailment due to the change in the position of a switch at the passage of traffic following a momentary de-shunting of a track area and the recording of an incompatible route. This accident caused only minor damage to infrastructure and stock. BEA-TT launched a technical investigation into this accident. Without waiting for the results of this survey, immediate measures have been taken. They have been further explained in Chapter 3.3.

* 20 October

Drift of a TER train after a collision with two cattle in Serqueux (department 76). The collision at a speed of 136 km/h made it impossible to use the train braking system. The trains drifted about 20 km until the line profile slowed the train down sufficiently for the driver to immobilise it with scotches. This accident had no impact on the passengers, but the rolling stock suffered considerable damage. BEA-TT launched a technical investigation into this accident. SNCF Mobilités has initiated a plan for the modification of the stock involved (see box page 10).

* 14 November

The derailment at a speed of 243 km/h of a TGV test train at Eckwersheim (department 67), not on the RFN, on 14 November 2015 during the approval tests for the second section of the East European high-speed line, was a major railway accident in 2015. This accident resulted in the death of 11 people and serious injuries to 21 of the 53 people on board, as well causing serious damage to the stock and infrastructure. This was caused by a belated braking (+ 12s at the speed of 330 km/h) leading to overspeed (+ 67 km/h) at the curve entry. For these tests, the automatic speed control systems (TVM 430 and ERTMS) had been deactivated so that the train would run at line speed +10%. BEA-TT launched a technical investigation into this accident.

* 1 December

Derailment of a TER train when entering the Laroche-Migennes station (Yonne) at a speed of 20 km/h, when passing a previously pressed switch. A succession of deviations in the application of the operating rules was the cause: safety installation not replaced after carrying out the works; erroneous verification by the relief crew; insufficient knowledge of the site. The BEA-TT initiated a technical investigation of the accident, which caused damage only to rolling stock and infrastructure.

The collision of Serqueux

On 20 October 2015, train number 848973 Amiens/Rouen consisting of an AGC (Z27673), moving in a single unit at a speed of 140 km/h with seven passengers, the driver and the guard the train on board, collided with two cattle on the track just before the Serqueux station. The impact on the front of the train as well as the passage of the cattle under the train caused significant damage leading to the total loss of the braking system efficiency. After the collision, the driver realised that he could stop his train drifting at a speed of about 100 km/h in the direction of Serqueux. The guard, after having tried unsuccessfully to stop the train by activating the alarm signal, placed the passengers at the rear of the train. After having travelled nearly 20 km and crossed the station of Serqueux at the speed of 80 km/h, the train slowed down sufficiently in the ramp in the direction of Sommery, so that the driver could get off the train and immobilise it with the help of scotches before it started moving in the other direction due to the slope. The exemplary behaviour of the driver and the guard meant the situation could be brought under control. There were no victims in this accident. On 21 October 2015, the BEA-TT launched a technical investigation into this accident.

The expert assessments conducted by the specialists of the SNCF and the manufacturer of the stock in the days following this event and in the presence of the EPSF, revealed the following damage:

* the detachment of the electrical coupler located on the front part above the coupling, which caused a short circuit and the loss of all electrical functions. including electromagnetic braking;
* the pulling off of the main pneumatic control valve located in the coupling, which caused the complete emptying of the compressed air reserve used by the pneumatic braking system;
* the deformation of the cowls of the purge drawbars during the projection of debris under the train (ballast, cattle carcasses) causing the automatic drainage of the brake valves on all four bogies of the train.

The fact that all the damage happened simultaneously meant that it was not possible to stop the train either automatically by operating the on-board safety devices or voluntarily by the action of the driver and guard, by using various braking devices.

On the basis of a risk assessment and taking into account the highly improbable nature of the sequence of causes and the damage revealed by the result of the expert report, SNCF Mobilités did not take any precautionary measures and the EPSF decided to not require them, neither on the stock of the same type nor on the stock of different type but which has comparable technical characteristics.

SNCF Mobilités nevertheless immediately started to study and implement, at an accelerated pace, the technical modifications to prevent such accidents from recurring. The first modifications initiated by SNCF Mobilités, the implementation of which is regularly monitored by the EPSF, were the following:

* development of track sweepers to prevent animals that had been hit from passing under the train;
* enhanced protection of linkage and purge valve cables;
* changing automatic purging valves to manual valves to prevent the braking system from draining completely;
* developing electrical insulation between the coupler and the train to retain the main electrical functions (electromagnetic brake, ground/train radio, etc.).

## Safety indicators

### Report on the consequences of accidents

The graphs and tables below show the number of people killed or seriously injured during a railway accident, based on the categories specified in the European Common Safety Indicators (CSIs), excluding the Eckwersheim accident that was not on the RFN.

**The number of people killed or seriously injured**

|  |  |
| --- | --- |
| Tués | Fatalities |
| Blessés graves | Serious injuries |

**Number of people killed or seriously injured between 2010 and 2015 by categories**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **People killed** | | | | | |
| 2010 | 2011 | 2012 | 2013 | 2014 | **2015** |
| Passengers | 1 | 7 | 2 | 4 | 0 | **4** |
| Employees | 1 | 2 | 6 | 3 | 1 | **2** |
| Level-crossing users | 27 | 29 | 33 | 29 | 25 | **27** |
| Unauthorised persons | 37 | 50 | 33 | 45 | 36 | **20** |
| Others | 0 | 0 | 0 | 4 | 3 | 1 |
| **Total** | **66** | **88** | **74** | **85** | **65** | **54** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **People seriously injured** | | | | | |
| 2010 | 2011 | 2012 | 2013 | 2014 | **2015** |
| Passengers | 7 | 14 | 6 | 31 | 12 | **6** |
| Employees | 4 | 5 | 6 | 2 | 8 | **2** |
| Level-crossing users | 17 | 9 | 10 | 19 | 26 | **11** |
| Unauthorised persons | 11 | 23 | 11 | 16 | 24 | **17** |
| Others | 2 | 2 | 4 | 4 | 4 | **5** |
| **Total** | **41** | **53** | **37** | **72** | **74** | **41** |

In 2015, the downward trend in the number of people killed continued, falling by 17% compared to the previous year. The most significant decrease can be seen in the category of unauthorised persons, falling from 36 deaths in 2014 to 20 this year, marking a decrease of -44%.

The overall decline is even more remarkable in terms of the total number of ‘seriously injured’. In fact, this number has fallen by 45% this year compared to 2014. With the exception of the ‘others’ category, the number of seriously injured persons is decreasing in all other categories.

The following graph shows this favourable trend, reporting the number of people killed and ‘seriously injured’ per million train-km. This graph also shows the change since 2011 of the m*orts blessés graves pondérés* MBGP indicator (deaths, serious injuries weighted – see definition Appendix 1) used for the assessment of common safety objectives (CSOs). In 2015, this indicator, corresponding to risk to society as a whole, reached a value of 0.118, which is lower than the national reference value (NRV) of 0.180 per million train-km. This figure is falling again after the improvement that started in 2014. The NRV is defined by Commission Decision of 23 April 2012 on the second series of CSOs.

|  |  |
| --- | --- |
| Tués | Fatalities |
| Blessés graves | Serious injuries |
| MBGP | MBGPs |
| VNR6 | NRV6 |

Assessment of NRV and CSO achievement

The process of evaluating the achievement of national reference values (NRV) and common safety objectives (CSOs) is explained in detail in Annex 1.

As shown in the figures of 2015 brought out in the following table, all risk categories have an acceptable performance result from the first evaluation stage for the first year since 2006. Nevertheless, although they are in compliance with the objectives, two categories are experiencing a drop in performance in 2015: the ‘passengers’ category and above all the ‘personnel’ category, whose performance has decreased by 21%, from 3.67\*10e-9 last year to 4.45\*10e-9 in 2015.

It is necessary to point out that there has been a significant improvement in the category of unauthorised persons, remaining below the NRV defined by the European Commission. In fact, in 2014, the CSOs of this category had not met the criteria for the first two stages and the performance of this category had been assessed as possible deterioration.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Stage 1** | | |  |
| **Risk category** | **National reference value (\*10e-9)**  **[2004-2009]** | **Common safety objective (\*10e-9)**  **[2014]** | **Common safety objective (\*10e-9)**  **[2015]** | **RSO < NRV**  **Yes/No**  **[2015]** |
| **1.1 - Passengers**  (by train km) | 22.5 | 2.45 | **9.31** | Yes |
| **1.2 - Passengers**  (by train km) | 0.11 | 0.02 | **0.03** | Yes |
| **2 - Employees**  (by train km) | 6.06 | 3.67 | **4.45** | Yes |
| **3.1 - Level-crossing users**  (by train km) | 78.7 | 56.3 | **56.9** | Yes |
| **4 - Others**  (by train km) | 7.71 | 6.94 | **3.04** | Yes |
| **5. - Unauthorised persons**  (by train km) | 67.2 | 78.4 | **43.9** | Yes |
| **6. - Society as a whole**  (by train km) | 180 | 148 | **118** | Yes |

### Accident occurrence rate

After two years of increase, the number of ‘significant’ accidents in 2015 is decreasing to 0.30 accidents per million train-km. This improvement is the result of the decline in the number of accidents from 177 in 2014 to 150 in 2015, marking a decrease of 15%, while at the same time, traffic has increased by 0.8%.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Accident Categories** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** |
| Collisions | 15 | 12 | 18 | 10 | 23 | 27 |
| Derailments | 20 | 13 | 16 | 11 | 15 | 11 |
| Accidents at level crossings | 36 | 40 | 38 | 42 | 51 | 41 |
| Accidents caused by moving rolling stock | 64 | 76 | 51 | 64 | 63 | 53 |
| Fires in rolling stock | 6 | 2 | 1 | 8 | 2 | 8 |
| Others | 14 | 11 | 14 | 11 | 23 | 10 |
| **Total** | **155** | **154** | **138** | **146** | **177** | **150** |

*This data falls within the framework of common safety indicators (CSIs – see Annex 2) as they have been defined in Annex 1 to 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 to take account of the new facts or classification inaccuracies discovered after publication of the 2014 safety report.*

This decrease in the number of accidents corresponds to the improvement in performance in four of the six accident categories, as shown in the table above. Only the ‘collisions’ and ‘fires’ categories have increased:

* an increase in the number of collisions that has reached its highest level in the last five years, increasing from 23 in 2014 to 27 in 2015;
* a sharp increase can be noticed in the number of fires in rolling stock, increasing from two in 2014 to eight in 2015, returning to its high level of 2013.

It has to be mentioned that animal collisions reached an unprecedented level in 2015, representing the first cause of collisions before the “others” causes, bad weather and malicious acts. In most cases, collisions with animals cause only material damage, but on 20 October 2015, the collision with two cattle at Serqueux could have had far more serious consequences, as it caused the drift of a passenger train over 20 km, as described in chapter 2.1 of the significant events. To respond to this increase in collisions with animals, efforts to combat their intrusion onto railway areas continue. This involves in particular:

* maintaining fence efficiency and filing complaints in the case of acts of vandalism;
* organising the alerting of wild animals;
* raising awareness among hunters’ federations;
* scaring animals with the help of reflectors or scare-guns.

With regard to the categories in improvement, the decrease in the number of accidents is particularly significant in the “others” category, which has decreased by 56% to return to the average level of 2013, after a remarkable increase in 2014 with 23 accidents. This category includes, for example, collisions and derailments of rolling stock subject to operation or maintenance vehicles, including those on tracks closed for maintenance operations, collisions and derailments caused voluntarily by the application of safety procedures in the case of an emergency situation, such as the deviation of a drifting vehicle to a track with a bumper, loss of dangerous goods during transport, objects thrown by trains (ballast, ice, etc.) as well as the electrocution or electrification related to moving rolling stock.

The number of derailments decreased by approximately 27% with 11 derailments in 2015, the most significant of which are also included in chapter 2.1 of this report. Level crossing accidents fell by 20% with 41 accidents, mostly related to non-compliance with road signs by car drivers, cyclists or pedestrians. Finally, the accidents caused by moving rolling stock have decreased by 16%.

The following graphs show the various types of accidents per million train-km and illustrate these trends, as well as the development over the last five years.

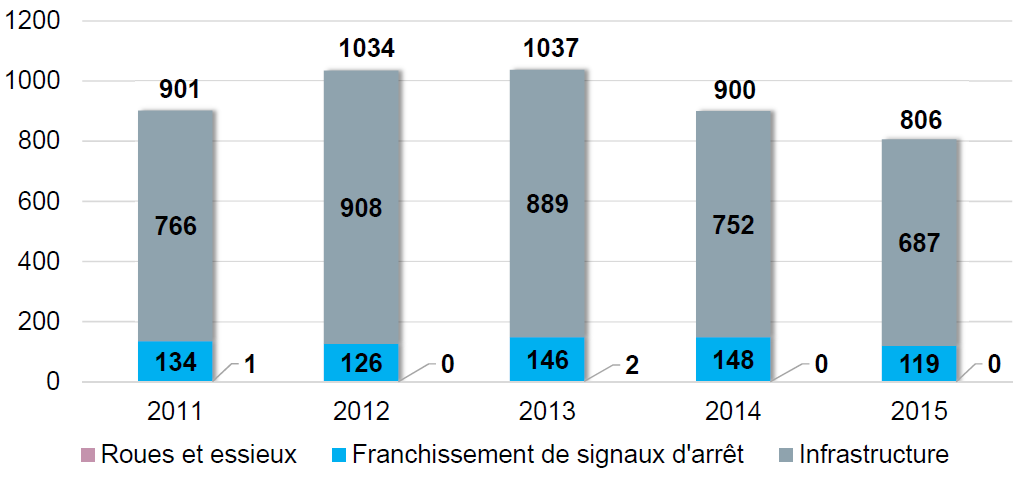
### Precursor events (warning signs of accidents)

Among the CSIs, there is a category dedicated to precursor events, which may or may not have resulted in a ‘collision’ or ‘derailment’ type of accident, as defined in Annex 1 to Directive 2004/49/EC.

The following are included in the precursor events:

* failures in the functioning of wheels and axles of rolling stock;
* for infrastructure, broken rails, track buckling cases and signal breakdowns;
* signals passed at danger without permission.

**Summary of precursor events in absolute terms**



|  |  |
| --- | --- |
| Roues et essieux | Wheels and axles |
| Franchissement de signaux d’arrêt | Signals passed at danger |
| Infrastructure | Infrastructure |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2011 | 2012 | 2013 | 2014 | **2015** |
| Broken rails | 274 | 335 | 301 | 219 | 195 |
| Track buckling (VR\*) | 171 | 217 | 172 | 138 | 163 |
| Signal breakdowns | 321 | 356 | 416 | 395 | 329 |
| **Total infrastructure** | **766** | **908** | **889** | **752** | **687** |

\*Slowing down value

Generally, the number of precursor events per million train-km continued the downward trend that began in 2014. In 2015, this number had dropped another 11%, reaching the lowest level in the past five years.

In detail and starting with failures in the functioning of wheels and axles, 2015 is the second consecutive year in which no events are to be reported.

With regard to the precursor events linked to infrastructure, although overall they are declining, nonetheless, there are differences depending on the categories. In fact, the number of broken rails and the number of signalling failures per million train-km have fallen respectively by -12% and by -17%, whereas, on the other hand, the number of track buckling cases per million train-km has increased by 17%.

This year, as in 2014, the ‘rails files hautes’ action plan implemented in 2012 and the mild temperatures of 2015 made it possible to achieve good results with broken rails. The breaking of thermite weldings has decreased by 47% and the breaking caused by corrosion by 31%.

Signalling failures have also declined in 2015 for the second consecutive year. In addition to the continuous improvement of equipment, the measures taken in 2015 relating to human and organisational factors, such as raising the awareness of staff on self-checks, feedback, or also training on ‘awareness of business risks’ yield results. The action plan to combat de-shunting was significantly improved in 2015, after six events which were classified as critical took place during the year (see Chapter 3.3).

Finally, the number of signals passed at danger per million train-km has fallen by 17% in 2015 compared to 2014. The action plan ‘Signals passed at danger’ (SPAD) (FSA, ‘Franchissements des signaux d’arrêts’) implemented by SNCF Réseau in July 2014 continued in 2015. The EPSF also set up a working group with operators on this topic as further described in Chapter 3.1.

# Improvement and railway safety initiatives

## Signals passed at danger (SPAD)

At the REX seminar organised by the EPSF in January 2015, it was decide to set up a working group of professional drivers among the railway operators who volunteered after the following observations:

* an increase in the number of signals passed at danger by drivers since 2012;
* methods for analysing and identifying the non-homogeneous causes between railway operators make it difficult to assemble, share and define national positioning;
* direct sharing between the less developed operators.

The first exchanges with the participants showed that a majority of the SPADs occurred during the commissioning of the trains (in the amount of 40%) and highlighted some common denominators, such as the passing of purple stop signals in places that are familiar to drivers (close to the start and end of their service), and signals whose identification is difficult (signal on a curve or on a bracket).

The group focused mainly on taking into account organisational and human factors in the management of SPADs by the operators.

Its roadmap contains the following working areas:

* the sharing of experiences on this topic;
* the development of a common analysis method;
* the identification of causes and precursor events;
* the assembly and sharing of analysis;
* the proposal and the implementation of individual and collective actions.

During the six meetings held in 2015, the group produced:

* a cartography which enables precisely locating the SPADs occurring by using an export of the data recorded in the VIGIE database of the VIGIE since 2006. These elements, which can be made available in particular during the training of train drivers for the extension of competence to new lines, make it possible to pay particular attention to the stopping signals which have already been passed. This cartography also makes it possible to detect the recurrence of the same signal passed at danger;
* a guide suggesting a method and a complete process for the handling of SPADs from their immediate investigation to the implementation of corrective actions;
* A grid of evaluation and recording of the results of the analysis to use, share, propose and implement the adapted measures.

A sample of about 50 SPADs occurred between 2014 and 2015, selected by railway operators and analysed prior to the creation of the working group, has given a first insight into the distribution by groups of factors.

The causal factors identified in the course of the SPAD analysis can be divided as follows:

**53% are related to human factors:**

* 72% are related to driver performance (physical or psychological performance);
* 28% are related to the skills of the drivers (theoretical knowledge, practical knowledge and social skills).

**29% are related to organisational factors:**

* 25% are related to collective work/co-activity (organisation, communication, etc.);
* 20% are related to the service design of the drivers;
* 18% are related to documents and procedures concerning traffic safety (quality, clarity, ergonomics, etc.);
* 17% are related to the general organisation;
* 11% are related to training (quality of training);
* 9% are related to management.

**15% are related to environmental factors:**

* They concern the environment outside or inside the driver’s cab.

**3% are related to technical factors:**

|  |  |
| --- | --- |
| A\_Humains | A\_Human |
| C\_Techniques | C\_Techniques |
| D\_Organisationnels | D\_Organisational |
| B\_Environnementaux | B\_Environmental |

On this small sample of SPAD, the human factor is the leading one and orientations are already evoked in particular:

* the development of technical equipment covering human factors, such as ATP Automatic Train Protection (KVB, ERTMS, etc.) on RFN and the comparable networks;
* the development of the FOH approach for railway operators;
* the performance of the training devices of drivers.

Thanks to the motivation of the working group and the first encouraging results, the work will be continued in 2016 to develop the process, define national focus, propose and implement specific measures, while always ensuring there is regular communication with all railway operators in relation to progress and the results achieved.

At the same time with this work, other actions have been implemented or planned:

* information and monitoring on the further development of the KVB on infrastructure;
* a benchmark with Belgium on ‘Spadrisk’ (a tool which makes it possible to measure the level of severity of the SPADs) and Switzerland on ‘Warnapp’ (tool which makes it possible to combat SPADs during the commissioning);
* closer collaboration with infrastructure managers on various topics, such as train path designing, signal closures, operational management of parking and garage lanes, compliance with the schedules, visibility of signals, etc.).

## Fires of rolling stock

During 2015, the level of safety was influenced by the problem with the fires of rolling stock, which appeared in the course of two observations, namely, on the one hand, the increase in the number of ‘significant’ accidents occurred in this category, and on the other hand, the occurrence of several major accidents. These fires mainly involved the rolling stock of passengers.

The number of ‘significant’ accidents with regard to rolling stock fires has increased compared to 2014 (see chart below). It reached a high number (8) in comparison with 2013. Among these eight accidents, six are classified as ‘significant’ accidents because they caused material damage in the value of more than EUR 150 000, and only one which resulted in a traffic interruption of more than six hours. The fire of the TGV engine on 21 August in Grenay (department 38) caused at the same time a damage of more than EUR 150 000k [sic] and a traffic interruption of more than six hours. No deaths or serious injuries were documented in these accidents.

This increase in ‘significant’ fires is not observed for fires of rolling stock that are less serious, as, for the latter, 30 events are counted to have occurred in 2015, which remains at the average level over the last five years. The degradation of safety performance in the case of rolling stock fires is mainly due to the increase in the number of accidents belonging to the most serious categories.

These serious fires occurred mostly during the period from May to August 2015. Significant accidents include, for example, the accident in Lunel (department 34) on 2 August – a fire on an AVE (high-speed train travelling on the Spanish network) – and the accident in Grenay (department 38) on 21 August – the fire in a TGV engine. These two events have had significant consequences on rolling stock and infrastructure. In both cases, the engine suffered a major damage as a result of the fire, which required the transhipment of the passengers.

The analysis carried out on all these events does not reveal any certain type of materials or technology particularly involved, and they also concern all types of engines. The causes identified concern technical cleaning (absent or insufficient), failures of certain components and possible non-conforming electrical connections.

The actions undertaken by SNCF Mobilités as an entity in charge of maintenance (ECM) for the materials concerned have been both curative and preventive to manage the fire risks of rolling stock:

* Implementation of giving feedback for each accident together with the investigation of its causes, alerts, park condition checks, training, modifications to maintenance rules, etc.);
* implementation of technical modifications;
* review of documentation related to the cleaning of technical equipment;
* work on preventive actions using the most recent technologies, such as the use of thermography in electrical maintenance to detect bad crimping, electrical overloads or bad connections. These actions also aim at the detection of smoke or the problem of overvoltages in the network.

These actions concern both the technical aspect with regard to the modifications of components but also human and organisational actions regarding the maintenance rules, especially on documenting the implementation of cleaning procedures.

## Shunting

**Problems**

Shunting involves detecting the presence of rolling stock on a section of a track to space the trains or stop them in front of special points (stop signals) to avoid events such as: collision (on the side, nose-to-nose, crashing into the rear part), crashes on level crossings (LC), on the crossing of pedestrian lanes (CPL) and derailments on a switch.

The track circuit is an electrical circuit formed by a transmitter, a transmission line constituted by the rails and a receiver, which enables the presence of a train to be automatically detected on a section of track.

By passing over the track circuit, the axles of the train enable the track circuit receiver to detect its presence on a track section (the axles of the train ‘shunt’ the signal emitted by the transmitter and the receiver receives virtually no more signals: there is ‘shunting’). This presence of the train then used to control the railway signalling and thus guarantee the safety of the traffic.

The ‘de-shunting’ [absence of electrical contact between the rail and the wheel of the train] occurs as soon as there is no electrical current in the axles (or when the current passing through them is too low): the system does not detect the presence of traffic on the track section while the train is there. As a result, signalling devices do not prevent the manoeuvring of switches, the opening of signals or no longer trigger announcements to control the lights and barriers of level crossings. In such a situation, and in the absence of technical or operational measures to compensate for this, the events (collision, crash, derailment) may occur.

The key factor lies in the quality of the electrical contact between the wheel and the rail, which can be mainly altered by the presence of oxidation (route with little traffic), grease on the wheels (maintenance of rolling stock), particles of silica or sand (environment, locomotive sand pits), parts of plants (autumn leaves) that isolate the wheels electrically from the track circuit. On the most heavily travelled routes, over and above a certain daily tonnage, this phenomenon is not seen, the railway traffic itself helps to eliminate the oxidation and to clean the railway. This phenomenon is observed in particular in the case of certain rolling stock for passenger transport and on locomotives used for freight traffic. The development of increasingly efficient rolling stock (in compliance with European and national regulations), which has braking techniques that limit the nuisance of noise and are so stable as to improve passenger comfort, plus the reduction in freight traffic on certain routes in recent years, affect the quality of the electrical contact between the wheel and the rail and contribute to de-shunting. The technical characterisation of ‘shunting’ is extremely complex because it involves a balance of numerous parameters related to infrastructure, rolling stock, operating conditions (nature and density of traffic) and the environment. The loss of or drifting from one or more parameters can alter this balance and lead to ‘de-shunting’. From the point of view of safety measures, two areas are different depending on whether these measures are implemented in the signal box **area** or **on the line**:

* **In all electrical signal boxes**, the detection of traffic on track circuits means that incompatible routes can be registered, allowing a registered route to be created as soon as there are the conditions for releasing the last switch interlocks that are incompatible with the tracked route. The occupation of the track circuit of a switch area prevents the latter from any change of position. It is therefore imperative that the train travelling on a route does not de-shunt in a switch area, as otherwise this might move by the formation of a registered route.

This feature was defective on 12 October 2015 in Sainte Pazanne station at the junction of the Pornic – Nantes and Saint Gilles Croix de Vie – Rézé (Nantes) lines.

Two TERs arriving successively from Pornic and Saint Gilles Croix de Vie had to be coupled in the station of Sainte Pazanne.

The first train crossed the switch in the direction of lane number 4 (to the left in the direction of traffic), then suddenly the tail bogie took the direction of lane number 1 (to the right in the direction of traffic) and derailed at a speed of 27 km/h. There were no injuries among the 12 passengers and the train staff.

The detection of electrically insulating contamination on the surface of the rail and on the wheel tyres resulted in a de-shunting for 2.6 seconds, which was sufficient for the computerised switching station system to lift the block and allow automatic rerouting to the next route that was registered for the reception of the second train.

* **On the line**, shunting is to protect track crossings (collision at level crossings or pedestrian crossings) and collisions between trains (nose-to-nose and crashing into the other train). Shunting must particularly ensure that the detection of the presence of a train continues.

On 11 January 2015, the computer system for maintenance assistance (CSMA) triggered an alarm concerning the abnormal operation of the track circuits between Dax and Saint Vincent de Tyrosse. The analysis of the records concludes that TER traffic was affected by seven cases of de-shunting.

From the point of view of railway safety, the main consequence for one of these seven cases of de-shunting was the failure to announce the arrival of the train, which in turn caused the closure of the LC within a normal period (bells, traffic lights, lowering of barriers).

**Measures taken**

A total of 65 de-shunting cases were noticed during 2015. In 28 cases, the technical safety measures implemented made it possible to limit the risks. In 31 other cases, operating measures helped to limit the risks.

For the last six cases, involving four passenger vehicles of X73500 type, a passenger vehicle of AGC type and a train of two locomotives of 66000 type, neither the technical measures nor the operating measures were effective. These are the critical de-shunting cases:

* on 11 January 2015, in Saint Vincent de Tyrosse: failure to close LC 108;
* on 18 May 2015, in Villefranque: premature opening of LC 8 which was still occupied by a train;
* on 25 August 2015, in Saint Aignan Noyers: failure to close LC 189;
* on 12 October 2015, in Sainte Pazanne: derailment;
* on 29 October 2015, in Tulle: risk of nose-to-nose collision following a de-shunting;
* on 3 November 2015, in Haubourdin: untimely opening of a half barrier of LC 15.

This feedback on de-shunting events, which was subject to regular and thorough monitoring by the EPSF, led SNCF Réseau and SNCF Mobilités to implementing, in application of their respective safety management systems , an action plan to reduce the occurrence of de-shunting and to ensure handling of the consequences of critical de-shunting occurrences. It concerns the strengthening and implementation of safety measures, whether they are operational or technical.

Five out of six cases of de-shunting referred to above are thus covered by this action plan. The sixth event, the opening of LC 8 in Villefranque on 18 May, exposed the particular risk of a collision of a road vehicle with a train that has not completely cleared the crossing after the premature reopening of barriers. This event is classified as critical, as it is not covered by technical or operational measures. However, considering that the driver on the road has the train in their field of view when approaching the LC, and even more so if they have stopped in front of the closed barrier, the level of risk does not appear to be anywhere near as great as for the five other critical cases listed above.

More generally, this action plan resulting from exchanges between SNCF Réseau, SNCF Mobilités and EPSF includes at the same measures covering signal boxes and train lines.

In the 292 signal boxes that also have route registering functions, the conditions for exemptions to the operating principle that prohibits use of the registration function for traffic susceptible to de-shunting have been strengthened. The prohibition of registration for X73500 type materials travelling in a single unit applies from now on in all the stations, without any possibility of exemption. On the other hand, for the other materials sensitive to the phenomena of de-shunting, the protocol of exemption imposes cumulative criteria for maintaining the state of cleanliness of the tread of the rail (number of daily traffic, monitoring of the state of pollution of the track circuits). These provisions led to an elimination of exemption in 175 (60%) registration stations.

On the line, the technical safety measures agreed upon provide for the installation of shunting aid pedals for all LCs controlled exclusively by track circuits The implementation priority is given to the most used LCs. Therefore, the 323 LCs where the period[[4]](#footnote-4) is ≥ 10 000, will be equipped by the autumn of 2016.

More generally, the criteria related to the de-shunting risks on which the principles of equipment and operation of the RFN are based on, date back to 2005. At the request of the EPSF, SNCF Réseau has initiated the update of this 2005 study so that the criteria and limits of this study can be re-examined by the current operating constraints of the network, while on the other hand, taking into account the lessons learned via feedback given. The results are expected to be seen by the end of 2016.

Finally, monitoring processes for rolling stock and track were the subject of actions contributing to contain the pollution factors (oxidation, sand, vegetation, grease, etc.) of the wheels and the rail. For example, it was necessary to adjust the periodicity of the monitoring, the reporting of pollution, the operations contributed to the cleaning of the railway and the wheels. The installation of about 50 recorders on track for monitoring the quality of the shunting must also contribute to the anticipation of the railway cleaning operations and will be carried out by September 2016 on the tracks that are most affected.

This action plan will be supported by organising the monitoring of each business's procedures (railway traffic, maintenance and works, maintenance of rolling stock, driving, etc.), the investigation and immediate expert report on de-shunting events, and giving feedback at a local level involving all the businesses.

On 9 December 2015, the EPSF, SNCF Réseau, industrialists Alstom, Bombardier, Vossloh Locomotives and IRT Railenium signed a protocol for the continued improvement of the safety of the network with regard to cases of traffic de-shunting.

The aim of this protocol is to implement innovative solutions for the safe detection of trains by developing new methods for assessing safety, better testing facilities and physical models to carry out the shunting analysis. These studies will make it possible in particular to:

* develop a method for the assessment of train shunting capability;
* develop a tool to help the decision-making and risk management.

In the medium term, this should lead to the availability of high-performance equipment for rolling stock and infrastructure to guarantee shunting capability.

The safety issues associated with the problem of shunting call for a significant commitment by the sector during 2016 so that significant progress can be made.

## Signalling failures

The year 2015 was marked by an improvement in safety indicators relating to signalling, such as the one relating to the number of signalling failures of average severity[[5]](#footnote-5) and the one relating to the number of signalling failures of major severity[[6]](#footnote-6), confirming the trend reversal observed in 2014 after several poor years.

|  |  |
| --- | --- |
| Gravité majeure | Major severity |
| Gravité moyenne | Average severity |

The level of these indicators, which constitute real precursor events in relation to the occurrence of accidents, still remains high and it is particularly difficult to get it below the levels of 2010/2011. It therefore demonstrates the need to continue the efforts undertaken. However, the confirmation in 2015 of a significant improvement is an encouraging trend.

Among the efforts made which help to explain this improvement, it is worth mentioning the implementation of an action plan initiated by SNCF Réseau in 2014, monitored by the EPSF, to reduce the number of events detrimental to the safety of traffic and caused by signalling issues. Improvement in the operational reliability of signalling equipment (devices to announce a temporary speed restriction (*limitation temporaire de vitesse*, LTV), electronic triggers, crossing barriers at level crossings) and taking more account of the organisational and human factors (FOH) in the analysis of the occurrence of events are the main focus of this action plan.

Nevertheless, these encouraging results did not prevent at the beginning of 2015 the occurrence of two new serious events related to the issue of signalling:

* the Paris Gare de Lyon (department 75) accident of 28 January 2015: a TGV derailed at a speed of 29 km/h at a switching point due to a lack of maintenance of the mechanical signalling installations after an accidental tilting of its switches when the crossing of the train had been permitted;
* and the La Possonnière incident (49) of 23 February 2015, during which a TER moving at the speed of 116 km/h had to use the emergency braking system when its driver had seen a closed signal and a train tail located in a canton before the signal, at a distance of 1.5 km.

These two events are in addition to the two major events in 2014, the Denguin accident of 17 July 2014 and the Achères incident of 9 December 2014, the causes of which were also directly related to the technical issue of signalling.

In view of the various existing investigative elements, it appears that these four events particularly are caused by the maintenance of the signalling installations of the national railway network (RFN).

The EPSF decided to concentrate its surveillance activities in 2015 on the technical issue of signalling.

The BEA-TT, in addition to the investigations carried out for the enquiries into three of these events[[7]](#footnote-7), employed a specialised company to analyse all these events from the viewpoint of FOH. The results of this study, which was concluded in September 2015[[8]](#footnote-8), highlight the preponderance of these factors in the occurrence of all these events and identify the real levers for improving safety in the areas of human resources management , references and operational maintenance documents as well as the organisation of work and maintenance.

The results of this analysis fully confirm a number of observations made in the framework of the EPSF infrastructure maintenance audits campaign since spring 2014 and concluded in 2015.

Finally, in 2015, SNCF Réseau started looking more and more at FOH when analysing the causes of events occurring in relation to maintenance and infrastructure works. SNCF Réseau also indicates that among other things, it is considering whether to include the FOH component in the various areas of its safety management system (SMS).

## Level crossings

In 2015, the number of people killed in a railway accident in the ‘LC users’ category has remained stable, unlike other categories which are falling. Thus, the ‘LC users’ category represents the main and most important cause of the number of fatalities in a railway accident (50%).

**Ministerial committee on the safety of level crossings**

On the occasion of the 8th International Level Crossing Awareness Raising Day, which took place on 3 June 2015 in Istanbul, the Secretary of State for Transport held the first ministerial committee in Nantes on the safety of level crossings.

This first ministerial committee, which will meet from now on once a year, aims to:

* follow the progress of the actions taken within the framework of the interministerial plan drawn up in 2013, analyse the results and identify the progress to be made. In this context, the Secretary of State has requested:
  + support, through more training, of awareness-raising measures for heavy goods vehicles, coaches and exceptional transport;
  + inclusion of relevant LC information in GPS;
  + preparation of a report on the efficiency of the 42 speed radars and 75 crossing radars of the LCs;
  + improvement of how telephones located near LCs are displayed to encourage vehicle drivers to use them in the case of emergencies;
  + making the awareness campaign of SNCF Réseau in cooperation with road safety part of this approach to raise awareness of risky behaviour;
* finalisation of the diagnostics on all LCs on behalf of the road managers;
* reconfiguration of the central coordination authority of the national policy for the improvement of level crossing safety involving FENVAC, the FNAUT, FNTR, UTP and AFT with a view to sharing and broadening ideas. Since the creation of this authority in 1997, it has been composed of representatives of central administrations (DGITM and DSCR), regional and local authorities (AMF, ADF and ARF), SNCF Réseau, EPSF, DREAL and the scientific network and technical department of the ministry (CEREMA and STRMTG)[[9]](#footnote-9).

**The central authority to coordinate national policy to improve level crossing safety**

This authority was created following the Port Sainte-Foy accident (1997). The main purpose of this authority is the coordination of national policy and the improvement of level crossing safety. Its work has a particular specification, namely to ensure the coherence of government action to improve the safety of level crossings, to encourage the coordination of the interventions of the various relevant parties (operators, users of the roads, directorates and services of central administrations, etc.) and to consolidate the follow-up of actions to improve or remove level crossings by targeting mainly those included in the national programme.

Thus, two main actions were initiated by this authority in 2015:

* The proposal of a new methodology for updating the list of level crossings included in the safety programme. This new methodology will be based on objective and precise criteria to replace the overly subjective criterion of ‘expert opinion’;
* The presentation of a national map of level crossing diagnostics from the elements transmitted by the prefects of regions on the 10 281 relevant railway crossings (LCs on which the train speed exceeds 40 km/h).

**Other initiatives**

On the regulatory side, a working group comprising all relevant railway parties and led by the DGITM was set up to review the Order of 18 March 1991 on the classification, regulation and equipment of level crossings. This working group started the consultations in 2015 and plans to publish the new version of the Order by the end of 2016. The major revisions of this Order have three objectives:

* to improve the display of telephones to be used for alerts in emergency situations;
* to improve the visibility of the LCs by adding flashing red lights on the opposite side to the direction of traffic when the road layout makes it difficult to see the traffic light difficult;
* to adjust the time for crossing LCs (the BEA-TT recommendation following the Allinges accident of 2 June 2008)

In addition, following the controls carried out by the EPSF in the course of 2015, several actions were taken by SNCF Réseau to respond to the observations made, such as the quality of the LC historical data. This action makes it possible to learn more about the nature of level crossings to adjust the equipment and maintenance.

Since many different parties are involved in safety at level crossings, they recognise that they need to share their experience. Therefore, a day of exchange and sharing of experience in relation to LCs was organised, in which DGITM, CEREMA, SNCF Réseau and the EPSF took part on 23 June 2015 in Nancy. During this event, the following subjects were covered in particular:

* the context and the issue of safety of LCs;
* the safety record and feedback on the European indicators;
* the accident analysis at level crossings;
* the local policy with regard to LCs: removals and improvements;
* the diagnostics of governmental directives;
* the studies and researches on the safety of LCs.

## The difficult issue of works

In line with previous years, a significant volume of work was carried out on the RFN in 2015. This results in the creation of renovation programmes for the national railway network, the VIGIRAIL plan (2014-2017) and the priority given to the maintenance by the Secretary of State for Transport in its action plan contributing to railway safety.

**Organisation and description of risks**

One of the main difficulties in organising the work on infrastructure is to reconcile the availability of infrastructure for commercial traffic and the access to it for efficiently carrying out this work, which in most cases require interruptions of traffic for at least several hours. The work is thus planned within defined time periods during which no commercial traffic is carried out.

These works, mainly carried out by SNCF Réseau, but also using subcontractors, can possibly create risks for railway traffic, which must be taken into account by the railway undertakings as well as by the infrastructure managers.

In application of their safety management system, railway undertakings, in cases when their regular traffic is impacted by this work, often have to reorganise their transport plan to obtain the replacement of the paths initially traced. This amendment is mainly due to last-minute train paths (SDM) between J-7 and J.

This last-minute planning strongly affects the human and material organisation of the railway undertakings and must be subject to paying a lot of attention to carefully issues. As a response, some of them decided to allocate specific means in pre-operational works to deal with this constraint on the organisation of their production.

In the case of SNCF Réseau, before the work begins, the relevant parties in the ‘Maintenance and Works’ (M&T) sector must ensure that no traffic will disrupt the work in the construction site. At the end of the works, and to authorise the return of commercial traffic, the ‘Railway traffic’ (CF) sector must obtain the guarantee that the infrastructure allows a totally safe resumption of the activity.

These operations require a perfect coordination between the M&T and CF sectors.

Carrying out the works also implies that particular engines travel on the RFN. The joining of two different traffic regimes (commercial and work related) can also be a source of risk.

**Incident analysis**

In 2015, in a context of large construction volumes, the incident analysis related to the works remained stable. A total of 312 safety events on the work was identified; while in 2014, it amounted to 315.

For certain categories of safety events, number of these events arising in relation to the works represents a significant proportion of the total events observed on the RFN. This is particularly the case for:

* signals passed at danger, in the case of which 18% of the events involve work;
* crashes on the track (50%);
* derailments on service routes (38%);
* the failures of closures at LCs (17%).

In order to reduce the number of safety events on construction sites, SNCF Réseau has undertaken a number of actions intended to cover such risks:

* at the interface level;
* between the personnel having authority over the machinist (WFP) and the machinists;
* between the M&T and CF sectors;
* between SNCF Réseau and its subcontractors;
* at the level of organisational and human factors (FOH).

**The interface between the personnel having authority over the machinist and the machinists**

The analysis of the signals passed at danger (SPAD) made it possible to establish a specific action plan implemented since mid-2014. The measures taken concentrate in particular on:

* reminder of the responsibilities of the PAM and the machinist;
* the establishment of an accreditation card for the PAM and for the machinist;
* the repetition of orders to ensure that each relevant party reformulates and correctly performs the actions they have to carry out.

This action plan made it possible to reduce the SPADs in relation to works by more than 20% between 2014 and 2015.

**The interface between the ‘Maintenance and works’ and ‘Railway traffic’ sectors**

The analysis of the incidents shows that one of the main causes results from the problems of interface between these two sectors. Therefore, to improve this relationship, SNCF Réseau has implemented the following measures:

* In certain regions, the creation of common trays which enable a better consideration of the requirements of the two sectors in the writing of temporary work orders (CTTx). This measure is intended to support the adoption and the applicability of these instructions by including the operational reality as much as possible;
* the creation of an M&T/ CF partnership, whose task is to disseminate the good practices observed and facilitate joint action to improve exchanges between local and national employees;
* the deployment of M&T and CF joint training programme for internal regulations on work on tracks and work trains (Regulation S9). The purpose of this measure is to reduce the number of incidents and accidents resulting from poor application of operating procedures on construction site areas.

**The interface between SNCF Réseau and its subcontractors**

In order to make this interface more reliable, SNCF Network:

* strengthens its qualification, selection and follow-up system of its subcontractors;
* involves subcontractors in the briefings carried out before the start of each project.

Through these measures, SNCF Réseau wants to ensure, on the one hand, that its subcontractors comply with the safety requirements and, on the other hand, through briefings, that all the relevant parties on the site are well coordinated and have the same information.

**Organisational and human factors**

To deal with the risks related to organisational and human factors (FOH), SNCF Réseau has worked in two key approaches.

🡺 The first key approach, where the impact is expected in the short and medium term, is to implement very specific measures to have control over the organisation and over the human factor.

🡺 The second key approach, where the impact is expected in the medium and long term, is to disseminate the culture of FOH within the company.

To deal with the organisational and human aspects of construction sites, the following measures have been taken, in the short and medium terms:

* In order to reduce the number of SPADs, it is requested that the procedures for the decommissioning of work trains is defined based mainly on the organisations and installations described in the local operating instructions (CLE). The number of special situations is therefore limited, which reduces the risk of SPAD linked to an organisation that is not supervision;
* since 2015, to cover the risk of derailment on the service roads used by construction sites, a diagnostics of the condition of these tracks has to be carried out before work begins. If necessary, repair works are carried out before the start of operations. This measure reduced the number of derailments by 30% between 2014 and 2015;
* In order to cover the risks of events whose origin is a misunderstanding of the tasks to be carried out, systematic briefings are organised before each working day. These sessions enable all relevant parties to have the same level of information and understanding of the tasks to be performed;
* In order to reduce the risk of incidents and accidents resulting from the non-fulfilment of a work or misbehaviour, the employees are stressed to implement the self-checks to verify that the tasks carried out during the works comply with the requirements. Experiments using computer tools are also planned and started. They consist, for example, in providing each agent with an IT application with a list of tasks that he has to perform. Each task must be validated in a predefined order. This validation sequence should allow the member of staff to question their self-checks;
* since 2016, some handcars are equipped with reflective strips allowing to better locate them at night to facilitate the visual checks before making the way to the traffic. This modification must make it possible to reduce the risk of collision due to an oversight on the track.

All of these measures demonstrate a high level of investment in controlling the risks associated with the work and spreading the culture of FOH. However, the effectiveness of these measures, mostly implemented in the course of 2015 or planned for early 2016, cannot yet be assessed. In any case, the considerable volume of works on the national railway network which is expected to continue in the coming years, and the risks related to them as mentioned above must continue to be the focus of attention of all stakeholders involved.

## The recommendations of the BEA-TT

The implementation of the safety recommendations issued by the BEA-TT by railway operators following the investigation of serious accidents and incidents is a priority of the feedback procedure for the improvement of railway safety. During 2015, BEA-TT carried out six investigations involving four derailments, a drift and a level crossing accident:

* derailment of a TGV train, on 28 January 2015 at the Gare de Lyon station in Paris;
* derailment of a TER on 12 October 2015 on the entrance to the Sainte-Pazanne station;
* drift of a TER train after a collision with cattle on 20 October 2015 in Serqueux;
* derailment of a TGV test train on 14 November 2015 in Eckwersheim;
* derailment of a TER, on 2 December 2015 in the station of Laroche-Migennes;
* collision between an abnormal load and an intercity train on 21 April 2015 in Nangis.

In September 2015, the BEA-TT published the final investigation report following the derailment of an intercity train on 12 July 2013 in Brétigny-sur-Orge. Three new recommendations on the maintenance management of the national railway network were made in addition to the first three recommendations of a more technical nature issued by the January 2014 progress report. These new recommendations addressed several managerial, organisational and human factors having probably affected, according to the BEA-TT investigation, the failures in maintenance processes of the crossing junction on which the derailment occurred:

* the general aging of the railway network which, by causing a multiplication of track maintenance operations carried out in the emergency to meet the needs of the operation, may lead to postponing certain tasks considered as secondary and may thus modify the representation in which the agents are engaged in the normal state of the installations;
* an organisation of infrapoles which may lead to entrusting the management of the teams to young executives who do not have sufficient experience and perspective, notwithstanding their involvement and their availability;
* control and audit processes that did not enable clearly detecting the deviation from the quality of certain maintenance operations on the track within the infrapole in which the Brétigny-sur-Orge sector operates.

These recommendations are therefore connected to the deployment of the modernisation of the network, the management of manager in the establishments responsible for its maintenance and the conduct of safety audits.

In 2015, the BEA-TT also issued four investigation reports after the following serious accidents and incidents:

* Collision as a result of the drift of a wagon with a train stationed at Modane station on 24 January 2013;
* collision between a TGV and a load-carrying road vehicle on 15 October 2013 in Saint-Rémy-de-Sillé;
* Drift in the opposite direction for 400 metres of a TER on 18 December 2013 in Mérens-les-Vals;
* Derailment of a wagon carrying used nuclear fuel in the shunting yard of Le Bourget at Drancy on 23 December 2013.

Investigations of the events at Modane and Mérens-les-Vals led to the formulation of recommendations concerning the technical specifications and maintenance of couplings and braking systems for rolling stock, as well as the maintenance and management of traffic on the tracks having continuous problems of adhesion.

The collision at the Saint-Rémy-de-Sillé level crossing resulted in a recommendation concentrating on the inconsistency between the configuration of the level crossing and its accessibility to lower vehicles.

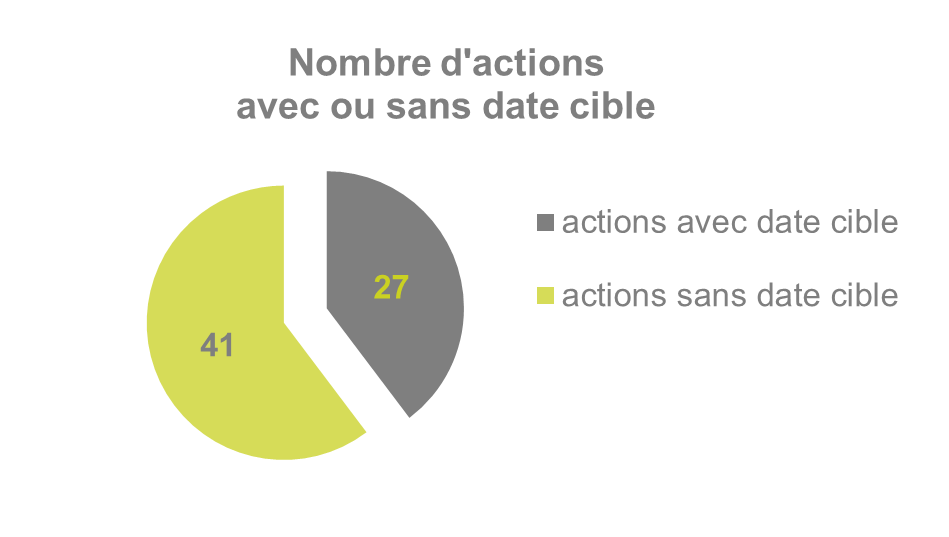
Finally, the derailment at Drancy did not lead to the formulation of recommendations, taking into account the BEA-TT’s assessment about its unprecedented nature due to an exceptional combination of different factors and the extremely low risk a similar incident may cause to humans.

**Status of follow-up of recommendations**

The graph below shows the status of the 132 recommendations addressed to the relevant railway parties by the BEA-TT since 2006. Annex 3 presents the progress made in 2015 in the implementation of these recommendations.

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| --- | --- |
| Ouvertes | Open |
| Closes | Closed |

By the end of 2015, 46 recommendations remain still open. In order to carry out a more pertinent follow-up of the implementation of measures in response to these recommendations, the relevant parties were asked during 2015 to commit to target dates for each of the measures planned or launched. By the end of 2015, approximately 40% of these measures had a target date (see chart below). This progress reflects the sector’s significant commitment to implementing the follow-ups to the BEA-TT surveys, a commitment which nevertheless remains to be intensified, to, on the one hand, reach 100% of measures with a target date and, on the other hand, to meet these deadlines set for the implementation.



|  |  |
| --- | --- |
| actions avec date cible | measures with target date |
| actions sans date cible | measures without target date |

In addition, 20 recommendations were closed in 2015. These include in particular the closure of recommendation R2 of the progress report related to the derailment in Brétigny-sur-Orge on 12 July 2013. The aim of those was to clarify and strengthen the rules on the measures to be taken in the event of the detection of irregularities affecting the second level attachments and the fastening of switches and crossings. As of February 2014, SNCF Réseau has written, disseminated and implemented a directive letter specifying the measures to be taken in relation with the situations observed on the joint bar bolts. This was followed by a phase of feedback before including the provisions in the SNCF Réseau internal business document on this maintenance operation. The dissemination and support in the implementation of this business document were achieved through the continuous training of operators. The whole process was finalised at the beginning of 2015.

Several recommendations concerning the level crossing accidents at Gimont (2010), Balbigny (2011) and Mesvres (2011) are among the recommendations closed in 2015. The measures concentrated on:

* the training of drivers of protecting and guiding vehicles of exceptional convoys;
* the modification or removal of level crossings;
* the addition of appropriate traffic signs to the approach of level crossings with difficulties in crossing lower vehicles.

## Improvement of how feedback is given

As part of the continuous improvement of the level of safety, the EPSF continued its mission of organising the common feedback giving of the railway system. Under the 2015 initiatives, two key approaches are identifiable: reinforcing the procedure for giving feedback and improving the system of giving feedback.

**Reinforcing the ‘system’ feedback procedure**

Since 2007, the ‘system’ feedback involves railway undertakings and infrastructure managers (SNCF Réseau and TP Ferro). In 2015 feedback began to be extended and this will eventually include all the other relevant parties in the railway industry.

🡺 In the first place, the three future infrastructure managers of the new high-speed lines were invited, without waiting for their safety authorisations, to be part of this process of disseminating the monthly information bulletins and by attending all **quarterly REX meetings** of the year. In addition to the quarterly meetings, involving the railway operators, the representatives of the Ministry of the Environment, Energy and the Sea as well as the BEA-TT, the feedback procedure was complemented by the implementation of specific meetings every 6 months bringing together the infrastructure managers, namely: SNCF Réseau, TP Ferro, the three future infrastructure mangers of the high-speed lines and the infrastructure managers of the ‘comparable networks’, i.e. the nine port infrastructure managers (maritime and autonomous), Eurotunnel and the CFL.

🡺 The EPSF is planning to broaden the ‘system’ feedback further to all other relevant parties in the railway industry while promoting a deeper understanding of the topics covered. These relevant parties are:

* training, evaluation and examination centres;
* the entities in charge of maintenance (ECM);
* the manufacturers of rolling stock;
* the qualified approved organisations (OQA).

The reasons for extending the number of relevant parties is to enrich and deepen the analysis of feedback on safety events by bringing together insights and reflections specific to the profession of each party. It also makes it possible to broaden and accelerate the sharing of lessons learned from this analysis.

🡺 The local component of the feedback system has also been supplemented in 2015 by organising the **‘REX territorial’ meetings**. The purpose of these meetings is to allow for an exchange between the relevant parties on the ground (RU and IM) regarding locally sensitive situations that might lead to a safety event, with the aim of carrying out the necessary preventive measures.

**Improvement of the system for giving feedback on safety events**

The second key approach of progress developed in terms of giving feedback in 2015 focused on improving the system for giving feedback on safety events.

🡺 In this respect, the first development concerned giving feedback on the events to the EPSF with two regulatory amendments. The first took place in August 2015 with the amendment of Decree No 2006/1279, which now requires operators to immediately inform the EPSF as well as the infrastructure manager, the BEA-TT and the ministry, of incidents and serious accidents. The second amendment, the preparation of which took place from spring 2015, resulted in the publication of the Order of 4 January 2016 on the notification to the EPSF on behalf of the operators of all larger scale safety events which the text has listed (classification).

🡺 In addition to improving the notification to the EPSF of the events that occurred on the network, this seeks to reinforce risk analysis and further develop it via feedback. This objective is specifically targeted by passing from 15 types of events historically used by the EPSF and mainly based on accidents (defined as more serious) and some significant incidents, to 65 types of safety events classified hierarchically in line with the European definitions of accidents and incidents and with the division of the structural and functional systems of the railway system.

In addition to the question of giving feedback on the events to the control authority, this development towards a better collection and consideration of more detailed indicators makes it possible to characterise more precisely the safety issues at the operator level. It is part of moves taken in relation to a safety culture by several operators and it can also be brought closer to the joint approach of the ‘severity scale’ working group launched in 2014. This working group continued its discussions in 2015 to define the principle of a scale consisting of six levels:

* Level 1: ‘minor’ safety event
* Level 2: event that could have had material consequences, and even minor injuries
* Level 3: event that could have had individual human consequences (one or two ‘seriously injured’ or one killed)
* Level 4: event that could have had several human consequences (many ‘seriously injured’ and/or many killed)
* Level 5: accident which had significant consequences (significant accident within the meaning of Directive 2004/49/EC)
* Level 6: accident which had serious consequences (serious accident within the meaning of Directive 2004/49/EC)

Like the safety events classification, this scale, the result of the joint work carried out by the sector in 2015 and which will be continued in 2016, is a founding tool of the common safety culture, the development, strengthening and deployment of which constitutes one of the main ways of improving the level of safety.

# Adoption of changes in railway safety regulations by relevant parties

The railway safety and interoperability regulations are constantly changing. The railway operators, training organisations, entities in charge of maintenance as well as the applicants for the authorisation of the commercial operation of infrastructure and vehicles must take these developments into account and adopt them so that they can be implemented in their daily operations, or even include them in their safety management system.

To assist them in this process, the EPSF provides a number of tools that are part of the overall regulatory framework.

Among these tools, there are some that help to understand the difficulties encountered in the adoption and enforcement of regulations by the sector: the regulatory activities’ days organised by the EPSF, the follow-up committee of the implementation of the Order of 19 March 2012 *laying down the objectives, methods, safety indicators and technical safety and interoperability regulations applicable on the national rail network* and the contact form on the EPSF website.

**The regulatory activities’ days**

The regulatory activities’ days, in addition to the presentations of the new regulations and the spreading of good practices, are places of exchange between the different relevant parties of the railway system.

Over the years, these days have been subject to a growing number of entries. This demonstrates that railway operators, who mostly have representatives in these days, put a great deal of importance on understanding the regulations to be able to apply them to the best of their abilities, and that they are demanding the organisation of such events.

During these exchanges, it appears that the large structures are well organised to be able to carry out what is commonly called the ‘regulatory watch’ and to implement the new provisions, although explanations are nevertheless important, especially with regard to major changes, such as the implementation of the Order of 7 May 2015 *on essential safety tasks other than train driving*, which replaced an order in force since 2003.

This is sometimes more problematic for smaller undertakings that do not always have all the necessary resources and for whom the support process on behalf of the EPSF must be more visible, as the requirements they are being subject to are the same as for the other undertakings.

**The monitoring committee of the Order of 19 March 2012: towards the establishment of an ‘interfaces and regulation committee’**

The monitoring committee for implementation of the Order of 19 March 2012, the establishment of which by the EPSF had been requested by the minister in charge of transport in the note added to this Order, was set up in 2012 by the EPSF by bringing together several relevant parties representing the sector (infrastructure manager and delegated infrastructure manager of the RFN, railway undertakings, training organisations, manufacturers, representative associations, etc.). It gathered twice in 2015 and permitted in particular:

* to understand the difficulties of implementing this Order by the sector, while underlining the overall coherence that this text provides;
* to propose the necessary amendments to this text (amendments which led to its revision in August 2015);
* to carry out in a constructive and coherent manner the development works, carried out by RFF (then by SNCF Réseau) and the EPSF, of the texts replacing those that were formerly annexed to the Order of 23 June 2003 repealed by the Order of 19 March 2012.

This committee was dissolved, due to the completion of this compliance work, in December 2015. However, the recognised advantages and efficiency of this proceeding demonstrated that it met a more general need. Additionally, the participants wished unanimously to maintain a body that would be the place for high-level informal exchanges on issues related to the regulation and its application. This new body, called the ‘interface and regulation committee’, was therefore created by common agreement, with the participation of the minister in charge of transport, as a continuation to the follow-up committee but with a more general objective with regard to all the problems related to the application of the regulation by the sector.

From the beginning of 2016, the creation of this new Interface and Regulation Committee will be extended to the minister in charge of transport as well as to all infrastructure managers, such as port authorities. The objective is to:

* facilitate ‘taboo-free’ exchanges on the safety issues relevant in the sector;
* address the interface topics;
* exchange views on related regulatory issues: application issues, suggestions for changes, simplifications, etc.;
* show some support for the spreading of good practice in relation to the application of regulation

**Feedback of the sector via the contact form available on the website**

The contact form available on the website enables all (professionals as well as individuals) to freely submit questions to the EPSF on different themes and, in particular, on the different types of authorisations and regulations in force.

This type of communication is complementary to that of direct contacting made by the professionals of the sector with the employees of the establishment, with all directions combined.

The questions asked most often relate to the implementation of specific points of the regulation, rather than a need for global understanding.

Even if the practical implementation may still remain problematic, as is regularly reported by the EPSF Controls Directorate during the audits, this is not, as a general rule, a misunderstanding of the regulation but more related to the difficulties of putting the theory into practice.

* **An example**

Prior to the implementation of a technical, operational or organisational change that may have an impact on safety, operators should assess the risk involved by applying the common safety method (CSM) on risk evaluation and assessment in accordance with the Commission Implementing Regulation No 402/2013. This topic raised many questions on the EPSF website, in particular with regard to the qualification of change.

In France, the implementation of the CSM may lead to the qualification of the change as ‘substantial’ and, in this case, the change must be subject to the authorisation of the EPSF, or as ‘significant’, which limits the analysis of the file to an independent body without being subject to the EPSF, or even as ‘minor’, which does not entail any obligation other than traceability.

This traceability of analysis must also be ensured by the railway operators in the other two cases, so that they are able to present them to the EPSF during its controls, and provide them with an annual report.

In 2015, of the 34 railway undertakings with a safety certificate and the 12 infrastructure managers with a safety approval, 19 operators applied the MSC one or more times during the year, that is 40% of the operators, which seems rather low in view of the developments that were regularly observed during the inspections (in total, the CSM were applied almost 400 times throughout the whole year). Several railway undertakings and infrastructure managers reported that there were no technical, operational or organisational changes during the year.

The following examples of application can be cited:

* implementation of a technical change: increase of bridge gauge, creation of a substation, creation of a remote control station, creation of a MISTRAL control station, replacement of rescue coupling, etc.;
* implementation of an operational change: commissioning of a new railway connection, positioning of anti-drift blocks, a line study by video, documentary dematerialisation, creation of a service road on a SEVESO site, reporting of irregularities, communication, etc.;
* implementation of an organisational change: creation of a safety directorate, centralisation of planning, reorganisation of an operational service, etc.

Overall, the common safety method related to the risk assessment and evaluation is still in the process of being adopted throughout the whole Europe.

# Lessons learned from authorisations and controls

The comprehensive review of the EPSF’s authorisation and control activities for 2015 is included in the EPSF activity report published on its website. This chapter focuses on the adoption of the concept of a safety management system and on taking into account human and organisational factors by the railway operators.

**The observations of the EPSF**

The purpose of safety management systems (SMS) is to organise in a systematic and reasonably comprehensive way the management of accident risks as well as to empower the organisation to do that. The concept of ‘SMS’ emerged in 2004 when Directive 2004/49/EC, known as the ‘safety directive’, was published. From 2006, the Decree No 2006-1279 on the safety of railway traffic and the interoperability of the railway system required that ‘each infrastructure manager and each railway undertaking develop a safety management system’.

The Regulations (EU) No 1158/2010 and (EU) No 1169/2010 concerning the common safety method for the evaluation of compliance with the requirements for obtaining railway safety certificates and obtaining a railway safety authorisation specify the information and procedures that need to be developed within the SMS of undertakings.

However, after 10 years of existence, the drafting of an SMS manual and associated procedures is still perceived very much as a regulatory obligation for obtaining a safety document (safety certificate for railway undertakings and safety authorisation for infrastructure managers). Therefore, undertakings are still too focused on the task of drafting a detailed manual rather than designing and implementing an internal safety management system recognised and well incorporated within the undertaking. This conclusion is based on the recurrent observations of the EPSF in various situations:

🡺 Some small newcomers with limited capacity to establish a SMS on the basis of a manual and structured procedures tend to contact the service providers who propose to establish and write these documents in their place, or even sell them a ‘off-the-shelf’ manual. If the documents drawn up for the authorisation are theoretically compatible, their adoption on the ground is all the more difficult as the documents were not, in this case, drawn up by persons in charge of safety themselves. This gives rise to discrepancies in the controls occurring in the months following the authorisation given by the EPSF and then, at best, to re-establishment of these documents, often at the cost of several iterations. This way of working, however, impedes the development of risk management.

🡺In the course of discussions with staff on the ground, few of them were able to situate themselves within the SMS. They admit that they do not have knowledge of the manual which should be given at all levels of the undertaking.

We remind people that the ‘SMS’ manual, the document of the highest level of safety, mainly represents the safety policy and objectives of the undertaking and is the responsibility of the manager for this matter. This manual must therefore be given and known at all levels of the undertaking, with each high-level process leading to applicable operational procedures and guidelines. Directive 2004/49/EC specifies in point 2 a) of Annex 3 that one of the essential elements of the SMS is ‘a safety policy approved by the Director-General of the organisation and forwarded to all the staff’.

🡺 For all operators, it is still rather uncommon that the interlocutors of the EPSF would spontaneously analyse a safety event and its causes by seeking to identify the stages or the processes of the SMS that led to a risk situation. This observation highlights the significant discrepancy between the correct description of an SMS manual and its application in practice. It is also due to a very inadequate inclusion of organisational and human factors (FOH) in safety management systems, while the railway system still relies strongly on people, respect for procedures, and factors related to an inadequate or disrupted organisation.

**Issues for reflection and measures taken.**

As a result, after addressing the SMS functions for risk management in the course of the 2nd railway conference in November 2014, the EPSF largely devoted its 3rd railway conference to the topic of FOH. Among the main points raised on this topic, it is necessary to recall the principles favoured by the most reliable organisations in high-risk industries to cover potential dysfunctions of interactions and problems of lack of knowledge or reasoning:

* the collegiality;
* the contradictory debate;
* managing gaps (internal to each organisation but also to interfaces between organisations);
* managing consensus;
* permanent and generalised interaction;
* the strengthening of signalling system and language used;
* the REX;
* FOH training;
* paying attention to the risks of failure to see things.

🡺 Through its licensing and control activities, the EPSF notes the attention and commitment of the sector in taking account of FOH but this must still be intensified and developed by all.

With regard to specific measures, this is reflected, as a first step for most operators, by taking more account of FOH in the analysis of safety events (see Chapter 3.1 on the signals passed at danger, for example). The operators also focus now on highlighting positive human behaviour in their analysis.

The operators who invest the most in FOH today do so through training activities for managers and operators, by setting up references and tools, such as briefings, self-checks and cross-checks or the ‘one minute pause’, by adapting the documentation and amending the monitoring of operators. In general, FOH processes are associated with the measures to strengthen the safety culture.

In general, these measures should enable there to be a significant rise in the level of safety if they are carried out efficiently. However, they are still very recent and if it is expected, and sometimes already stated, that locally they would give interesting results quickly, it is likely that their impact on the national indicators is still hardly perceptible in 2016.

The EPSF encourages each operator to intensify its efforts so that:

* the SMS manual is a reference document that can be operationally exploited by structuring and disseminating it to all employees who are involved in railway safety;
* the SMS covers the risks specific to its activity by giving some appropriate space to human and organisational factors, and not only with regard to feedback but also in design and operation, so that it also becomes more operational. This trend has already been incorporated into European legislation, as the Directive (EU) 2016/798 of the European Parliament and of the Council of 11 May 2016 on railway safety stipulates in its recital (18) that ‘Through its processes, the safety management system should ensure that human capabilities and limitations and the influences on human performance are addressed by applying human factors knowledge and using recognised methods’.

**Annex 1 - Definitions: common safety objectives and indicators**

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Directive 2004/49/EC introduced the harmonised assessment of the level of railway traffic safety and of the operators’ performance at the Community level and in the Member States. The assessment principles can be described in the following three points.

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**Common safety indicators (CSI)**

The CSI are calculated for each country on the basis of observable data. Annex 1 of the directive, along with its appendix, gives these indicators which are defined on a common basis. In particular, it indicates the number of people killed and ‘seriously injured’ at the time of railway accidents, broken down according to the following five types of people:

* passengers;
* employees, including subcontractors;
* level-crossing users;
* unauthorised persons on railway premises;
* ‘other’ people.

For each type of person, it is possible to determine the MBGP indicator (*Morts Blessés Graves Pondérés* – deaths, serious injuries weighted) corresponding to the sum of the number of fatalities with 0.1 times the number of ‘severe injuries’.

**Common safety objectives (CSO)**

Eight risk categories have been defined and calculated on the basis of the MBGP of the five categories of persons put into perspective by the volumes of activities (train-km, passenger train-km and traveller-km) or indicators describing the infrastructure (number of LCs and number of track kilometres).

|  |  |
| --- | --- |
| Risk categories | Measurement unit |
| **1.1 Passengers** | Passenger MBGPs / passenger train-km |
| **1.2 Passengers** | Passenger MBGPs / passenger-km |
| **2. Employees** | Employee MBGPs / train-km |
| **3.1 Level-crossing users** | Level-crossing user MBGPs / train-km |
| **3.2 Level-crossing users** | Level-crossing user MBGPs / [(train-km \* number of level crossings) / track-km)] |
| **4. Others** | MBGPs ‘others’ / train-km |
| **5. Unauthorised persons** | MBGPs unauthorised persons / train-km |
| **6. Societal** | Total number of MBGPs / train-km |

The eight CSOs are therefore the target values set for each risk category. These targets are calculated in compliance with the common safety method (CSM) described in Commission Decision 2009/460/EC of 5 June 2009. This decision provides for the introduction of national reference values (NRVs) for each risk category, constituting target values making it possible to quantify the current safety performance of railway systems in the Member States.

In comparison with the other European countries and basing on the figures for 2014 provided by the European Railway Accident Information Links (ERAIL), it can be noticed from the graph given below that France ranks in the 8th place of the indicator of MBGP with regard to traffic, which represents a decline of two places compared to the previous ranking, in which France was ranked in the 6th place.

**Assessment of NRV and CSO achievement**

The principles for assessing the achievement of NRVs and CSOs are also described in Decision 2009/460/EC, notably in Annex 2. The flowchart below can be used to assess the safety performance for each target value relating to a risk category (NRV or CSO): ‘Acceptable’, ‘Possible deterioration’ or ‘Probable deterioration’.



# Annex 2 - Common safety indicators

This annex presents the common safety indicators (CSIs) defined by Directive 2004/49/EC. These are the annual changes calculated as five-year moving averages. So the value for 2015 corresponds to the average of the values for the period from 2011 to 2015. In comparison, the data presented in the ‘2.2 – Safety indicators’ section of the charts are not the result of moving averages.

**Accidents presented by type**

**Deaths broken down by type of person involved**

**People seriously injured broken down by type of person involved**

**Accident precursors**

# Annex 3 – Follow-up of the recommendations of the BEA-TT

This annex summarises the follow-up carried out in 2015 by EPSF of the measures implemented further to the recommendations made by BEA-TT to railway sector stakeholders.

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| **Reports published in 2006** | Caption code: Closed = C; Open = O |

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| --- | --- | --- | --- | --- | --- | --- |
| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 12/2006 | Collision between a TER train and a lorry on a level crossing in Saint-Laurent-Blangy (62) on 9 June 2005.  Saint-Laurent-Blangy (62) on 9 June 2005 | R1 | Pursue the examination of the solutions (a bridge or underpass or new route) making it possible to do away with this LC, in order to arrive at a decision and accomplish it as soon as possible. | SNCF Réseau  General Council of department 62 | Radars were installed and commissioned in September 2014. Concerning the proposed cancellation of LC83, the a preliminary study was presented to the GC62 at the end of 2014. It appears that there is a significant additional cost (around EUR 2 million) due to heavily polluted soils bordering the future work which were not identified in the preliminary study.  As a result, exchanges are going on between SNCF and GC62 to find the best economic solution to this project (work target set in 2018). | O |
| 11/2006 | Derailment of a Corail train in Saint-Flour (department 15) on 25/02/2006 | R4 | Establish a programme to upgrade lines open to passenger traffic that are equipped with bullhead rails.  In time, organise the gradual replacement of bullhead rails with Vignole rails given the ageing of the bullhead rail stock, the growing maintenance costs and the high risk of derailing in the event of a rail breakage. | SNCF Réseau | A bullhead rail elimination programme will be established during the first quarter of 2016 and will be provided to the EPSF.  On 1 January 2015, less than 500 km of main tracks open to passenger traffic in operation were equipped with bullhead rails.  The target of 411 km by 2016 should be reached. | O |

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| **Reports published in 2007** | Caption code: Closed = C; Open = O |

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| --- | --- | --- | --- | --- | --- | --- |
| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 11/2007 | Passenger accident in Chaville-Rive-Droite station (department 92) on 10/11/2006 | R1 | For rolling stock requiring significant maintenance in the workshops, examine modifications that make it only possible to open doors manually after actuation of an SAI at a speed threshold lower than the lowest detectable speed; establish a programme for the implementation of these modifications. | SNCF Mobilités | Deployment of changes in progress for the relevant series.  On 10 December 2015: 60.2% Z2N park has benefited from OM.  Z20500: implementation rate track D = 46.2%, track P = 100%, track C = 76.5%.  Z5600 and Z8800 implementation rate track D = 50.9%, track U = 71.4%, track C = 55.1% Z20500 hybrid implementation rate track D 68.9%.  Z 6400 and VB2N: no modifications are to be expected.  Z 6400 and VB2N: no modifications.  100% of Z2N (5600/8800/20500 or 309 carriages) will be modified from now until December 2016  Z20900: the 54 trains will be upgraded from 2018 to 2023.  The Z22500 or Z50000 will benefit from the required functionality. | O |

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| **Reports published in 2008** | Caption code: Closed = C; Open = O |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 04/2008 | Derailment of a maintenance locomotive in Carcassonne (department 11) station  22 February 2007 | R2 | Examine the installation of a unified derail on track 4 between points 120b and 118a. | SNCF Réseau | Closed | C |
| 03/2008 | Person struck in Villeneuve-Triage (department 94) station on 1 March 2007 | R1 | Ensure a sufficient number of ‘Do not cross the tracks’ signs are installed, or any other equivalent system, and keep them clean so they are legible. | SNCF Réseau | Closed | C |
| 12/2008 | Derailment of a work train in Culoz (department 01) on 24 July 2006 | R1 | When bringing a specialist a piece of equipment (approved for railway works) incorporated in a works train from the works zone to the parking place and vice-versa, make the departure authorisation conditional on the prior remittal of a working order compliance certificate (AMOR) duly signed by the representative of this specialist equipment’s operator to the train formation operator in charge of issuing the departure authorisation. The latter can then transmit the ‘train ready for departure’ information to the delegated infrastructure manager’s officer who will then be able to authorise access to the network by opening the corresponding signal. | SNCF Réseau | Closed | C |
| R2 | Regarding future track works equipment with a complex architecture subject to the IN 1418 standard, check its ability to pass track warping and for the on-line test apply the protocol stipulated by sheet UIC 518 for vehicles with a new technology. This stipulates the measurement of the wheel/rail interaction forces Y and Q in particular. In the case of a train whose architecture is similar to that of the P21/95, perform these measurements on the working group’s axle at least. | SNCF Réseau | The recommendation is included in the framework of the drafting of the special operating rules CG MR3A No 3 and CG MR3A No 5. Upon the validation in accordance with the process of drafting and updating this type of text under Article 10 of Decree No 2006-1279, SNCF Réseau will publish it and make it applicable. | O |
| 12/2008 | Staff member struck by a train at LC 37 in Bayard (department 52) on 26/02/2008 | R2 | Examine a modification to the regulations for works in the immediate vicinity of an LC no longer stipulating the utilisation of guarding resumption lights but the utilisation of flashing red road lights to alert the announcer of an approaching train so that it can emit the announcement signal. | SNCF Réseau | Closed | C |

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| **Reports published in 2009** | Caption code: Closed = C; Open = O |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 12/2009 | Group of people struck at the Stade de France in Saint-Denis (department 93) | R3 | Put in place 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 Réseau | Closed | C |
| R5 | Review the installation policy regarding 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 procedures regarding this policy. | SNCF Réseau | The zones identified as being similar to the Stade de France (crowds gathering from time to time) have been identified and are being dealt with. The safety policy has not been published to date. While waiting for its publication, measures of placarding are taken by SNCF Réseau. | O |

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| **Reports published in 2010** | Caption code: Closed = C; Open = O |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 02/2010 | Collision between a coach and a TER train in Allinges (department 74) on 02 June 2008 | R2 | Complete the Order of 18 March 1991 (Article 10) indicating that the time for a level crossing to close must allow any authorised heavy road vehicle moving across at the moment a train is announced to pass the barrier on the other side before it comes down.  The verification of this condition must be carried in consultation with the road infrastructure manager so it can determine the time authorised vehicles take to cross.  If this leads to a time that is too long with respect to other considerations leading to limiting the announcement time (for example, risk of passing the half-barriers in chicane by imprudent users), consider prohibiting road vehicles that cannot complete the crossing in the time allowed. | DGITM | In progress, LC safety plan  All LCs of the national safety programme must be processed by 2018. | O |
| 12/2010 | Derailment of two dangerous goods wagons in Orthez (department 64) station on 24 November 2009 | R2 | Have the maintenance entities check the adequacy of the maintenance rules relating to the body-bogie links on tanker wagons with long wheelbases and have the instructions relating to the traceability of the interventions on these assemblies strengthened. | VTGF | Closed | O |
| AFWP | Working group put in place |
| R3 | Have modified and completed by the entities in charge of maintenance, the criteria relating to the play on the transoms of rigid wagons with long wheelbases so they are coherent with the standards relating to the track and sufficient to guarantee the ability of the wagons to pass warped sections. | VTGF | Closed | O |
| AFWP | Working group put in place |
| R5 | Put in place a rail greasing policy guaranteeing a sufficient level of greasing in zones where the severe geometrical characteristics and the presence of heavy freight train traffic generate a particularly high risk of derailment by wheel climb. | SNCF Réseau | Closed | C |
| 12/2010 | Collision between a train and the load on a train running in the opposite direction in the Livernant tunnel (department 16) on 20 May 2009 | R5 | Examine the ways which allow, by adapting regulatory document IN 1514-S2C or by making recommendations concerning the railway undertakings’ function documents, to ensure that train drivers presume there has been a gauge encroachment by the oncoming train when they hear an unusual impact noise when passing an oncoming goods train at night or when there is no visibility. | EPSF | In progress | O |
| DGITM | Closed |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 01/2011 | Derailment of a freight train in Neufchâteau station (department 88) on 22 May 2010 | R2 | Send the holders the recommendation to strengthen and ensure the reliability of the wheel crack detection cells on their wagons, in relation with their entities in charge of maintenance or their maintenance engineering service providers. | AFWP | In progress | O |
| 01/2011 | Collision between a TER train, a minibus and car in Amilly (department 87) on 3 July 2009 | R2 | Assess whether it would be appropriate to install the trackside-train radio alert system (SAR) in the traffic management operational centres (COGC) and the traffic control centres to effectively alert the trains in the case of obstacles on the tracks or imminent danger. | SNCF Réseau | Closed | C |
| 08/2011 | Derailment of a freight train in Bully-Grenay station (department 62) on 29 July 2010 | R2 | Contribute, at the European level, to the creation and implementation of a compulsory qualification and follow-up system for the workshops that have to work on brake manifolds and, more generally speaking, on the most safety-critical systems. | DGITM | In progress  Items provided during validation | O |
| R3 | Make a comparison with the main European networks of the consistency, density and quality of the problem monitoring and detection systems on running trains (excluding LGV) and search 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. | SNCF Réseau | The benchmarks served as input elements for the CCR (especially STEM) and X15 studies. These elements will enable closing the recommendation. | O |
| 10/2011 | Collision between a TER train and a lorry on an unguarded level crossing in Gimont (department 32) on 27/09/2010. | R2 | Quickly secure the access route to the hamlet of Julias, either by doing away with level crossing No 76, or by modifying the way it is crossed by installing sound and light signalling and by straightening district road No 10 as it approaches the LC. | SNCF Réseau  Gimont Commune | Closed | C |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 01/2012 | Derailment of a freight train in Neufchâteau station (department 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 through the intermediary of the European Railway Wheels and Wheelsets Association (ERWA) for Valdunes) in order to promote a study and test campaign making it possible to assess the real forces to which tanker wagon rolling systems are submitted on line and in marshalling yards, as well as the interactions of these requirements, so they can be taken into account in the design standards for wheels. | SNCF Mobilités | Closed | O |
| EPSF | This recommendation did not appear to be particularly practical. So no specific action has been planned. |
| Valdunes | 31 December 2015  Not closed.  Items provided during validation |
| R2 | Intervene with the European standards bodies to have roughcast wheel plates removed from the European design and manufacturing standards for wagon wheels, awaiting sufficient improvement in the knowledge of the impact of their surface characteristics on their fatigue life. | BNF | In progress | O |
| R6 | Intervene with Bureau CUU to have wheel plate crack detection at the time of exchange technical inspections and of post-repair verifications more explicitly highlighted in Annexes 9 and 10 of the uniform utilisation contract. | SNCF Mobilités | Closed | O |
| NACCO | 31 December 2015  Not closed  Items provided during validation |
| VTG | Closed |
| R9 | Take action at national level and with the European Railway Agency to ensure that the holders of wagons and the entities in charge of maintenance put in place organisations and tools allowing them to know 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 European Wheel Traceability (EWT) guidelines | EPSF | Closed | C |
| AFWP | Closed |
| 05/2012 | Collision between a TER train and car heavy goods vehicle in Saint-Médard-sur-Ille on 12 October 2011 | R2 | 1. Carry out an assessment of the conditions for the implementation of the policy for improving the safety of level crossings, concentrating in particular on:  * the procedures for drawing up the list of level crossings known as ‘worrying’ in terms of the relevance of the classification criteria, taking into account the safety diagnostics provided for by the circular of the minister responsible for transport issues in July 2008 and validating this list; * clarification of the steps and measures involved in the registration of a level crossing in this list, in particular with regard to planning and carrying out studies and landscaping projects or the removal of such crossings; * the steering of this policy, in terms of monitoring and possible reorientation of the measures already taken or to be taken; * the role of the national coordination authority for the policy of removing and redeveloping level crossings in the course of implementation of this policy.  1. Implement the adjustments that will result from this assessment. | DGITM | In progress, LC safety plan | O |
| 06/2012 | Collision between a goods train and an outsize lorry transporting metal beams stopped by LC No 222 in Balbigny (department 42) on 25 January 2011 | R3 | Have information drawn up by RFF and SNCF and distributed to the professional road transport organisations regarding the specific dangers of crossing level crossings for outsize lorries drawing their attention, in particular, to the precautions to be taken to avoid being immobilised and situations where protection must be requested from the railway infrastructure manager. | DGITM | In progress | O |
| 07/2012 | On-line derailment of two wagons in Artenay (department 45) on 09/03/2011 | R1 | As an entity in charge of maintenance, introduce in your own maintenance documents and apply the inspection criteria for the pins under vehicles defined in the European Visual Inspection Catalogue (EVIC); as a member of the International Union of Private Wagons (UIP), intervene to have the criteria in this professional association’s maintenance handbook brought into line with those of EVIC. | NACCO | Closed | C |
| 11/2012 | Catch-up of two freight trains in Maillé (department 37) on 01/02/2012 | R1 | Ensure the recording and traceability of the regulators’ and traffic managers’ safety communications made from their service landline phones.  *Furthermore, BEA-TT invites the railway operators operating on the national railway network to remind their drivers of the safety requirements that apply when running on sight, notably, regarding vigilance and control over their train’s speed, so they are in a position to stop ahead of any signal or obstacle.* | SNCF Réseau | Three initiatives were taken by SNCF Réseau with regard to the recording of conversations with the stations:   * + - * In the short term, deployment of recorders on existing telephone switches on 100 to 120 sites which will be deployed during 2016. These sites have been chosen for their importance and technical capacity which enables the installation. The next step is to identify those stations that have technology that does not allow rapid deployment.       * In the medium term, registration on the core GSMR network is planned for mid-2017. Specifications of expected functionality should be provided prior to the decision of implementation.       * In the long term, the deployment of the TFNG will include the ‘registration’ functionality. | O |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 06/2013 | Collision between a TER train and car in Breuil (department 69) on 04/12/2011 | R1 | Define and implement as quickly as possible the national safety programme for unguarded level crossings with a St Andrew’s cross. | DGITM | In progress | O |
| R2 | As part of the national policy for improving the safety of level crossings, asking prefects to contact the local authorities to ensure that appropriate measures are taken, so that access to unguarded level crossings at Saint-André, which are serving only a few local residents, is rapidly and strictly limited to these people. | DGITM | 31 December 2015  Action not closed  Items provided during validation | O |
| R3 | Take the necessary measures to remove level crossing No 65 on the Lozanne to Paray-le-Monial railway line and, meanwhile, strictly limit access to it to local residents by any appropriate means.  *Furthermore, without making any formal recommendations, the BEA-TT:*  *- Invites the railway undertakings to ensure that their drivers comply with ‘S’ signs and, more generally, with the rules for using the horn;*  *- Draws the attention of the RFN (Réseau Ferré de France) to the fact that the environment around certain unguarded level crossings at Saint-André makes the warnings given by trains difficult to hear, thus increasing the risk incurred by road users, and invites them to take that into account in the safety programme for these level crossings.* | SNCF Réseau  Prefecture of Rhône  Commune of Breuil | A cost estimate has been drawn up. Given the cost, a study has been launched to do away with this LC. The removal date will be determined when this study has been completed.  The proposal of SNCF Network is to remove the LC via a transfer on an old communal road. The mayor of the commune refused this solution, demanding the construction of an interchange. The SNCF Réseau does not wish to commit itself financially beyond the cost of restoration of the former communal road. The price difference between the two solutions is around EUR 4 million.  Following a meeting held in the sub-prefecture of Villefranche for the removal of the LC, it seems that the mayor has revised his statement. | O |
| 06/2013 | A motor-car hit an insulator in Sevran (department 93) on 01/02/2012 | R1 | Monitor the trend regarding the number of breakages of Vt 200223 type ceramic insulators.  In the event of a significant increase, remove the insulators of this type used in main-track catenaries in positions where they could be impacted by railway traffic in the case of breakage. | SNCF Réseau | Closed | C |
| R2 | Identify the characteristics of the front windscreens and of the screen heaters on the rolling stock, and the rules for using these windscreen heaters.  For rolling stock equipped with front windscreens that do not comply with the EN 15 152 European standard or the NF F 15-818 French standard or an equivalent national standard, examine the possibility and relevance of improving the protection in cold weather against projectiles penetrating the driving cab, for example by clarifying the windscreen heater utilisation rules or by planning the replacement of the glass with screens offering a better resistance to impacts at low temperature. | All railway undertakings | In progress | O |
| R3 | Make sure that the changes made to the EN 15 152 European standard relating to the front windscreens of rolling stock take into account the temperature-related variability in the glass’s resistance to impacts and guarantee that the drivers’ protection is maintained, or even improved over the whole temperature range habitually encountered on the national railway network and more particularly at negative temperatures.  *As a complement to this last recommendation, BEA-TT also invites the railway undertakings other than SNCF to work in the same direction in the national and international standardisation bodies they take part in.*  *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 the front windscreens of rolling stock, throughout the entire temperature range commonly encountered on the national railway network, including in hot weather with the windscreen heater in operation, and to share this knowledge in the framework of the works to revise the EN 15 152 standard.* | Saint Gobain | Closed | O |
| BNF | Actions in progress |
| SNCF Mobilités | SNCF’s intervention with the standardisation bodies (BNF ERA, sector, etc.), particularly regarding the EN 15-152 standard relating to the front windscreens of train cabs, is continuing in the direction desired by BEA-TT. |
| 07/2013 | Collision between a train and works equipment in Lachapelle-Auzac (department 46) on 4 July 2012 | R1 | In the framework of the feedback from the application of the work-site assurance processes and in order to avoid deviating practices from appearing, examine the conditions that would make it possible to facilitate, in complete safety, the utilisation of the equipment-guarantee process at the time of unforeseen works that only have a slight impact on railway traffic. | SNCF Réseau | The simplification of the safety procedures has been adopted as one of the priority areas in the large-scale multiannual initiative that is being implemented by the SNCF infrastructure directorate to ‘accomplish all works in complete safety’.  In particular, a great deal of work has been carried out to ‘ease the equipment-guarantee procedure’:  These provisions are already the subject of experimentation over a 6-month period, which will be followed by feedback aiming to validate its continuation. | O |
| R2 | Remind the staff in charge of works on railway tracks that strict compliance with the loopback and protection measures guaranteeing the absence of trains that would not be able to stop before arriving at worksites is an essential requirement. | SNCF Réseau | Closed | C |
| R3 | Ensure the recording of all the operations-related communications made from the traffic staff’s service telephones.  *Furthermore, BEA-TT invites SNCF to provide feedback on the utilisation of new catenary maintenance equipment of the LOR’AXE type and on the conditions under which their conductors are formed.* | SNCF Réseau | Three initiatives were taken by SNCF Réseau with regard to the recording of conversations with the stations:   * + - * In the short term, deployment of recorders on existing telephone switches on 100 to 120 sites which will be deployed during 2016. These sites have been chosen for their importance and technical capacity which enables the installation. The next step is to identify those stations that have technology that does not allow rapid deployment.       * In the medium term, registration on the core GSMR network is planned for mid-2017. Specifications of expected functionality should be provided prior to the decision of implementation.       * In the long term, the deployment of the TFNG will include the ‘registration’ functionality. | O |
| 08/2013 | Derailment of a passenger train in Mercuès (46) on 22 May 2012 | R1 | Define and implement procedures and methods for monitoring combined civil engineering works, that will make it possible to monitor them in their entirety, particularly when they include sensitive earthworks. | SNCF Réseau | SNCF is going to pursue its action on the joint updating of its procedures specific to monitoring its civil engineering works (CEW) and earthworks (EW) with a view to taking into account, in a cross-referenced way, the problems observed on both types of works.  To begin with, this system will consist of making the standards concerned coherent with each other: IN256  ‘Monitoring earthworks, drains and platforms’, and INI1253 ‘Monitoring civil engineering works and related constructions’, and of producing specific ‘Covered wall’ function guidelines.  An initiative will then be taken to raise awareness among the stakeholders involved.  MTM-DT-GC will establish a summary note which will comment on the work carried out on the different routes.  Validation of references planned for 2017. | O |
| R2 | Systematically take into account, in the knowledge of the civil engineering works’ environment and in the definition of their monitoring procedures, the data contained in the various information and prevention documents relating to major natural risks established by the public authorities (departmental major risk dossiers, district information on major risks, natural risk prevention plans, district safeguard plans). | SNCF Réseau | A meeting between the DGPR and the SNCF (Technical Engineering Department) was held on 5 June 2014 for this purpose. At the RFN level it is necessary to have direct and fluid access to the geographical data (GIS). For the moment, the response from DGPR only provides intermittent access using a public tool (Cartorisques), with limited effectiveness for the problem in question. The process was initiated with the DGPRN on 14 December 2015. A work is in progress for the rewriting of PPRNs. | O |
| R3 | To develop, on the basis of national and foreign road and railway implementations, simple real-time warning systems for railway traffic that can be implemented quickly while waiting for sustainable measures to be taken, in the event of dangerous disturbances affecting the works. | SNCF Réseau | The SNCF Network feasibility studies on the implementation of new simple warning systems are in progress.  A research project (Dimodo) was started in 2014. Previously committed benchmark measures are also being continued. They made it possible to identify:   1. A localised mobile system – the laser scanner – which will be tested in the field in 2015 (assessment of the test to check its ability to detect an obstacle and whether it should be included in the railway system); 2. A fixed linear system – optical fibre – which will also be tested in the field in 2015. This system is also being tested relating to the same problem on another European network.   Experiments are still ongoing or planned on fixed warning systems. The planned deadline is in September 2016. | O |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 01/2014 | Derailment of an intercity train in Bretigny-sur-Orge (department 91) on 12 July 2013  (Progress report) | R1 | Improve the overall level of control over bolted assemblies on points and crossings, by focussing on various factors, including:   * + - * the technical specifications and the 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 installation and of maintenance operations on these assemblies. | SNCF Réseau | Following the expert reports carried out, starting from summer 2014 two types of activity could begin:   * + - * the ‘short-term’ measures, which concentrate on improving the performance of the existing component parts. This involved manufacturing two bolt prototypes (end of September 2014), setting up comparison test areas (November 2014).   The end of the tests and the conclusions are scheduled for mid-2016.   * + - * The ‘medium-term’ measures aim, through a better understanding of how a splice bar works, to rethink the design of all or part of it. This is ongoing. | O |
| R2 | Clarify and strengthen the rules relating to the measures to be taken if defects are detected affecting the bolts on switches and crossings.  In this framework, indicate the maximum lead-time after any intervention or inspection round, within which all the bolts must be present and tightened. Likewise, indicate this same time for second-level attachments. | SNCF Réseau | Closed | C |
| R3 | Identify the switches and crossings or groups thereof that have special features requiring strengthened maintenance or early regeneration with respect to the general instructions.  Include provisions in the general maintenance organisation or in that of the site that ensure that these particularities are taken into account in a reliable and auditable way. | SNCF Réseau | Since 2015, the new process which makes it possible formally to adapt the machine maintenance to local conditions and which was defined at the end of 2014 has been at testing phase at several sub-centres. The feedback received at the end of 2015 shows that this experimentation should be continued in 2016. A new REX will be carried out in 2016. It should result in a generalised deployment in early 2017. | O |
|  | Collision between a TER train, a minibus and car in Amilly (department 28) on 27/11/2012 |  | On level crossings where the announcement continuity zone is separated from the short zone (downline setup) improve the safety of the ‘announcement resetting by the short zone’ function, either by means of a technical modification of the resetting circuit, or by means of a modification of the maintenance rules for the electrical junctions concerned. | SNCF Réseau | In the framework of the existing installations, for setups of this type, the systematic preventive maintenance rule will be modified: the short-circuit tuning blocks will systematically be replaced when they are 20 years old.  A survey of the blocks of over 20 years old has been carried out and their replacement is planned. The edition of the IN which will deal with the organisation of the noria is scheduled for the first quarter of 2016.  In the case of new or largely redesigned installations, the action brought about a correction to the Directive on studies of signalling – DES 167 and 190. | O |
|  | Amend specification SAM S 004 so the assessment of the shunting capability of diesel locomotives equipped with scrubbers coupled with the pneumatic brake take account of the fact that, during their lifetime, these locomotives will inevitably cover significant distances without braking. | EPSF | Actions in progress | O |
|  | Provide feedback focused on cases of de-shunting involving diesel locomotives running light.  Check whether the series equipped with scrubbers coupled with the brakes have a higher than average de-shunting frequency, only taking into account journeys done running light. Where applicable define the measures to be taken. | SNCF Réseau | Closed | O |
| EPSF | Actions in progress |
|  | Derailment of a TER train in Lyon Guillotière (department 69) on 26 June 2013 |  | Whenever 984 type axles are concerned, include the systematic check that the axle painting process is lastingly under control in the axle repair load allocation and workshop quality monitoring processes. | SNCF Mobilités | The production and repair of the 984 have been centralised in just two sites that have installations suited to this type of axle: the Languedoc Roussillon maintenance Technicentre (Nîmes site) and the Picardie industrial Technicentre .  These two sites’ safety monitoring plans include a verification that the repair procedure is applied. | O |
|  | Finalise the drafting of version B of technical data sheet TR1 018 relating to the elimination of axle defects and put it into application taking care, by means of any appropriate means, to ensure the instructions are fully understood and applied by all the staff responsible for implementing them.  Issue the surface honing training module (MAORRAG) to all the staff in the repair centres assigned to this task, including the staff already posted to this position. | SNCF Mobilités | The sheet was published in June 2014.  The training module (surface honing MAOR RAG) has been implemented since June 2014 and it is currently being issued to all the staff in the repair centres (completion scheduled for end of 2015). | O |

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| **Report date** | **Investigation title** | **No** | **Wording of the recommendation** | **Entity** | **Status of measures taken by the EPSF** | **Code** |
| 05/2015 | Collision following a drift in Modane (department 73) on 24 January 2013 | R1 | Tighten and clarify the maintenance rule with the objective to find and eliminate coupling tensioners which do not bear the marks of conformity with the European standard or Recognised national standards on the wagon fleet of which you are the entity in charge of maintenance. | ERMEWA | Prohibition to use the repaired or re-employed tensioners and in the event of replacement, use of complete tensioners in accordance with EN 15 566 of 2009. This standard requires, in particular, the affixing of a manufacturing date to the various components of the tensioner and a level of resilience higher than the one stated in the old French standard (NF F 10407) or in the UIC form 826 which it replaces.  In addition, systematic replacement of tensioners not bearing the manufacturing date by new tensioners during checks under general revision.  This measure will be deployed at the latest on the entire Ermewa industrial wagon fleet in September 2015  With these measures, the fleet will be fixed within a maximum period of 12 years | O |
| SNCF Mobilités  Stock Management | Starting from the first semester of 2016, checks during normal revisions, verifying the presence of the marking of each component of the tensioner as provided for in NF F 10407 / UIC526 or in NF EN 15566, and to discard all non-conforming tensioners and those whose screws have been used, calculated from its manufacturing year, for more than 30 years.  For the series of wagons having a normal overhaul interval of more than 12 years, extended monitoring to intermediate check-ups (periodicity of 6 years) to clean up the fleet within a maximum period of 12 years as also proposed by the ECM Ermewa for Its fleet of wagons.  In addition, SNCF examined the additional measures to be undertaken, and identified two measures to improve the reliability of the SCMT on BB36300, in order to significantly reduce the number of cases of untimely emergency braking caused by this system. |
| R2 | In the case of C3A and C3W type distributors, carrying out a research on the modification of the specifications of the ‘cut-off’ and ‘first-time’ cuffs devices, or of their assembly, is required to ensure the seal of the brake cylinder circuit up to -25°C for a lifetime consistent with the maintenance schemes. | FAIVELEY-TRANSPORT | As part of the continuous improvement of product performance, Faiveley-Transport analyses more precisely the recommendation R2 and works on the material and shape of the cuffs of the ‘cut-off’ and ‘first-time’ devices of the C3A and C3W distributors. Research and development of a duration of 12 months at a laboratory required to confirm the relevance and technical feasibility of this recommendation. | O |
| SNCF Mobilités  Stock Management | Considering the proposals that Faiveley would be able to make in relation with the materials to be used for the cuffs.  Follow-up of progress at regular points with Faiveley.  Decision on the follow-up given to the recommendations R2 and R3 from now on until August 2017 after the evaluation of the impact of the modification on their lifespan and the maintenance rules that would result from it, prior to modification of all distributors.  In addition, SNCF examined the additional measures to be taken, and identified two measures to improve the reliability of the SCMT on BB36300, in order to significantly reduce the number of untimely cases of emergency braking caused by this system. |
| R3 | As soon as the modification subject to the R2 recommendation has been finalised, it has to be applied during the revision of the relevant distributors of the wagons of which you are the entity in charge of maintenance. | SNCF Mobilités  Stock Management | O |
| ERMEWA | While waiting for the proposals of Faiveley Transport, no special measure other than the reinforcement of the controls and inspections concerning the correct application of the reference frame has to be taken. |
| 06/2015 | Drift of a TER in Mérens-les-Vals (department 09) on 18 December 2013 | R1 | Update the regional application document INFP MPY 01074 on the prevention of skidding, wheel blocking and de-shunting, taking into account the feedback and drivers’ alerts.   * In this context, include the line section linking Ax-les-Thermes to Latour‑de‑Carol among those that repeatedly present a degraded adherence requiring the implementation of suitable preventive and corrective measures. | SNCF Réseau | The route connecting Ax-Les-Thermes to Latour-de-Carol is now well identified as repeatedly presenting a degraded adhesion. The autumn railway cleanup campaign will cover this section of the route and the INFP MPY INFP MPY 01074 text is currently being rewritten. | O |
| R2 | Specify in the procedures manuals issued for the staff responsible for railway traffic management measures to be taken in the event of significant skidding, in particular when they are repetitive and not restricted to a specific location. | SNCF Réseau | A normative definition of the alert limits and the measures to be taken will be carried out by a working group comprising of the members of the trades ‘Traffic, Maintenance and Works, Access Network’ as well as railway operators. The retained guidelines will be included in the local operating instructions. | O |
| R3 | To set up, within the Toulouse service station, an organisation and a control which enable ensuring that every time an AGC type train passes through the station, all of its sand pits will be effectively used. | SNCF Mobilités | Immediately after the event, the systematic test of the pits by the drivers before departure on track was instituted.  From 2013, each warehouse attendant was monitored on level 1 by his local manager and completed product controls were set up by the entity in charge.    A traceability of those full pits is implemented at the two service stations concerned.  Finished product controls have been set up and live checks are also carried out. At the same time, the Midi-Pyrénées Technicentre is launching a study aimed at automating the tracking and traceability of full pits. | O |
| R4 | Improve the braking performance of large capacity self-propelled train sets in case of poor adhesion by:   * rapidly lowering to a level as low as possible compatible with the constraints on the equipment, the infrastructure and comfort of the passengers, the speed limit below which the pads of their electromagnetic brake must not be in contact with the rails; * prescribing and organising a systematic verification of the functioning and filling of their sand pits during all their passages in the service station. | SNCF Mobilités | In progress  A deployment plan for 2016 to 2018 is under preparation. | O |
| 06/2015 | Collision between a TGV and a load-carrying road vehicle in Saint-Rémy-de-Sillé (department 72) on 15 October 2013 | R1 | Prevent, by any suitable means, the access of low-loader vehicles to Municipal Road No 3 or resume the long profile of that road immediately in the north of level crossing No 128 so that these vehicles can cross it without becoming trapped. | SNCF Réseau  Commune of Saint-Rémy-de-Sillé | In progress | O |
| 07/2015 | Derailment of a wagon carrying used nuclear fuel in the shunting yard of Le Bourget at Drancy (department 93) on 23 December 2013 | S.O. | No recommendation given on behalf of the BEA-TT | N/A | N/A | N/A |
| 09/2015 | Derailment of an intercity train in Bretigny-sur-Orge (department 91) on 12 July 2013  (Final report) | R4 | Ensure that the compliance of the average age of the various components of the national railway network with different provisions accepted is regularly checked by external audits and on the basis of explicit objectives, and that the means allocated to the maintenance are consistent with the needs related to the state of the installations and the expected performance. | SNCF Réseau | An initial audit should be conducted during the Q4 2016 and should be renewed three times a year. | O |
| R5 | Improve the policy for the assignment of executives in establishments responsible for the maintenance of railway infrastructure:   * by avoiding gathering the young executives in the operational units and taking this objective into account in determining the organisational frameworks for these units; * by ensuring that the proximity leaders, support technician and the operational technician of a team in the road sector have the skills, competencies and seniority complementary to each other; * by reducing their turnover, especially in establishments located in the Ile-de-France region. | SNCF Réseau | Several measures which allow limiting the turnover have already been put in place.  Provisions to ensure better complementarity in the supervisory teams of proximity, to enhance the experience and to accompany the improvement of skills of the new leaders of proximity must be created by the end of the first semester of 2017. | O |
| R6 | To systematically integrate into the safety audits of the establishments in charge of the maintenance of the railway infrastructure, checks on the actual condition of a sample of equipment recently monitored or maintained in order to evaluate how relevant the maintenance rules are and how well they have been implemented.  Particular attention should be paid to carrying out the surveillance rounds and the checks of the B-type family of switches and crossings. | SNCF Réseau | SNCF Réseau has already agreed to include, from the campaign of 2017, the internal safety audits and technical inspections on installations recently monitored or maintained.  The modalities for the implementation of technical inspections on the actual condition of installations and maintenance operations will be defined in 2016. | O |

# Annex 4 – Summaries of developments in national, European and international regulations

**NATIONAL REGULATIONS**

**Ordinances**

* Ordinance No 2015-855 of 15 July 2015 adopted pursuant to Article 38 of Law No 2014-872 of 4 August 2014 on railway reform

The Government, by virtue of Article 38 of the Law on railway reform, was empowered to adopt by a ruling provisions of a legislative nature which concern:

* the alignment of the legislative provisions with regard to the changes brought about by the Law on railway reform;
* the incorporation of Directive 2012/34/EU of 21 November 2012 establishing a single European railway area (recast) into national law with regard to provisions of a legislative nature.

The provisions are mainly concentrating on the rules of access to the railway network, the rules of access to service facilities and provisions relating to the missions, organisation and independence of the Railway Regulatory Authority (ARAF)[[10]](#footnote-10). One provision is related to the cooperation between the EPSF and the ARAF (Article L 2131-8 of the Transport Code).

* Ordinance No 2015-1682 of 17 December 2015 with the intention to simplify certain systems of prior authorisations and declarations of undertakings and professionals

Article 8 of this Ordinance amends Article L.1612-1 of the Transport Code relating to the preliminary safety dossier (DPS), whose approval by the EPSF is a prerequisite for starting the work in the framework of an infrastructure project.

It is foreseen from now on that the safety report attached to the DPS should be prepared by an accredited qualified organisation and no longer by a qualified approved organisation (OQA approved by the EPSF). This way, there are no longer any approvals given by the EPSF of the qualified organisations intervening in railway matters. In addition, independent experts are disappearing.

**Decrees**

* Decree No 2015-84 of 28 January 2015 establishing the list of railway networks with operating characteristics comparable to those of the national railway network, known as the ‘comparable networks decree’

This Decree extends the list of railway networks with operating characteristics comparable to those of the RFN. The result is the application of the safety rules in force on the RFN to these networks that are subject to certain special conditions which will be set out by an order. Thus, competence is given to the EPSF to grant the railway operators the necessary safety authorisations for carrying out their activities and for exercising the necessary controls.

It repeals Decree No 2010-1201, which established a first list of these ‘comparable networks’.

* Decree No 2015-143 of 10 February 2015 relating to the safety of railway traffic safety and the interoperability of the railway system

This Decree modifies the decree No 2006-1279 of 19 October 2006 relating to the safety of railway traffic safety and the interoperability of the railway system The main purpose of the amendment is to bring the provisions of Decree No 2006-1279 into conformity with Law No 2014-872 of 4 August 2014 on railway reform creating the entities SNCF Réseau and SNCF Mobilités. This amending Decree will enter into force on the effective date of the safety approval of SNCF Réseau and no later than 1 July 2015.

* Decree No 2015-960 of 31 July 2015 on the railway undertaking license and focusing on various transport-related provisions

The amendments with regard to safety and interoperability aspects concern the following points:

* Articles 15 and 16 of Decree No 2006-1279 of 19 October 2006 relating to the safety of railway traffic and the interoperability of the railway system. These articles relate respectively to the reporting of serious accidents and incidents as well as the accidents and incidents referred to in the safety indicators. The railway operators shall directly and immediately inform the EPSF of such events. This kind of information is no longer provided through the SNCF Réseau (Article 15);
* the development of [Decree No 2006-369 of 28 March 2006](http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000456113&amp;amp;amp;categorieLien=cid) on the missions and statutes of the EPSF with the intention to clarify the arrangements for cooperation between the EPSF and the ARAF and the competent IGC on the permanent cross-channel connection. This Decree completes the system established by the Order of 15 July 2015 (Articles L.2131-8 and L.2221-6-1 of the Transport Code incorporating into national law Directive 2012/34/EU of 21 November 2012 establishing a single European railway area [recast]).

An Article 2-1 is created to provide for:

* 1. the communication by the EPSF to the ARAF and the competent IGC on the permanent cross-channel connection, information that is useful for the accomplishment of their tasks;
  2. the possibility for the EPSF to send to the ARAF and the competent IGC on the permanent cross-channel connection, recommendations on railway safety;
  3. a period of 6 months for the EPSF to respond to the recommendations addressed by the ARAF.
* Decree No 2015-1757 of 24 December 2015 amending Decree No 2006-369 of 28 March 2006 on the missions and statutes of EPSF and Decree No 2006-1279 of 19 October 2006 on the safety of railway traffic and the interoperability of the railway system

This decree amends:

* Decree No 2006-369 of 28 March 2006 on the missions and statutes of the EPSF;
* Decree No 2006-1279 of 19 October 2006 relating to the safety of railway traffic safety and the interoperability of the railway system

Concerning Decree No 2006-369 of 28 March 2006, the main amendments made are intended to:

* complete the tasks of the EPSF in terms of authorisations, vehicle registration, providing feedback and analysis data on safety events, organisation of feedback, promotion of good practice and follow-up on the recommendations of the BEA-TT;
* clarify the tasks of the EPSF by introducing the concept of acceptable means of compliance (AMC) as well as reminding the role of the EPSF as a guardian of safety and initiator in studies related to safety (technological innovation);
* provide for the publication of the rate of safety fee;
* provide for the intervention of external experts to carry out the control missions;
* specify the modalities applicable to the financial penalties that the EPSF may impose from now on.

Concerning Decree No 2006-1279, the implemented amendment concerns Article 37 and focuses on the derogations from the technical specifications for interoperability (TSI). It is intended to specify that a derogation may only take place in the case of redevelopment renewal projects or extension of an existing line (and not for all projects). In addition to the risk of compromising the financial viability, it is added that the coherence of the railway system is also compromised.

**Orders**

* Order of 13 April 2015 laying down the special arrangements applicable to networks with operating characteristics comparable to those of the RFN, known as the ‘comparable networks order’

This Order, adopted pursuant to Decree No 2015-84 of 28 January 2015, which sets out the list of comparable networks, lays down the special arrangements applicable to these comparable networks to take into account their specific characteristics.

The adapted provisions are planned for the following reasons:

* for the issue and withdrawal of the authorisations necessary for the exercise of a railway activity on this network;
* for the application of Titles II (traffic safety), V (design and construction of systems), V (a) (registration of vehicles) of Decree No 2006-1279;
* concerning the orders provided for by the latter (Order of 19 March 2012, ‘Aptitudes’ order, ‘PIS’ order (intervention and safety plans on the RFN), ‘Drivers’ order ).

This Order repeals the Order of 21 October 2010 which had the same purpose and modifies:

* the Order of 18 March 1991 on the classification, regulation and equipment of level crossings;
* the Order of 14 April 2008 on the safety certificate required in the case of railway matters.
* Order of 7 May 2015 on the essential tasks for railway safety other than the operation of trains, adopted in application of Articles 6 and 26 of the amended Decree No 2006-1279 of 19 October 2006, relating to the safety of railway traffic and interoperability of the railway system

This Order lays down:

* the list of essential safety tasks, other than the operation of trains, for which the employees must be empowered by their employer;
* the professional knowledge required for the employees assigned to these essential safety tasks;
* the training procedures of such employees (initial training, adaptation training for specific positions and continuing training) as well as their evaluation procedures;
* the procedure of their empowerment and the follow-up that must be implemented by the employer;
* the conditions for the accreditation of training organisations.

This order entered into force on 20 May 2016. The Order of 30 July 2003 on the conditions of physical and professional capacities and the training of personnel authorised for safety functions on the RFN was repealed on that date.

* Order of 17 July 2015 amending the Order of 6 August 2010 on the certification of train drivers

The purpose of this order is:

* to transpose Directive 2014/82 of 24 June 2014 amending the Annexes to Directive 2007/59 on the certification of drivers. These amendments are related to the training, aptitudes and examinations/assessments;
* to introduce into French law the provisions of Decision 2011/765 of 22 November 2011 concerning the criteria for the recognition of training organisations providing train driver trainings, the criteria for the recognition of examiners responsible for the assessment of drivers;
* to take into account the development of Decree No 2006-1279 of 19 October 2006 (Article 6: Issue of supplementary certification and practice of instructors);
* to take into account the difficulties of the application of current text, following the remarks of the EPSF, the sector and the Railway Qualification Committee (CFA).
* Order of 25 August 2015 modifying the Order of 19 March 2012 setting out the safety goals, methods, indicators and the technical regulations relating to safety and interoperability applicable to the French railway network.

This amendment:

* follows the adoption of the law on the railway reform and the consequential implementation of Decree 2006-1279 (mainly concerning the notion of ‘IM’: adaptation of the provisions of the Order);
* takes into account the proposals for editorial or minor amendments made in the EPSF reports of 2013 and 2014 (including amendments to Annex 7, manoeuvring-related provisions);
* introduces a specific regime for historic trains (Article 29a);
* incorporates into national law Directive No 2014/88 of 9 July 2014 amending the Directive No 2004/49 on safety indicators;
* repeals the note annexed to the Order of 19 March 2012.

**EUROPEAN UNION REGULATIONS**

**Directives**

* Directive 2008/68/EC of 24 September 2008 on the inland transport of dangerous goods in its consolidated version of 23 June 2015

This Directive applies to the inland transport of dangerous goods by road, rail and waterway, within the Member States or between several Member States, including loading and unloading operations, the transfer from one mode of transport to another and the stops required due to the circumstances of transport. It was amended by the Implementing Decision (EU) 2015/974 of 17 June 2015, authorising the Member States to adopt certain derogations pursuant to Directive 2008/68/EC of the European Parliament and of the Council on the inland transport of dangerous goods.

**Regulations**

* Commission Regulation (EU) 2015/302 of 25 February 2015 amending the Regulation (EU) No 454/2011 on the TSI concerning the ‘Telematics applications for passenger service’ subsystem of the Trans-European railway system

The purpose of this amendment is to update Annex III to Regulation (EU) No 454/2011 to refer to the amended technical documents. This Annex concerns the list of technical documents in the TSI.

* Commission Regulation (EU) 2015/995 of 8 June 2015 amending Decision 2012/757/EU concerning the TSI on the ‘Operation and Management of Traffic’ subsystem of the European Union railway system, known as the ‘OPE’ TSI.

The amendments introduced lead, on the one hand, to the general revision of the ‘Operation’ TSI, and in particular its annexes, and, on the other hand, the extension of its field of application to other on-board personnel performing train accompanying tasks.

* Commission Regulation (EU) 2015/924 of 8 June 2015 amending Regulation (EU) No 321/2013 on the TSI concerning the ‘Rolling stock – Freight Wagons’ subsystem of the European Union railway system. This amending Regulation concerns:
* composite brake blocks, to define them as a constituent of interoperability and to make them subject to a specific evaluation procedure defined by the Agency aimed at the notified bodies. This amendment closes this open point;
* The introduction of the equivalence to the concept of ‘GE’ marking of existing wagons marked as ‘TEN-G1’ according to the former ‘Wagons’ TSI. This equivalence is intended to facilitate the operation of the so-called ‘passe-partout’ (ordinary-looking) wagons.
* Commission Regulation (EU) 2015/1136 of 13 July 2015 on the common safety method (CSM)

The amendments implemented are intended to introduce a harmonised ‘risk acceptance criterion’ (RAC) additional to the only one existing so far to conclude the mandate for the revision of this CSM which had only partially been carried out through the Regulation (EU) No 402/2013.

**Decisions**

* Commission Decision (EU) 2015/14 of 5 January 2015 on the TSI for the ‘Control, Command and Signalling’ subsystems of the Trans-European railway system

This Decision amends Decision 2012/88/EU (already amended by Decision 2012/696/EU for the first time) on the TSI for the ‘Control, Command and Signalling’ subsystems. It entered into force on 1 July 2015.

This modification extends the TSI’s scope of application to the whole of the European Union’s railway network, no longer simply covering the Trans-European Network (TEN), in line with Article 8 of Directive 2008/57/EC. This has, in particular, brought about the inclusion of new Class B systems for France, with the aim to cover also the systems located outside the lines of TEN.

This modification also involves the introduction of a first revision of the specifications associated with the ERTMS baseline 3 to improve its completeness and operation.

Finally, the amended TSI introduces in its Chapter 7, the obligation to equip the rolling stock subject to the application of the TSI with a ‘CCS – edge’ subsystem, that in compliance with the specifications of baseline 3 of the ERTMS and as from 1 January 2018.

* Implementing Decision (EU) 2015/2299 of the European Commission of 17 November 2015 on the interoperability of the railway system within the Community

This decision sets out the parameters to be used for the classification of national rules in the reference document referred to in Article 27 of Directive 2008/57/EC

**INTERNATIONAL REGULATIONS / OTIF (Intergovernmental Organisation for International Carriage by Rail)**

The Committee of Technical Experts (CTE) of the Intergovernmental Organisation for International Carriage by Rail (OTIF) adopted the following decisions at its 8th session on 10 June 2015:

* Amendment of Annex A to Appendix G to the Convention on International Carriage by Rail (COTIF) – Technical Admission of Railway Equipment (ATMF) on the Certification and Audit Rules for Entities in Charge of Cleaning (ECC)

The amendments in Annex A of the ATMF are mainly aimed at the addition of a new model of ‘cleaning functions certificate’ as well as certain adaptations to bring it into line with Regulation (EC) No 352/2009 of the European Commission.

* Amendment of the Uniform Technical Prescription (UTP) for the subsystem of ‘Rolling Stock – Noise’ (‘Noise’ UTP)

The revision of the ‘Noise’ UTP takes into account the provisions of the TSI concerning the subsystem of ‘Rolling Stock – Noise’ (Regulation (EU) No 1304/2014 of the European Commission of 26 November 2014). The UTP ‘Noise’ in effect since 1 December 2012 is repealed, having its effect from the date of entry into force of the Revised Noise UTP, i.e. 1 December 2015. However, the 1 December 2012 version may continue to be applied in accordance with the provisions of Chapter 7 of the revised ‘Noise’ UTP.

* Amendment of Appendices G and Appendices J to M to the UTP on the subsystem of ‘Rolling Stock – Freight Wagons’ (‘WAG’ UTP)

This updating of the ‘WAG’ UTP has the aim to ensure consistency with the ‘WAG’ TSI on the subsystem of the ‘Rolling Stock of Freight Wagons’ of the European Commission (Regulation (EU) 2015/924 of the European Commission of 8 June 2015). The objective of these amendments is to make the ‘WAG’ UTP in line with recent developments and progresses in the production of composite brake blocks. The list of composite brake blocks approved for international transport has been updated (bringing the Appendix G of the ‘WAG’ UTP in line with the appendix G of the ‘WAG’ TSI).

Annex 5 - Publications of the EPSF

**Operational texts**

|  |  |  |  |
| --- | --- | --- | --- |
| **Reference** | **Title** | **AMC** | **Application date** |
| AC A 1a No 1  Version 1 | Approach speed safety | X | 07 June 2015 |
| RC A 7d No 8  Version 1 | Incorporation of work vehicles holding a traffic approval on a train | X |
| RC A 7a No 11  Version 1 | Composition and braking rules for international freight trains travelling between France and Germany | X | 25 September 2015 |
| RC A 2c No 4  Version 1 | Occasional travel of historic trains organised by an operator using historic equipment | X | 01 November 2015 |
| RC A-B 2b No 1  Version 1 | Protection of main lines;  Line closure | X | 13 December 2015 |
| RC A-B 7a No 1  Version 4 | General rules relating to the composition, trailer, braking, limit speed and train weight | X |
| RC A-B 7c No 1  Version 3 | Coupling / uncoupling  Intervention on the brake components and checking the operation of the continuous brake | X |
| RC A-B 7d No 3  Version 1 | Vehicle loading requirements | X |
| RC A-B 7d No 5  Version 1 | Recognition of suitability for transport (RST) | X |
| RC A-B 7d No 7  Version 1 | Identification of damage or irregularities in towed vehicles | X |
| RC A-B 8a No 1  Version 2 | General provisions relating to manoeuvres | X |
| AC A-B 0 No 3  Version 1 | Physical and psychological suitability of officers assigned to essential safety tasks other than driving the trains |  | 20 May 2016 |
| RC A-B 2a No 1  Version 1 | Traffic Services | X | 05 June 2016 |
| RC A-B 2c No 1  Version 1 | Train traffic | X |
| RC A-B 2c No 2  Version 1 | Train Despatch | X |
| RC A-B 2d No 1  Version 1 | Train driving | X |
| DC A-B 11 No 1  Version 1 | Presentation of the electric traction installations of the electrified lines in 1 500 volts direct current or 25 000 volts alternating current single phase 50 hertz |  | 11 December 2016 |
| RC A-B 11 No 2  Version 1 | Operation and development of an electric circuitry  Operation and immobilisation of interruption devices  Emergency shutdown  Damages | X |
| RC A-B 7d No 4  Version 1 | Exceptional transport | X |

**Guides**

|  |  |  |
| --- | --- | --- |
| **Reference** | **Title** | **Application date** |
| Guide 009 – Version 1 | Guide for Railway Operators - Development and Implementation of a Safety Management System | 12 January 2015 |
| Guide 010 – Version 3 | Guide for Applicants of an Authorisation to Start Commercial Operation of an Infrastructure Project on the RFN | 10 August 2015 |
| Guide 012 – Version 3 | Guide for obtaining a safety certificate for a package of services on the RFN for the use by railway undertakings | 27 May 2015 |
| Guide 013 – Version 1 | Guide with regards to safety tasks other than driving | 20 July 2015 |
| Guide 015 – Version 2 | Guide for candidates who want to obtain the license of a train driver | 19 November 2015 |

**Specifications for the authorisation of stock**

|  |  |  |  |
| --- | --- | --- | --- |
| **Reference** | **Title** | **AMC** | **Application date** |
| SAM X 012 | Ballast pick-up | X | 13 February 2015 |
| SAM X 707  Version 3 | Class B signalling system: Beacon speed control (KVB) – on-board equipment | X | 17 April 2015 |
| SAM S 004  Version 2 | Rolling stock capacity for shunting: Design rules | X | 27 July 2015 |
| SAM F 102  Version 3 | Magnetic brakes | X | 08 October 2015 |
| SAM X 004 | Vehicles with historical vocation | X | 1 November 2015 |
| SAM X 702  Version 2 | Tachometry | X | 1 December 2015 |

**Specifications for the authorisation of stock and infrastructure**

|  |  |  |  |
| --- | --- | --- | --- |
| **Reference** | **Title** | **AMC** | **Application date** |
| SAMI D 001  Version 2 | Hot axle box detection devices (DBC) | X | 31 March 2015 |

**Repeal of the texts of the EPSF**

**Repeal – Traffic safety**

|  |  |  |
| --- | --- | --- |
| **Reference** | **Title** | **Application date** |
| RC A-B 7a No 10 version 1 | Identification of damage or irregularities in towed vehicles | 13 December 2015 |
| RC A-B 8a No 1 version 1 | General provisions relating to manoeuvres |
| RC A-B 7c No 1 Version 2 | Coupling / uncoupling  Intervention on the brake components and checking the operation of the continuous brake |
| RC A-B 7a No 1 Version 3 | General rules relating to the composition, trailer, braking, limit speed and train weight |

**Repeal of texts formerly appended to the Order of 23 June 2003 as modified, relating to the safety regulations that apply on the national railway network**

|  |  |  |
| --- | --- | --- |
| **Reference** | **Title** | **Application date** |
| IN 1511 | Protection of main lines | 13 December 2015 |

# Annex 6 - Authorisations issued by the EPSF

|  |  |
| --- | --- |
|  | **Total number of certificates** |
| Number of safety certificate parts A issued in previous years and valid for 2015 | 20 |

|  |  |  |
| --- | --- | --- |
|  |  | **Total number of certificates** |
| Number of certificate parts B issued in previous years and valid for 2015 | Number of certificate parts B for which the part A was issued in France | 20 |
| Number of parts B for which the part A was issued in another Member State | 14 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | **Requests accepted** | **Requests rejected** | **Applications pending** |
| Number of new requests for safety certificate part A submitted by the railway undertakings in 2015 | 8 | New certificates | 5(1) |  | 1(3) |
| Certificates updated/modified | 0 |  |  |
| Renewal of certificates | 3(2) |  |  |

1. PICHENOT - SAGES RAIL - CTSF - FERROTRACT - SNCF MOBILITES
2. OSR France – EURO CARGO RAIL – CFR
3. ECORAIL Transport

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  | **Requests accepted** | **Requests rejected** | **Applications pending** |
| Number of new applications for safety certificate part B submitted by the railway undertakings in 2015 | When part A was issued in France | New certificates | 0 |  |  |
| Certificates updated/modified | 0 |  |  |
| Renewal of certificates | 0 |  |  |
| When part A was issued in another Member State | New certificates | 2(1) |  |  |
| Certificates updated/modified | 2 (2) |  |  |
| Renewal of certificates | 2 (3) |  | 1(4) |

1. RENFE MERCANCIAS - CFL
2. TRENITALIA - DB SCHENKER RAIL ITALIA
3. EUROSTAR INTERNATIONAL LIMITED – TRENITALIA
4. B LOGISTICS

# Annex 7 - List of holders of permits issued by the EPSF

**Lists of railway undertakings that held a safety certificate as of 31 December 2015 on the national railway network**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **RAILWAY UNDERTAKINGS** | **SAFETY CERTIFICATE’S FIRST DATE OF ISSUE** | **DATE OF CURRENT CERTIFICATE** | **PART A** | **PART B** | **COMMERCIAL SERVICE LAUNCH DATE** |
| 1 | SNCF Mobilités | 01 January 1938 | 25 June 2015 (took effect on  1 July 2015) | FR 11 2015 0003 | FR 12 2015 0004 | 1938 Prior to the obligation to be a Safety Certificate holder |
| 2 | EUROPORTE France | 13 June 2005 | 19 November 2011 | FR 11 2011 0018 | FR 12 2011 0019 | 13 June 2005 |
| 3 | ECR | 01 December 2006 | 25 September 2015 | FR 11 2015 0013 | FR 12 2015 0014 | 13 May 2006 |
| 4 | COLAS RAIL | 01 December 2006 | 29 November 2011 | FR 11 2011 0025 | FR 12 2011 0026 | 08 January 2007 |
| 5 | VFLI | 03 October 2007 | 16 August 2012 | FR 11 2012 0017 | FR 12 2012 0018 | 04 October 2007 |
| 6 | CFL CARGO | 13 December 2007 | 26 November 2012 |  | FR 12 20140016 | 04 February 2008 |
| 7 | TSO | 29 February 2009 | 04 July 2013 | FR 11 2013 0010 | FR 12 2013 0011 | 29 July 2009 |
| 8 | TRENITALIA | 31 March 2010 | 17 July 2015 |  | FR 12 2015 0009 | 22 February 2011 |
| 9 | CFR | 21 July 2010 | 23 July 2015 | FR 11 2015 0010 | FR 12 2015 0011 | 19 November 2010 |
| 10 | EUROSTAR INTERNATIONAL LIMITED | 30 August 2010 | 11 August 2015 |  | FR 12 2015 0012 | 01 September 2010 |
| 11 | OSR FRANCE | 19 November 2010 | 09 November 2015 | FR 11 2015 0016 | FR 11 2015 0017 | 13 October 2010 |
| 12 | RENFE | 17 December 2010 | 27 June 2011 |  | FR 12 2013 0007 | 21 December 2010 |
| 13 | SNCB LOGISTICS | 14 April 2011 | 14 April 2011 |  | FR 12 2011 0003 | 14 April 2011 |
| 14 | ETF SERVICES | 27 June 2011 | 27 June 2011 | FR 11 2011 0006 | FR 12 2011 0007 | 05 July 2011 |
| 15 | COMSA RAIL TRANSPORT | 11 July 2011 | 11 July 2011 |  | FR 12 2013 0016 | 15 June 2012 |
| 16 | THELLO | 12 October 2011 | 09 September 2014 | FR 12 2014 0005 | FR 12 2014 0005 | 11 December 2011 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **RAILWAY  UNDERTAKINGS** | **SAFETY CERTIFICATE’S FIRST DATE OF ISSUE** | **DATE OF CURRENT CERTIFICATE** | **PART A** | **PART B** | **COMMERCIAL SERVICE LAUNCH DATE** |
| 17 | RDT 13 | 17 November 2011 | 17 November 2011 | FR 11 2011 0022 | FR 12 2011 0023 | 11 June 2012 |
| 18 | SVI | 25 April 2012 | 19 August 2014 |  | FR 12 2013 0020 | 25 April 2012 |
| 19 | ETMF | 13 August 2012 | 13 August 2012 | FR 11 2012 0015 | FR 12 2012 0016 | 20 August 2012 |
| 20 | NORMANDIE RAIL SERVICES | 21 December 2012 | 21 December 2012 | FR 11 2012 0024 | FR 12 2012 0025 | 16 November 2003 |
| 21 | SÉCURAIL | 25 June 2013 | 25 June 2013 | FR 11 2013 0012 | FR 12 2013 0013 | 10 July 2013 |
| 22 | TMR | 28 June 2013 | 28 June 2013 |  | FR 12 2013 0015 | 28 June 2013 |
| 23 | FER ALLIANCE | 30 September 2013 | 23 September 2013 | FR 11 2013 0017 | FR 12 2013 0018 | 06 February 2014 |
| 24 | DB SCHENKER RAIL NEDERLAND | 21 October 2014 | 21 October 2014 |  | FR 12 2014 0007 |  |
| 25 | VLEXX GMBH | 29 October 2014 | 29 October 2014 |  | FR 12 2014 0008 |  |
| 26 | THI FACTORY | 26 November 2014 | 26 November 2014 |  | FR 12 2014 0010 |  |
| 27 | CAPTRAIN ITALIA SRL | 05 December 2014 | 05 December 2014 |  | FR 12 2014 0011 |  |
| 28 | REGIORAIL France | 09 December 2014 | 09 December 2014 | FR 11 2014 0014 | FR 11 2014 0015 | 17 December 2014 |
| 29 | FERROTRACT | 02 July 2015 | 02 July 2015 | FR 11 2015 0005 | FR 12 2015 0006 | 05 October 2015 |
| 30 | COMPAGNIE DE TRACTION ET SERVICES FERROVIAIRES (TRACTION AND RAILWAY SERVICES COMPANY) | 23 July 2015 | 23 July 2015 | FR 11 2015 0010 | FR 12 2015 0011 | 23 July 2015 |
| 31 | CHEMIN DE FER LUXEMBOURGEOIS (LUXEMBOURG NATIONAL RAILWAY COMPANY) | 30 September 2015 | 30 September 2015 |  | FR 12 2015 0015 |  |
| 32 | RENFE MERCANCIAS | 04 December 2015 | 04 December 2015 |  | FR 12 2015 0018 |  |
|  | **RAILWAY  UNDERTAKINGS** | **SAFETY CERTIFICATE’S FIRST DATE OF ISSUE** | **DATE OF CURRENT CERTIFICATE** | **PART A** | **PART B** | **COMMERCIAL SERVICE LAUNCH DATE** |
| 33 | SAGES RAIL | 08 December 2015 | 08 December 2015 | FR 11 2015 0019 | FR 12 2015 0020 |  |
| 34 | PICHENOT | 11 December 2015 | 11 December 2015 | FR 11 2015 0021 | FR 12 2015 0022 |  |

**List of infrastructure managers holding a safety authorisation as at 31 December 2015**

|  |  |
| --- | --- |
| **NAMES** | **Date of issue of authorisation** |
| SNCF RÉSEAU | 1 July 2015 |
| TP FERRO | 22 September 2015 |
| Grand Port Maritime du Havre\* | 23 December 2015 |
| Grand Port Maritime de Dunkerque\* | 17 August 2015 |
| Grand Port Maritime de Nantes / Saint-Nazaire\* | 13 October 2015 |
| Grand Port Maritime de Marseille:\* | 14 December 2015 |

\* Infrastructure falling under the scope of Decree No 2015-84 of 28 January 2015 *laying down the list of railway networks with operating characteristics comparable to those of the national railway network* and the Order of 13 April 2015 *laying down the special provision for their application to networks with operating characteristics comparable to those of the national rail network [...]*

**List of port railway networks with operational safety regulations as of 31 December 2015**

|  |  |
| --- | --- |
| **NAMES** | **DATE OF ISSUE OF AUTHORISATION** |
| Grand Port Maritime de Rouen | 20 January 2011 |
| Grand Port Maritime de La Rochelle | 26 July 2011 |
| Grand Port Maritime de Bordeaux | 20 June 2012 |
| Autonomous Port of Paris | 03 July 2012 |
| Autonomous Port of Strasbourg | 10 July 2012 |

# Annex 8 – Abbreviations and acronyms used in this report

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| ADF | l’Assemblée des départements de France (Assembly of Departments of France) |
| AFT | l’Association pour le développement de la formation professionnelle dans le transport (Association for the Development of Vocational Training in Transport) |
| AFWP | Association française des professionnels du wagon (French association of wagon professionals) |
| AMEC | *autorisation de mise en exploitation commerciale* (authorisation to put into commercial service) |
| AMF | l’Association des maires de France (Asssociation of French Mayors) |
| NSA | National safety authority |
| ARAFER | Autorité de régulation des activités ferroviaires (Authority for regulating rail and road activities) |
| ARF | l’Association des régions de France (Association of French Regions) |
| ATP | Automatic Train Protection |
| ATMF | *admission technique de matériel ferroviaire* (technical admission of railway equipment) |
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| BEA-TT | Bureau d’enquête sur les accidents de transport terrestre (Land transport accident investigation bureau) |
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| CAR | *critère d’acceptation des risques* (risk acceptance criteria) |
| EC | European Commission |
| CEREMA | Centre d’étude et d’expertise sur les risques, l’environnement, la mobilité et l’aménagement (Centre for study and expertise on risks, environment, mobility and development) |
| CF | ‘*Circulation ferroviaire*’ (‘railway traffic’ – the business) |
| CFA | la Commission ferroviaire d’aptitude (the Railway qualification committee) |
| CIG | commission intergouvernementale (intergovernmental commission) |
| CLE | *consigne locale d’exploitation* (local operating instruction) |
| COTIF | la Convention relative aux transports internationaux ferroviaires (the Convention on International Carriage by Rail) |
| CRM | *conscience des risques métiers* (awareness of business risks) |
| SC | Safety certificate |
| CTE | la Commission d’experts techniques (the Committee of technical experts) |
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| DBC | *dispositifs de détection de boîtes chaudes* (hot axle box detection devices) |
| DGITM | la Direction générale des infrastructures, des transports et de la mer (the Directorate-General for Infrastructure, Transport and the Sea) |
| DREAL | la Direction régionale environnement aménagement logement (the Regional Directorate for Environment, Planning and Housing) |
| DSRC | la Délégation à la sécurité et à la circulation routières (the Delegation for road safety and traffic) |
| DPS | *dossier préliminaire de sécurité* (preliminary safety dossier) |
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| ECC | Entity in charge of cleaning |
| ECM | Entity in charge of maintenance |
| RU | Railway undertaking |
| ERA | European Railway Agency (Agence ferroviaire européenne) |
| ERAIL | European Railway Accident Information Links |
| ERTMS | European Rail Traffic Management System |
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| FENVAC | la Fédération nationale des victimes d’attentats et d’accidents collectifs (National federation of victims of attacks and collective accidents) |
| FNAUT | la Fédération nationale des associations d’usagers des transports (National transport users’ federation) |
| FNTR | la Fédération nationale des transports routiers (National road transport federation) |
| SPAD | Signals passed at danger |
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| IM | Infrastructure manager |
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| CSI | Common safety indicators |
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| KVB | *contrôle de vitesse par balise* (beacon speed control) |
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| TSR | temporary speed restriction |
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| AMC | acceptable means of compliance |
| MBGPs | *morts et blessés graves pondérés* (deaths, serious injuries weighted) |
| CSM | Common safety method |
| M&T | ‘*Maintenance et travaux*’ (‘Maintenance and works’ – the business) |
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| OQA | *organisme qualifié agréé* (qualified approved organisation) |
| CSO | Common safety objectives |
| OTIF | Organisation intergouvernementale pour les transports internationaux ferroviaires (Intergovernmental Organisation for International Carriage by Rail) |
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| PAM | Personnel having authority over the machinist |
| PSN | *programme de sécurisation national des PN* (national safety programme for LC) |
| LC | Level crossing |
| UTP | Uniform technical prescription |
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| REX | Feedback |
| RFN | Réseau ferré national (National railway network) |
| RFF | Réseau ferré de France (formerly SNCF Réseau) |
| TEN | Trans-European Network |
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| SAI | *signal d’alarme par téléphonie* (intercom emergency signal) |
| LMP | Last minute paths |
| SMS | Safety Management System |
| CSMA | Computer system for maintenance assistance |
| TSI | Technical Specification for Interoperability |
| STRMTG | le Service technique des remontées mécaniques et des transports guidés (Cableways and guided transport technical service ) |
|  |  |
| TER | Train express régional (regional express train) |
| TGV | train à grande vitesse (high-speed train) |
| TVM | *transmission voie machine* (track-machine transmission) |
| CPL | Crossings of pedestrian lanes |
| EU | European Union |
| UTP | Union des transports publics (ferroviaires) (Public transport union – railways) |
|  |  |
| NRV | National Reference Values |

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1. www.securite-ferroviaire.fr [↑](#footnote-ref-1)
2. Formerly known as the European Railway Agency [↑](#footnote-ref-2)
3. The Council of State repealed in its decision of 15 April 2016 the connection of the Channel Tunnel to railway networks with operating characteristics comparable to those of the national railway network. [↑](#footnote-ref-3)
4. Daily average of the number of railway traffic using the level crossing multiplied by the number of road traffic [↑](#footnote-ref-4)
5. Signalling failure of high potential risk with the presence of a safety loop or of lower risk without a safety loop. [↑](#footnote-ref-5)
6. Unsafe signalling failure or potentially dangerous signalling failure without a safety loop. [↑](#footnote-ref-6)
7. The La Possonnière incident is the only one of four events that is not subject to the investigation by the BEA-TT. [↑](#footnote-ref-7)
8. The report is available on the BEA-TT website. [↑](#footnote-ref-8)
9. See acronyms at end of document [↑](#footnote-ref-9)
10. ARAF becomes ARAFER (Authority for regulating rail and road activities) as of 1 February 2016 [↑](#footnote-ref-10)