

BEA-TT
*French Land Transport
Accident Investigation Bureau*

**ACTIVITY
REPORT**

2011



**General Council for the Environment
and Sustainable Development**

**French Land Transport
Accident Investigation Bureau**

ACTIVITY REPORT

YEAR 2011

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Glossary

- **CMVOA:** French Ministerial Unit for Operational Monitoring and Alerts, Ministry for Ecology, Sustainable Development and Energy
- **CGEDD:** French General Council for the Environment and Sustainable Development
- **CNO:** French Railways National Operations Centre
- **COGIC:** French Operational Centre for Inter-ministerial Crisis Management, Ministry for the Interior
- **DGITM:** French General Directorate for Infrastructure, Transport and the Sea
- **DSCR:** French Road Safety and Traffic Directorate
- **RO:** Rail Operator
- **EPSF:** French Railway Safety Authority
- **IM:** Infrastructure Manager
- **HGV:** Heavy Goods Vehicle
- **LC:** Level Crossing
- **STRMTG:** French Agency for Mechanical Ropeways and Guided Transport Systems
- **TMD:** Transport of Dangerous Substances
- **LV:** Light Vehicle

A review of 2011

Sixteen investigations were concluded, with two intermediate reports formulating immediate safety recommendations; 59 recommendations were made, which for the most part were accepted by their recipients; and 17 new investigations were opened – these are the figures that characterise the activity of BEA-TT in 2011. The activity level was particularly sustained, and was higher than in previous years.

But apart from these quantitative data, four actions had a particular impact on the work of BEA-TT and mobilised its teams during the past year.

Firstly, several inquiries required detailed technical investigations that helped extend the knowledge available. Determining the causes of the braking incident that caused a freight train derailment in Bully-Grenay, analysing the likelihood of trams being derailed on impact with road vehicles, and clarifying the mechanism by which an LPG tanker's outlet cover broke causing a fire on a motorway, were the most significant examples.

Secondly, four investigations concluded in 2011 involved tram line operations. Supplementing the three investigations on this mode of transport already completed since 2002, these identified a series of avenues for progress that were discussed at a seminar for the operators involved, which was organised in collaboration with the French Agency for Mechanical Ropeways and Guided Transport Systems (STRMTG).

In addition, the overturning of the mini tourist train of Notre-Dame-de-la-Garde, Marseille, in May 2010, following two similar accidents in other cities over the two previous years, stimulated reflection about the specific safety issues relating to the operation of this type of passenger transport. This led to recommendations for a series of actions designed to improve control by both the competent authorities and transport workers.

Finally, five investigations were opened between February 2011 and January 2012 into accidents or significant incidents affecting the operation of ski lifts. In addition to the audits conducted by STRMTG, these should provide a perspective on safety management in the sector based on a detailed analysis of concrete events.

These various actions illustrate BEA-TT's efforts to fulfil its missions better and better by developing its investigative capacity, structuring the scope of its inquiries and promoting the value of its recommendations to transport and safety professionals.

I invite you to read this activity report which gives an account of the investigations carried out in 2011 and the lessons learnt from them.

In the name of all the BEA-TT investigators and on my own behalf, I would like to repeat my thanks to everyone who contributes to and supports the work done by BEA-TT to prevent land transport accidents: the management teams and experts at CGEDD, DGITM and DSCR, the land transport and technical services safety authorities, the legal authorities, the infrastructure companies and transport operators and companies.

Claude AZAM, Director

1 - Remit and organisation of BEA-TT

1.1 - The reason for technical accident investigations

Transport accidents, with their human cost and sometimes spectacular or dramatic nature, remind us that people, equipment and organisations are fallible in spite of progress in matters of safety.

Serious or complex accidents or incidents call for an in-depth and transparent approach, in the form of a technical investigation, to determine the circumstances and causes, and then to make preventive recommendations as soon as possible to stop them happening again.

The technical investigation must remain wholly separate from the legal investigation, whose objectives, centred on the search for liability, and constraints, particularly timeframes, are not the same.

To carry out their work effectively, technical investigators must have access to all the facts, evidence and useful information, even if covered by investigative secrecy or professional or medical confidentiality. These prerogatives are stipulated by law.

Finally the need to mobilise highly qualified and independent investigators at short notice, to keep records and make good use of the lessons learnt, led to these investigations being entrusted to a permanent, specialised body.

1.2 - The main stages of the creation of BEA-TT

The first technical investigation bodies to be created in France were for the civil aviation (1946) and maritime sectors (1997).

No equivalent organisation was set up for land transport until 2004. In the event of a serious accident, such as the 1988 Gare de Lyon accident (56 dead) or the 1999 Mont Blanc Tunnel accident (39 dead) the Minister for Transport set up an "ad hoc" investigation committee under the aegis of the French General Council for Bridges and Highways (CGPC).

In the light of experience acquired in this respect it became necessary to set up a land transport body similar to those for air and sea transport, with appropriate legislative status.

It was the law of 3 January 2002*, in the aftermath of the tragic fire in the Mont Blanc Tunnel on 24 March 1999, in which 39 people lost their lives, which gave a legislative basis to technical investigations in the land transport sector. It made provision for such investigations to be carried out by a permanent, specialist body entitled to access all data pertinent to the investigation, even those covered by investigation secrecy or professional or medical confidentiality.

This law also affirms the principles of investigator independence and the publication of investigation reports.

It was coded in articles L 1621-1 to 1622-2 of the Transport Code.

*Law no. 2002-3 of 3 January 2002 relating, in particular, to the safety of transport systems and infrastructures, and to investigations after transport accidents

Decree no. 2004-85 of 26 January 2004, published in accordance with this law, officially created the French Land Transport Accident Investigation Bureau (BEA-TT) and defined its remit and operating conditions.

1.3 - Remits and methods of intervention

BEA-TT is a service with national authority, responsible to the vice-chairman of the French General Council for the Environment and Sustainable Development. This position comprises no hierarchical authority liable to undermine the independence of the investigations carried out.

BEA-TT's main remit is to carry out technical investigations into serious land transport accidents and any other significant accident or incident. It is also responsible for encouraging the dissemination of experience and lessons from accidents and it may undertake studies or research into past experience and accident analysis.

Its area of expertise covers railway transport, guided urban transit systems (underground and tramways), ski lifts, road transport (particularly heavy goods vehicles and public transportation) and inland waterways, each of these sectors having its own regulations and economic, technical, professional and even cultural logics.

Decisions to open technical investigations are taken by the director of BEA-TT. In the railway sector, investigations are mandatory for accidents designated as serious by European Directive 2004/49/EC on railway safety. The decision to open an investigation concerning other forms of land transport in 2011 had to be requested or agreed by the Minister for Transport. Designed to unify the procedures for opening a technical investigation into an accident or incident for all land and sea transport, decree 2012-668 of 4 May 2012 now allows the Director of BEA-TT to open such an inquiry on his own initiative.

Each investigation must examine the event from every angle, from human error to the relevance of the regulations, including infrastructure, operating conditions, design and condition of the rolling stock, safety arrangements, staff training and medical factors etc.

Because of the variety of investigations to be carried out BEA-TT identifies and mobilises all the skills required for each case.

At the end of the investigations or studies, BEA-TT publicises its reports on its website: www.bea-tt.developpement-durable.gouv.fr.

Recipients of safety recommendations must inform BEA-TT of the follow-up action they intend to take. BEA-TT can make recipients' responses public but it is not responsible for monitoring or inspecting the effective implementation of the recommendations it has made.

1.4 - Transposition of the European Railway Safety Directive

In the railway sector, European Directive 2004/49/EC specifies the role of the various parties and, in particular, that of the accident and incident investigation bodies which Member States are required to set up.

In France, which began to transpose this directive in 2006, this body is BEA-TT. In the main it concerns three points:

- giving the director of BEA-TT the power to decide to undertake railway investigations, which previously came under the responsibility of the Minister for Transport;

- requiring infrastructure managers and rail companies to report to BEA-TT any accidents and incidents in which it may need to be involved;
- monitoring the implementation of recommendations made by BEA-TT, to be carried out by the national safety authority, i.e. EPSF in France.

On points one and two, transposition was achieved with publication of law no. 2006-10 of 5 January 2006 (art. 18) and decree no. 2006-1279 of 19 October 2006 (art. 2 and art. 65)

On point three, transposition is not yet complete. EPSF has however been responsible for the required monitoring since 2008.

1.5 - Organisation and resources

BEA-TT is organised around its main remit, conducting technical investigations into accidents and incidents. To this end it calls upon three types of investigator:

- first of all, its own permanent investigators;
- secondly, temporary investigators who are commissioned by the director to meet the needs of an investigation and who are given the legal status of technical investigators; they may be active or retired officers of a transport company, infrastructure manager or civil service body with inspection or control responsibilities;
- finally, experts appointed to deal with specific issues.

In addition BEA-TT may, under the terms of its founding decree, call upon all State services which are competent in its field, particularly for the monitoring and reporting of accidents.

In practice, investigations are carried out by the permanent investigators with the support, as appropriate, of temporary investigators and experts selected according to the external skills considered necessary to analyse a particular accident.

On 1 January 2012 BEA-TT's staff consisted of 14 officers: 2 senior managers, 9 permanent investigators and 3 administrative officers. It also has two doctors on secondment from the French General Transport Labour Inspectorate to deal with medical aspects.

In addition, 3 commissioned temporary investigators contributed to BEA-TT's work in 2011.

Its operational budget allowance was €134,000 in 2011.

1.6 - Monitoring and reporting of accidents and incidents

In order to monitor events linked to safety BEA-TT receives two types of information:

- firstly, accident reports sent to it directly by the operators concerned by the particular events;
- secondly, daily bulletins prepared and distributed by the major operators, emergency services or crisis management services.

Direct reports come from just a few operators. For accidents involving public transport or dangerous substances, procedures were established with SNCF, RATP and the police in 2005. In 2011, a circular extended these to ski lift operators. They are yet to be specified and implemented for the other transport services referred to in BEA-TT's founding decree, especially for provincial urban transport systems.

Daily bulletins currently come from four sources:

- the French National Centre for Traffic Information;
- SNCF, with daily reports from the French National Operations Centre (CNO);
- the French Ministry for the Interior (Civil Defence - COGIC);
- the French Ministry for Ecology, Sustainable Development and Energy, with bulletins from CMVOA and the distribution of a press review.

On the basis of this information and possibly also an assessment investigation, BEA-TT will select accidents and incidents for which a technical investigation appears useful.

2 - Investigations carried out in 2011: overview

2.1 - Investigations carried out in 2011

Seventeen investigations were completed in 2011 with publication of the reports and recommendations. In addition, two inquiries gave rise to intermediate reports formulating immediate safety recommendations in application of article L.1621-20 of the French Transport Code, although not all their investigations were complete.

The 19 accidents concerned cost the lives of 17 people, 16 of them on the roads.

Six of these accidents concern railway transport, including two collisions on level crossings. Seven others involve road traffic alone, four guided transport, one waterways and one a ski lift operation. Summaries of these investigations are given in the chapters below.

2.2 - Causal factors highlighted

The human factor played a major role in almost all these accidents, either as their source or as a factor contributing to their seriousness. Failures of concentration ranging from distraction to falling asleep, inappropriate reactions, excessive speed, passing through lights that indicate the need to stop, failure to wear seatbelts and undisciplined coach travellers were all direct or aggravating causes, of which at least one was involved in twelve of the thirteen accidents involving road vehicles, including those that occurred on level crossings or intersections with tram lines.

The human factor also contributed to:

- the collision that took place in Boisseuil, where attempts to warn the driver of the passenger train involved that a trailer was immobilised on the track were unsuccessful;
- the crash between two trams in Montpellier, where one of the drivers, newly trained, failed to control a hill start;
- the river and sea vessel "Natissa" striking a bridge in Mornas, because its pilot forgot to lower the wheelhouse;
- the personal accident that occurred on the "écho alpin" ski lift in Châtel, where the person responsible for overseeing the departure was distracted by other tasks.

Infrastructure characteristics were decisive in the collision between a regional express train and a heavy goods vehicle on an unmanned level crossing marked with a St Andrew's cross in Gimont. The corresponding inquiry clearly showed that the rules on the layout of these level crossings did not allow slow, heavy vehicles to cross them safely.

The state of infrastructure and their equipment, as well as their environmental situation, were factors in five other accidents, including:

- two collisions in Denain and Orvault between a car and a tram, the first occurring at a simple crossing with low visibility and the second at a complex roundabout. These accidents call into question the use of R24 signs at these junctions;
- the two accidents in Rouen and at the Puymorens pass involving coaches on road infrastructure presenting inadequately signposted features: in one case a narrow underground passage and in the other a sudden, deep gutter;
- the Châtel accident, in which the passenger sensor designed to stop the ski lift automatically if a user does not leave it in time did not operate.

Factors relating to vehicles were direct causes of four of the accidents analysed, and contributed to aggravating three others. Both derailments of freight trains, in Neufchâteau and Bully-Grenay, were caused by damage to vital parts of wagons which maintenance procedures had not managed to prevent. The five other accidents concerned were due to deficiencies in the design or manufacture of the vehicles involved: ineffective brakes on an agricultural trailer, insufficient resistance to wrenching off of the cover of an LPG tanker's outlet, a fault in the seal of a tram's brake calliper, the use of materials with insufficient fire resistance in the same tram, the sensitivity to derailment of certain trams and the absence of an anti-skid system in trams operating on lines with significant gradients.

Organisational and regulatory factors were also highlighted in eleven of the accidents examined. These essentially concern training, evaluation and follow-up for staff involved in safety, including road drivers, controlling the quality of wagon maintenance operations and managing the lessons learned from experience. They led BEA-TT to make several recommendations aimed at supplementing the rules or certain operating procedures. In the area of road transport, for example, recommendations were issued on bus and coach drivers wearing headphones at the wheel and the conditions of implementation of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). In rail transport, it was recommended that an obligatory system for qualifying wagon maintenance workshops should be established at European level and that operational centres managing national railway traffic should be equipped with ground-train alert systems. BEA-TT also emphasised the potential benefits for guided public transport safety of a comparative evaluation of signalling systems that could be used as barrier lights where trams cross road junctions, an understanding of the sensitivity to derailment of trams in collisions with road vehicles and the rigorous, structured management of lessons learned from experience. With regard to inland water transport, the attention of the competent authorities was drawn to the need to supervise the working hours of boat skippers. Finally, the overturning of a wagon of a tourist road train in Marseille, following two similar accidents in Ile-Rousse and Besançon, led BEA-TT to recommend several actions to improve safety when operating this type of vehicle, which needs to be better supervised by the competent authorities and controlled by transport operators.

2.3 - Recommendations made

As part of these 19 investigations, 59 separate recommendations (16 for rail transport, 16 for road transport, 5 for waterways, 19 for guided transport networks and 3 for ski lifts) were formulated. As some of them were sent with the same wording to several recipients, the total number of recommendations received was 79 (20 for rail transport, 22 for road transport, 8 for waterways, 26 for guided transport and 3 for ski lifts).

Recipients

These 79 recommendations were distributed as follows:

- 29 to regulatory or supervisory authorities (central government departments, decentralised services, technical services, rail safety authority);
- 18 to rail, road or waterway infrastructure managers;
- 6 to transport organising authorities;
- 6 to operators of guided transport networks;
- 4 to road or waterway transport companies;
- 5 to professional associations or organisations;
- 7 to manufacturers of rolling stock;
- 4 to other recipients (design organisations, maintenance engineers and workshops).

2.4 - Follow-up action planned by the recipients

The decree of 26 January 2004 specifies that recipients of recommendations shall inform the director of BEA-TT of the actions they intend to take and, where appropriate, the timeframe required for their implementation within a deadline specified at 90 days. These responses are made public in the same way as the recommendations themselves.

Of the 79 recommendations cited above:

- 53 were accepted and their implementation confirmed, sometimes with a time or financial condition;
- 5 were not accepted or were subject to strong reservations;
- 21 received no response from the recipient concerned.

It should be noted that BEA-TT is not authorised to carry out subsequent checks on operational follow-up actions actually taken on the recommendations it has made.

Such implementation monitoring, apart from a simple list of recipients' intentions made by BEA-TT, is thus dealt with by an outside body.

For the main parties in the railway sector, monitoring is carried out by EPSF, in accordance with European Directive 2004/49/EC, which gives this role to the national rail safety authority.

For the other recipients of recommendations, the implementation of recommendations has been monitored by DGITM, the central administration department of the Ministry for Transport, since 2009.

2.5 - Investigations carried out in 2011

BEA-TT undertook 17 investigations in 2011, a list of which is given in appendix 1 of this report.

These 17 investigations concern:

- for **railways**, 6 events, including 2 derailments and 4 collisions on level crossings;
- for **roads**, 4 accidents, all on motorways and all involving one or more heavy goods vehicles;
- for **waterways**, just 1 event concerning a barge striking a tug moored to a floating quay;
- for **guided transport**, 3 accidents, including 1 derailment, 2 collisions with light vehicles and 1 collision with buffers at a station;
- for **ski lifts**, 3 accidents: 1 person

Appendix 2 of this report outlines the circumstances of these various accidents.

By the end of 2011, 125 investigations had thus been conducted since the law on technical investigations into land transport accidents was promulgated in 2002. They are grouped according to the various modes of transport as follows:

- Railway transport: 47 (including 19 accidents on level crossings)
- Road transport: 43 (excluding accidents on level crossings and intersections with tram lines)
- Waterways: 15
- Guided transport: 15
- Ski lifts: 5

3 - Investigations carried out: rail transport

3.1 - Investigations carried out in 2011

Five investigations concerning accidents on railways were completed in 2011. The type, dates and places of these accidents are specified in the table below.

In addition, following the derailling of wagons carrying dangerous substances in Neufchâteau in the Vosges region of France, the BEA-TT, without waiting for the conclusion of all of its investigations and in application of article L. 1621-20 of the French Transportation Code (*Code des transports*), issued an initial series of safety recommendations designed to strengthen and improve the reliability of crack detection in wagon wheels. These were the subject of an interim report published in January 2011.

57 people were injured in these six accidents, five of them seriously. There were no deaths.

Given the severity of their consequences, four of these incidents constitute serious accidents, as defined by Directive 2004-49 EC relating to railway safety, for which a technical investigation is a mandatory requirement. These are identified in blue in the table below.

Date	Type and place of accident	Fatalities	Mode*
03.07.2009	Collision between a passenger train and an agricultural trailer in Boisseuil (Haute-Vienne)	0	RY
20.12.2009	Derailling of a Regional Express Network (RER) C train due to a fallen parapet block in Choisy-le-Roi (Val-de-Marne)	0	RY
22.05.2010	Derailling of railway wagons carrying dangerous substances in Neufchâteau (Vosges) – Interim Report	0	RY
29.07.2010	Derailling of a coal train near Bully-Grenay Station (Pas-de-Calais)	0	RY
27.09.2010	Collision between a regional express train (TER) and a lorry on Level Crossing no. 76 in Gimont (Gers)	0	LC
14.12.2010	Collision between a regional express train (TER) and a coach on Level Crossing no. 19 in Auxerre (Yonne)	0	LC

Three of the accidents in question can be directly attributed to the operation of the railway system.

This concerns the two derailments that occurred near the Neufchâteau and Bully-Grenay stations, which were caused by damaged wagon components. Furthermore, the investigations carried out revealed that this damage had arisen due to the inadequate control of monitoring or maintenance operations on the components concerned.

The third of these accidents concerned the collision in Gimont between a Regional Express Train (*train express régional* -TER) and a heavy goods vehicle, which occurred on an unmanned level crossing equipped with Saint-Andrew's cross signals. . This collision revealed that the rules which apply to the design of such level crossings do not always guarantee that they can be crossed in complete safety by heavy and slow vehicles.

*RY=Railway; LC=Level Crossing

The three other aforementioned accidents are the consequences of factors outside the railway system: an inappropriate reaction by a coach driver, a road traffic accident that caused a parapet block to fall on a railway line and a runaway agricultural trailer that had been poorly immobilised and ended up on a railway line. The investigation carried out into this latter accident in Boisseuil highlights the need to supplement and strengthen the procedures and means of efficiently alerting trains and stopping them in the event of imminent danger.

3.2 - Recommendations made

Following these six investigations, 16 separate recommendations were made by BEA-TT.

Subject of the recommended measures

Of these 16 recommendations:

- 4 concern the railway infrastructure, 1 of which is on a private branch line
- 6 concern wagons and their maintenance
- 1 relates to railway operation
- 3 focus on the road infrastructure
- 1 targets the training of coach drivers
- 1 concerns the maintenance of agricultural equipment

Recipients

As four of the recommendations cited above were each sent with the same wording to two recipients, the total number of recommendations received by recipients in respect of the investigations in question was 20, including:

- 4 by regulatory or supervisory authorities (central government departments or the French Railway Safety Authority)
- 7 by railway infrastructure managers, including a manager of a private branch line
- 2 by engineering or wagon maintenance service providers
- 1 by a professional association in the rail sector
- 3 by road infrastructure managers
- 1 by a road haulage company
- 1 by an agricultural equipment manufacturer
- 1 by a professional association of agricultural equipment manufacturers.

3.3 - Follow-up action planned by the recipients

The table below indicates the follow-up action planned by the recipients of the abovementioned recommendations.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
Boisseuil	5	5		
Choisy-le-Roi	0			
Neufchâteau	5	5		
Bully-Grenay	3	3		
Gimont	5	2		3
Auxerre	2	1	1	
TOTAL	20	16	1	3

Only one recommendation was not adopted by its recipient. The Interdepartmental Highways Authority (*Direction interdépartementale des routes*) for the Centre-Est region thus considered that the creation of a horizontal signalling device marking the extent of the railway at level crossing no. 19 in Auxerre was not beneficial, given the modifications that had already been made in order to make this crossing safe.

3.4 - Monitoring the implementation of recommendations

Independently of the intentions expressed by the recipients and outlined in paragraph 3.3 above, the French Railway Safety Authority (EPSF) monitors the actual implementation of the recommendations sent by the BEA-TT to rail operators on the French rail network.

On the basis of this monitoring, the progress made in the operational implementation of the recommendations sent to these operators between 2004 and 2012 can be seen in the following table:

Year of publication of the report	Number of recommendations sent			
	Total	Closed		In progress
		Completed	Not accepted	
2004-2006	30	28		2
2007	19	15		4
2008	21	13		8
2009	24	15	2	7
2010	15	3		12
Total 2004-2010	109	74	2	33

Appendix 3 to this report gives a detailed account of this implementation. For the years 2004 to 2006 inclusive, this appendix only mentions those recommendations that were not closed at the time of the account published in BEA-TT's 2008 Activity Report.

3.5 - Overall summaries of investigation reports published in 2011

Collision between a passenger train and an agricultural trailer at Boisseuil (Haute-Vienne) on 3 July 2009



Just before 8:30 p.m. on 3 July 2009, at the locality of “Pereix” in Boisseuil (Haute-Vienne), a tractor driver was loading hay bales onto a trailer when it crushed the chocks under its wheels and careered down the sloping meadow on which he was working before coming to rest on the railway lines below.

Passenger train 3661 travelling on this railway line collided with the trailer that had fallen onto line 1 and derailed.

13 people were injured in this accident, one seriously.

The direct cause of the accident was the obstacle on the railway lines caused by the runaway agricultural trailer.

Two factors played a decisive role in the trailer breaking free.

- The inefficiency of the parking brake which failed to immobilise the trailer
- The use of unsuitable chocks

Four factors contributed to the failure of the attempts made to stop the train before the accident:

- The tractor driver's failure to alert the gendarmerie immediately
- The fact that the driver of train 3661 failed to receive the radio message
- The lack of rigour in the exchange of safety information by radio, which led the train dispatcher to believe that all trains had been notified
- The train dispatcher's failure to use the emergency electrical shutdown device as a way of stopping the train

This led BEA-TT to issue three recommendations concerning:

- Firstly, the strengthening of recommendations concerning the maintenance of braking devices on agricultural trailers
- Secondly, the improvement of radio warning systems by railway management centres and the introduction of the emergency shutdown into the procedures of the operators of these centres.

Derailment of an RER C train on 20 December 2009 due to a fallen parapet block in Choisy-le-Roi (Val-de-Marne)



At 8:36 p.m. on 20 December 2009, in Choisy-le-Roi, the RER (Regional Express Network) train no. 145867 hit a block of stone that had fallen onto the line. Following this impact, the train derailed, pulling up the track on which it was travelling and tearing down approximately 500 m of the catenary system for the four tracks, while ploughing into the adjacent track. 37 people were injured in the accident, two of them seriously. All were situated in the first carriage of the train.

Several minutes earlier, this block of stone, originating from the parapet of the road bridge crossing the rail tracks of the Quai Jules Guesde, had been struck by a car coming from Vitry-sur-Seine and then toppled onto the railway lines below.

The direct and immediate cause of this accident was the loss of control of a road vehicle which had collided with the stone parapet of a bridge and pushed a block onto the railway line.

Four factors contributed to this loss of control:

- The excessive speed of the vehicle, taking account of the weather conditions and the condition of the carriageway
- A slight collision with a vehicle travelling in the opposite direction
- The possible effects of alcohol and drug consumption by the driver
- The failure of the ABS system.

Furthermore, the lack of protection for the bridge parapet, which was not designed to withstand such an impact, could not prevent the block of stone from falling, and the failure to alert the rail operator meant that the train could not be stopped in time to avoid the accident.

This prompted the BEA-TT to ask the public authorities to continue their current policy regarding road safety improvement measures, by focusing on the abovementioned points in particular: adapting speed to suit the weather and road conditions, excessive speeds and driving under the influence of alcohol and/or drugs.

Derailment of railway wagons carrying dangerous substances on 22 May 2010 in Neufchâteau (Vosges)

Interim report



On 22 May 2010, the last four wagons of the SNCF freight train 58701 derailed and toppled over in the middle of the tracks, just before Neufchâteau station.

Three of these wagons were tankers containing dangerous substances. One of them, containing phenol, was found to be leaking around the dome. This led to the establishment of a safety perimeter, followed by long and complicated sealing and transfer operations.

The accident caused no casualties, but there was significant damage to the infrastructure and major disruption to traffic.

The derailment was probably due to the failure of the front left-hand wheel of the first wagon to be derailed. Approximately one-third of the rim was found to be missing and there were circular cracks in an area around 300 mm from the axle.

As part of the protective measures taken by the French Railway Safety Authority (EPSF) and the investigation carried out by BEA-TT, similar damage was detected in a number of wheels on wagons in use.

In December 2010, in light of the information gathered up to this point, pursuant to article L. 1621-20 of the French Transportation Code and without waiting for the conclusion of the investigation BEA-TT considered it necessary to issue an initial series of safety recommendations designed to prevent a repeat of such accidents.

In this context, five recommendations were formulated:

- Once concerning the extension of the wheel checking campaign
- Three concerning the maintenance and inspection of wagon axles
- One concerning the railway facilities on the Roussillon industrial site.

Derailment of a coal train on 29 July 2010 at Bully-Grenay Station (Pas-de-Calais)



At 11:10 a.m. on 29 July 2010, the first 19 wagons of SNCF Freight train 88214 derailed on track 2 at the entrance to Bully-Grenay station (Pas-de-Calais). These wagons, loaded with coal, jack-knifed and toppled over onto the tracks, just after the passenger building, thus blocking the two main tracks.

They came to rest with no casualties but caused significant damage to the railway infrastructures for an approximate distance of 600 m.

The 19 wagons involved were damaged and at least two of them were beyond repair. On the other hand, this accident had no environmental impacts.

On the first wagon, there were signs of a braking incident: certain brake head wear plates were reddened by the heat and heavily worn; the wheels were very hot and some of them had very large flats and hollowed out wheel treads.

The accident was caused by a malfunction of the brake distributor on the first wagon of the convoy, which caused the blockage of the first two axles, the hollowing out of the wheel tread by the friction on the rail and then the derailment at the first switch point rail at Bully-Grenay Station.

This malfunction was probably caused by the presence of solid particles inside the distributor, originating from excess sealing adhesive remaining after the last servicing of this component.

Due to the place at which the blockage occurred and the lack of apparent clues, the anomaly could not be detected in time by the railway employees or by the automatic detectors.

The analysis of the causes and circumstances of the accident led to the formulation of three recommendations in the following areas:

- Quality of the work carried out by the distributor repair workshop
- Qualifications of the wagon component repairers
- Density and consistency of the surveillance and anomaly detection system for trains in operation.

Collision between a TER train and a lorry on 27 September 2010 on LC no. 76 in Gimont (Gers)



At 8:40 a.m. on Monday 27 September 2010, a Regional Express Train (TER) travelling from Auch to Toulouse collided with a lorry on level crossing (LC) no. 76 (unmanned and marked by St. Andrew's cross signals) at the locality of Julias near Gimont in the *département* of Gers.

11 people were injured in this collision, one seriously.

The direct cause of this accident was the lorry's inability to cross over the level crossing before the arrival of the train, which could be observed 11 seconds before the accident.

Two factors played a decisive role in this situation:

- The insufficient time between the moment at which the train entered the road user's field of view and the moment at which it reached the level crossing. This is not enough time for the driver of an HGV that has stopped to ensure the absence of trains, to start up the vehicle and cross over the entire level crossing.
- The alignment of the municipal road as it approaches and crosses the rail tracks, which prevents drivers of large vehicles from adopting the correct position at the entrance to the level crossing to have a clear view of the arrival of trains. This alignment also forces them to perform a tricky, low-speed manoeuvre when crossing the railway tracks.

The analysis of this accident led BEA-TT to issue three recommendations:

- The first concerns the automatic light signals and audible signalling equipment with or without barriers for unmanned level crossings with Saint Andrew's cross signals, at which trains exceed speeds of 40 km/h
- The other two concern the modification and management of the access road to the hamlet of Julias via the RD 120 minor road.

In addition, this report provides an opportunity to remind railway companies and their drivers of the rules for using the acoustic warning signal on the approach to level crossings.

Collision between a TER train and a coach on 14 December 2010 on LC no. 19 in Auxerre (Yonne)



At around 6:10 p.m. on 14 December 2010, on the road through the hamlet of Jonches in the municipality of Auxerre in the *département* of Yonne, a coach travelling on the RN 77 trunk road and carrying around thirty passengers, which had stopped just after level crossing no. 19 on the Auxerre to Laroche – Migennes railway, was hit by a TER Regional Express Train from Auxerre Saint-Gervais station.

17 people were injured in this collision, one seriously. All were passengers in the coach.

The direct cause of the accident was the unexpected stopping of the coach on the way out of the level crossing, in a position that encroached on the rail tracks.

Two factors played a decisive role in this situation:

- The indiscipline of two coach passengers, which caught the driver's attention and forced him to make an emergency stop in order to separate the belligerents and restore calm to the vehicle
- A mistake in evaluating the actual position of the coach, which was partly due to the difficulty of identifying the exact area of the level crossing at night.

The analysis of this accident led the BEA-TT to issue the following recommendations and suggestions on:

- Maintaining the discipline of pupils transported by coach
- Defining the area occupied by level crossing no. 19 in the hamlet of Jonches in Auxerre, and the area around it, by means of road markings.

Raising coach drivers' awareness of the lengthwise dimensions of their vehicle, particularly in exceptional or emergency situations.

4 - Investigations carried out: road transport

4.1 - Investigations carried out in 2011

Seven investigations into road traffic accidents, excluding level crossings and intersections with tramlines, were completed in 2011. The type, dates and places of these accidents are specified in the table below. They cost the lives of 15 road users. One of them was particularly devastating. It involved an articulated lorry which overturned at night on the A10 motorway in the municipality of Marcillac, blocking all traffic lanes and the emergency hard shoulder of the carriageway on which it had been travelling.

Date	Type and place of accident	Fatalities
05.02.2010	Crash of a coach into an underpass with restricted clearance in Rouen (Seine-Maritime)	0
14.05.2010	Accident involving the Notre-Dame-de-la-Garde mini road train in Marseille (Bouches-du-Rhône)	0
20.06.2010	Accident due to a coach leaving the RN 320 trunk road in Porté-Puymorens (Pyrenées-Orientales)	2
09.07.2010	Pile-up involving two HGVs and five light vehicles on the RD 9 minor road in Aix-en-Provence (Bouches-du-Rhône)	3
15.07.2010	Collision between two heavy goods vehicles on the RD 974 in Asnières-lès-Dijon (Côte d'Or)	2
16.12.2010	Collision and fire involving two HGVs, one of which was transporting LPG, on the A8 motorway in La Trinité (Alpes-Maritimes)	1
28.04.2011	Crash of a van into a semi-trailer that had overturned on the A10 motorway in Marcillac (Gironde)	7

Four of the accidents in question were caused by HGVs. They were all due to a lack of vigilance by their driver, which either led to the loss of control of the semi-trailer unit, or to a collision without braking or manoeuvres to avoid the stationary vehicle ahead. It has been impossible to determine the causes of these lapses of attention with certainty. In three of these accidents, falling asleep at the wheel was, in all likelihood, to blame. In the case of the pile-up that occurred on the RD 9 minor road in Aix-en-Provence, the complete lack of reaction by the driver of the refrigerated lorry was probably due to the performance of an ancillary task.

Elsewhere, the raging fire following by the collision of two HGVs on the A8 motorway bypassing Nice, was caused by the safety cut-off on the outlet valve of the liquefied petroleum gas tanker being knocked off in the crash. The subsequent investigations showed that although this tanker was approved by the competent Italian authorities, the valve in question did not meet the targets set by the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Consequently, it would be highly desirable for the implementation conditions for these targets to be clearly specified.

Two of the investigations completed in 2011 concerned accidents involving coaches. Here again, the inattention of the drivers was the main cause. However, the conditions for the signalling of specific difficulties posed by the road infrastructures on which these coaches were travelling, i.e. an underpass with limited clearance in Rouen and a deep and steep-sided ditch running alongside the RN 230 trunk road descending from the Col de Puymorens, may have played a role.

Finally, the final investigation conducted in 2011 concerned the overturning of the last trailer on the Notre-Dame-de-la-Garde tourist road train in Marseilles. Two other similar accidents had already occurred in Ile-Rousse in the Haute-Corse *département* of Corsica in 2008 and in Besançon in the *département* of Doubs in 2009. The analyses performed highlighted safety issues specific to this type of transport, in terms of the operators' knowledge of the operating limitations of the equipment in question, the training of drivers, the drafting of safety regulations relevant to each circuit and the real-time regulation of the operation of several mini trains travelling on the same circuit at the same time.

4.2 - Recommendations made

At the end of these seven investigations, 16 separate recommendations were formulated by BEA-TT.

Subject of the recommended measures

Of these 16 separate recommendations:

- 5 concern modifications to road infrastructure or signage;
- 3 focus on assessing, monitoring or raising the awareness of drivers on the roads
- 1 relates to design measures for safety devices on liquefied petroleum gas tankers
- 3 recommend changes to the regulations regarding the design of road infrastructures, equipment for vehicles and driving
- 4 more specifically target the operation of tourist road trains, concerning the issuing of operating permits, the organisation of circuits and taking account of the operating limitations of the equipment in question.

Recipients

As six of the abovementioned recommendations were each sent with the same wording to two recipients, the total number of recommendations received by recipients in respect of the investigations in question was 22 including:

- 11 by the supervisory and regulatory authorities;
- 5 by road infrastructure managers
- 2 by transport contractors
- 2 by associations of tourist road train operators
- 1 by a manufacturer of mini road trains
- 1 by a research body.

4.3 - Follow-up action planned by the recipients

The table below indicates the follow-up action planned by the recipients of the abovementioned recommendations.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
Rouen	8	2	2	4
Marseilles	10	3		7
Porté-Puymorens	1	1		
Aix-en-Provence	0			
Asnières-lès-Dijon	1	1		
La Trinité	2	1		1
Marcillac	0			
TOTAL	22	8	2	12

The table shows that two of the recommendations were not accepted by their recipients. Thus:

- Veolia Transport considers that it already exceeds its regulatory obligations with regard to the training of its drivers and that consequently, it does not need to implement any further actions;
- CERTU (French Research Centre for Networks, Transportation, Urban Planning and Construction) points out that the guide for urban crossroads recommends the installation of clearance detection gantries on the approach to underpasses with limited clearance. It also considers that the anticipated safety improvements to be gained from the compulsory implementation of such detection systems would be very limited, or indeed marginal. Therefore, it does not consider it useful to launch an expediency study on this subject.

4.4 - Overall summaries of investigation reports published in 2011

Crash of a coach into an underpass with limited clearance in Rouen (Seine-Maritime) on 5 February 2010



At around 11:25 a.m. on Friday 5 February 2010, a coach rammed into the “Pierre Corneille” underpass with limited clearance (*passage souterrain à gabarit réduit - PSGR*) in Rouen, because the height of the coach exceeded the available clearance.

One person was seriously injured and six others were slightly injured in the accident. The rest of the 32 passengers had to be treated for shock. Furthermore, major material damage was recorded.

The immediate cause of the accident was the error of judgement committed by the coach driver, who drove into an underpass that was lower than the height of her vehicle.

This error of judgement was linked to the coach driver's failure to concentrate on her driving duties, which could be attributed to lack of concentration on her part. This could be due to her having major personal problems, exhibiting chronically inadequate driving behaviour from a safety standpoint and wearing headphones.

Moreover, although the company that employs this driver had been informed about certain recurrent problems, it had failed to take adequate steps to correct these driving deficiencies and behavioural problems. In this case, there was also an organisational cause that may have played a role in the driver's behaviour at the time of the accident.

Furthermore, three factors coincided to increase the severity of this accident:

- The high speed of the coach (50 to 55 km/h at the time of the impact), without any prior braking
- The lack of a clearance detection gantry on the approach to the underpass, which would certainly have prompted the driver to brake and could have reduced the intensity of the impact or have even prevented the accident.

- The lack of seatbelts in the coach, which were not compulsory, given the date on which it was first brought into service.

Six recommendations were formulated, concerning:

- The signalling of underpasses with limited clearance in the city of Rouen
- The implementation of a clearance detection system at the entrance to underpasses with limited clearance
- Vocational training and the correction of the driving deficiencies of salaried drivers in passenger road transportation companies
- The use of headphones by the driver of a passenger road transportation vehicle while driving.

Accident involving the Notre-Dame-de-la-Garde mini road train on 14 May 2010 in Marseilles (Bouches-du-Rhône)



At around 2:00 p.m. on 14 May 2010 in Marseilles (Bouches-du-Rhône), the last wagon of a tourist road train overturned on the corner while leaving the Notre-Dame-de-la-Garde basilica car park.

13 people were injured in this accident, four of them seriously.

The direct cause of the accident was the mini train being driven at excessive speed on a tight corner.

Three causal factors may have played a role in this inappropriate driving:

- A real-time communication breakdown between the regulator of the tourist circuit and the driver of the mini train, which presented the driver with an unforeseen circumstance that disturbed him and affected his driving
- The driver's ignorance of the operating limitations of his equipment
- The lack of instructions for negotiating the difficult parts of the circuit.

Furthermore, the poor stability of mini road trains on tight corners makes them more likely to turn over.

The analysis of factors responsible for the accident led BEA-TT to make six recommendations:

- Regulation of the running of mini road trains operating simultaneously on a circuit
- Training of the drivers of mini road trains in the specific operation of this type of equipment and on its operating limitations
- Formalisation of the safety rules for each circuit and inclusion of their approval by the Prefect of the *département* in their operating permit

- Provision of information for the purchasers of mini road trains concerning their operating limitations and precautions
- Fitting of speed indicators to mini road trains.

**Accident due to a coach
leaving the RN 320 trunk road
at Porté-Puymorens (Pyrénées-Orientales)
on 20 June 2010**



At around 2:30 p.m. on Sunday 20 June, in Porté-Puymorens in the *département* of Pyrénées-Orientales (66), a coach returning from Andorra and travelling on the *Route Nationale* (RN) 320 trunk road towards Foix, swerved to the right, put its front right-hand wheel in the drainage channel alongside the carriageway, suddenly jumped out of it and crossed both traffic lanes before leaving the road on the left-hand side and then overturning in the meadow below.

Two people were killed in this accident and 17 were injured, three of whom were hospitalised; all were coach passengers.

The direct and immediate cause of this accident was a lack of attention by the coach driver who allowed the front right-hand wheel of his vehicle to slip into the drainage channel alongside the RN 320 trunk road on the mountain side, followed by his inappropriate reaction by suddenly steering to the left in an attempt to remedy this situation.

The characteristics of this deep and steep-sided drainage channel contributed to the coach leaving the road, by making it more difficult to regain control of the vehicle and bring it back onto the carriageway.

The analysis of this accident led BEA-TT to issue a recommendation aiming to increase the width of the hard shoulder on the RN 22 and 320 trunk roads in the descent from the Pas de la Case when this route is next redeveloped and in the meantime, to refrain from increasing the depth of the channels and to encourage users to focus their attention on their trajectories.

In addition, this accident provides an opportunity to remind:

- *Transport companies and their drivers of the need to avoid any sources of distraction while driving*
- *The public authorities and associations why it is so important for seatbelts to be worn in coaches and of the need to hold regular public awareness-raising activities in this field.*

**Pile-up on the RD 9 minor road
at Aix-en-Provence (Bouches-du-Rhône)
on 9 July 2010**



At around 1:15 p.m. on Friday 9 July 2010, a refrigerated lorry travelling on the RD9 minor road in the Vitrolles – Aix-en-Provence direction, collided with a queue of vehicles in a traffic jam around the La Pioline designated development zone in Aix-en-Provence (Bouche-du-Rhône).

The pile-up involved two heavy goods vehicles, four light vehicles and a van.

Three people were killed, one person was seriously injured and two people were slightly hurt.

The cause of this accident was the lack of reaction by the driver of the refrigerated lorry, who did not slow down on the approach to the traffic jam queue, which was highly visible, and who made no attempt to brake or avoid the stationary vehicles, even at the last instant.

The cause of this failure to react cannot be determined with certainty. However, it would seem that the hypothesis of hypo-vigilance can be discarded because the driver had just begun his delivery round a few minutes earlier. Similarly, the hypothesis of the driver suddenly being taken ill would also seem unlikely, given the driver's age, his lack of a known medical history and the absence of clues revealed by the post-mortem examinations.

Under these conditions, inattention linked to the performance of an ancillary task would seem to be the most probable cause of the complete lack of any reaction by the driver concerned; however, he would need to have taken his eyes off the road for a good ten seconds or so in order to fail to notice the traffic jam.

This lack of attention may have been caused by the operation of a smartphone; however, it has been impossible to confirm this hypothesis because once switched on, this type of device remains permanently connected to the Internet, without a user being necessarily in the process of using it.

The BEA-TT thus asks the public authorities to continue their efforts to raise users' awareness of the dangers due to the presence of mobile telephones near drivers, by reminding them that consulting text messages, multimedia content, e-mails or websites is wholly incompatible with driving.

**Collision between two HGVs
on the RD 974 minor road in Asnières-lès-Dijon (Côte d'Or)
on 15 July 2010**



At 3:15 a.m. on Thursday 15 July 2010, an articulated lorry, travelling on the RD 974 minor road in the Langres – Dijon direction, around the commune of Asnières-lès-Dijon (Côte-d'Or), served to the left and collided with another articulated lorry travelling in the opposite direction.

Two people were killed in the accident – the drivers of both lorries.

The cause of the accident was the swerving of one of the lorries to the left for a reason that cannot be determined with certainty.

Hypotheses include the driver falling asleep, a sudden illness leading to a loss of consciousness or an attempt to overtake another unidentified vehicle.

An examination of the circumstances of this accident led BEA-TT to issue a recommendation concerning the right to overtake, which is permitted in this area.

**Collision and fire involving two HGVs,
one carrying LPG,
on the A8 motorway in La Trinité (Alpes Maritimes)
on 16 December 2010**



At around 1:00 a.m. on 16 December 2010, an articulated lorry travelling towards Italy on the A8 motorway crashed into a semi-trailer transporting liquefied petroleum gas (LPG) at the Viaduc de la Neuc viaduct in the municipality of La Trinité in the *département* of Alpes-Maritimes. Following the impact, LPG escaped from the tanker and ignited, causing a violent fire.

The driver of the HGV at the origin of the crash lost his life. Local residents were evacuated to protect them against any risk of intoxication or explosion. There was significant damage to the viaduct and its infrastructure.

The direct and immediate cause of the accident was the lack of any reaction by the driver of the HGV that caused the accident, who did not slow down or alter his course when approaching the tanker lorry that had stopped in the middle of the lane. This failure to react was probably due to a state of drowsiness.

Two other factors contributed to the collision:

- The inadequate organisation of the journey of the articulated lorry at the origin of the crash, whose nocturnal rest stops were unplanned. This facilitated the build-up of the driver's fatigue and led to him to seek a suitable parking place, without success.
- The layout, characteristics and signage of areas suitable for use as stopping points throughout the section of the A8 motorway bypassing Nice, whose restricted conditions of use are not apparent, i.e. stops to be used for absolute emergencies only, and which must be followed by a call for emergency assistance if it is impossible to set off again immediately.

The outbreak of fire was due to the safety cut-off on the LPG liquid phase outlet valve, situated at the bottom of the tank, being knocked off in the crash. The design of this device thus failed to meet the objectives set in this field by the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

The analysis of this accident led BEA-TT to issue two recommendations:

- The first concerns the creation of refuges along the section of the A8 motorway bypassing the Nice conurbation
- The second is designed to ensure the effectiveness of the provisions of the “ADR” agreement, requiring the internal safety cut-offs, which must be fitted to tanker outlets, to be capable of remaining in place if subjected to external stresses.

Furthermore, BEA-TT draws the attention of professional transport federations to the benefit of planning long journeys over unaccustomed routes and of using new GPS equipment that is capable of monitoring vehicle activity for this purpose, in the interests of safety and for the good of the company.

**Crash of a van into a semi-trailer
that had overturned on the carriageway
of the A10 motorway in Marcillac (Gironde)
on 28 April 2011**



At around 12:11 a.m. on Thursday 28 April 2011, an articulated lorry consisting of a tractor unit and a semi-trailer travelling in the slow lane of the A10 motorway in a North-South direction, suddenly swerved to the right, continued along the hard shoulder and then tipped over on its right-hand side while attempting to get back onto the carriageway, skidding across its full width and running into the double crash barrier situated on the central reservations. It then came to rest in a position that blocked the entire carriageway and the emergency hard shoulder, at reference point (PR) 494.7 in the municipality of Marcillac in the *département* of Gironde. Shortly afterwards, a van travelling in the fast lane and in the same direction collided head-on into the floor of the semi-trailer.

The accident caused the death of seven people: the driver of the articulated lorry and the six occupants of the van.

The initial cause of the accident was the loss of control of the articulated lorry which, by overturning, prevented any possibility of travelling on the motorway lanes.

It has been impossible to determine the cause of this loss of control with certainty. The investigations conducted have not revealed any specific problems relating to the condition of the vehicles, the road infrastructure or the driver's health. The most plausible hypothesis is that the driver fell asleep, although he was in compliance with the legislation on working and driving conditions.

Once it had turned over onto its right-hand side, with its chassis facing the oncoming traffic in the middle of the night, the semi-trailer was difficult to see by drivers travelling on the motorway lanes in question. This very probably explains why the van smashed into it at full speed.

With regard to the circumstances of this accident and its probable causes, BEA-TT issued no specific recommendations at the end of this investigation. However, it emphasised the need to comply with the mandatory requirement to wear seatbelts, including for HGV drivers.

5 - Investigations carried out: waterway transport

5.1 - Investigation carried out in 2011

An investigation into one accident on a waterway was completed in 2011. The type, place and date of this accident is specified in the table below. There were no casualties other than the pilot of the vessel involved, who was slightly injured. However, waterway traffic on the Rhône was interrupted at the Mornas bridge for nearly 24 hours in both directions.

Date	Type and place of accident	Fatalities
18.11.2008	Collision with a bridge by the river-marine vessel "Natissa" on the Rhône in Mornas (Vaucluse)	0

5.2 - Recommendations made

At the end of this investigation, 5 separate recommendations were formulated by BEA-TT.

Subject of the recommended measures

Of these 5 recommendations:

- 2 concern the management of operating and rest time for pilots of inland waterway vessels
- 1 concerns a medical examination for pilots over 65 years of age
- 1 focuses on developing a device capable of warning pilots of vessels of the position of their wheelhouse when approaching bridges
- 1 relates to the management of emergency stops by vessels in non-secure sites.

Recipients

As three of the abovementioned recommendations were each sent with the same wording to two recipients, the total number of recommendations received by recipients in respect of the investigation in question was 8 including:

- 3 by the regulatory or supervisory authorities (central government departments and decentralised services)
- 3 by waterway infrastructure managers
- 1 by a waterway transportation company
- 1 by the professional association of Rhône-Saône river pilots.

5.3 - Follow-up action planned by the recipients

The table below indicates the follow-up action planned by the recipients of the abovementioned recommendations.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
Natissa	8	2	1	5

One recommendation was not taken into account, as the Compagnie Nationale du Rhône, to which it was sent, considered that it could not commit to stimulating the development of IT equipment capable of warning the pilots of approaching obstacles.

5.4 - Overall summary of the investigation report published in 2011

**Collision of the river-marine vessel
“Natissa” with a bridge
over the River Rhône in Mornas (Vaucluse)
on 18 and 19 November 2008**



The accident covered by the investigation occurred in two phases that took place on 18 and 19 November 2008 respectively.

At 7:15 p.m. on 18 November 2008, the wheelhouse of the river-marine vessel “Natissa”, registered in Malta and transporting 1,454 tonnes of bulk cement from Nice to Lyons, smashed into the deck of the TGV high-speed rail bridge (“Méditerranée” high-speed line) in Mornas (Vaucluse). The force of the impact crushed the wheelhouse, injuring the pilot who was inside it at the time. The vessel then ran aground on the right bank, 100 m upstream of the bridge.

During this phase, there were no other casualties amongst the members of the crew and there was no interruption to river traffic.

On the next day – 19 November – around 12:00 p.m. the vessel was refloated due to the effects of the wind and current. After colliding with a marker buoy, it ran into the bridge via the navigable channel and remained stuck underneath the bridge deck. There was no pollution.

Nor was there any apparent damage caused to the bridge deck. Only the marker buoy was knocked over. However, the incident on 19 November interrupted river traffic in both directions until 20 November 2008 – the date on which the Natissa was towed upstream and moored at the Lafarge Company's berthing dock in Mondragon.

The direct cause of the first phase of the accident – the collision with the bridge by the Natissa's wheelhouse, followed by its grounding upstream of the bridge – would appear to be the pilot forgetting to lower the wheelhouse, or attempting this manoeuvre too late.

The direct cause of the second phase – the grounding of the vessel and its blockage under the bridge, which interrupted river traffic on the Rhône – was the lack of precautions made to ensure the proper mooring of the vessel after the first phase.

The duration of this interruption to river traffic was increased by the difficulties encountered in discussions with the insurance companies.

Five preventive recommendations were formulated following the technical investigation, concerning two groups of identified factors:

- Fatigue of the pilot and its effects on his vigilance
- Inspection of the safety of a vessel that has made an emergency stop.

6 - Investigations carried out: Guided transport

6.1 - Investigations carried out in 2011

Four investigations concerning tramway accidents were completed in 2011. The types, places and dates of these accidents are specified in the table below. In total, one person was killed and 11 were injured in these accidents.

Date	Type and place of accident	Fatalities
08.10.2009	Derailment of a Valenciennes tram following a collision with a car in Denain (Nord)	0
26.12.2009	Fire in a tyre-mounted tram in Clermont-Ferrand (Puy-de-Dôme).	0
27.04.2010	Collision between a tram and a private car in Orvault (Loire-Atlantique)	1
12.05.2010	Collision between two trams in Montpellier (Hérault)	0

Three of the accidents were the direct consequence of human error – either a car driver failing to comply with traffic lights at which he or she should have stopped, or the tram driver involved failing to retain control of the tram.

However, other factors also played a significant role in these three accidents.

In particular, the investigations conducted into the collisions in Denain and Orvault revealed that certain intersections of roads and tramlines, due to their complexity or environment, are not clear enough for road users. The concluding recommendations made in the reports thus question the design of these intersections and the use of R24-type stoplights at them, which are relatively uncommon in conurbations.

More specifically, the accident that occurred in Denain also reveals the ease with which certain trams can be derailed in the event of an impact with a road vehicle. Its conclusions invite manufacturers and the supervisory body to take account of this risk in the design and authorisation to operate tramway equipment.

Finally, the investigation conducted into the crash of two trams in Montpellier shows the need to improve the training of tram drivers in the management of complex situations, emergencies and stress.

The fourth accident – i.e. the fire in a tyre-mounted tram in Clermont Ferrand – was caused by the failure of the braking system fitted to the rolling stock in question. Malfunctions affecting these brakes had been known for two years but had not yet been corrected. This accident thus emphasises the critical need for a structured and monitored feedback process, which should be especially rigorous during the running-in period after commissioning, given that the guided public transport system in question is of an innovative nature. In addition, the low fire-resistance of certain materials used in the manufacture of the tram in question allowed the fire to spread quickly, leading to its complete destruction.

6.2 - Recommendations made

At the end of these investigations, 19 separate recommendations were formulated by BEA-TT.

Subject of the recommended measures

Of these 19 separate recommendations:

- 7 concern modifications to intersections between tramway line and roads, as well as the traffic light systems installed at them
- 7 concern the design of rolling stock
- 2 relate to the management of safety
- 3 target the training and accreditation of tram drivers

Recipients

As five of the abovementioned recommendations were each sent with the same wording to two or three recipients, the total number of recommendations received by recipients in respect of the four investigations in question was 26 including:

- 8 by regulatory or supervision authorities (central government departments and STRMTG [French Agency for Mechanical Ropeways and Guided Transport Systems])
- 6 by bodies responsible for the organisation of transportation
- 6 by operators
- 5 by manufacturers of rolling stock
- 1 by a research body.

6.3 - Follow-up action planned by the recipients

The table below indicates the follow-up action planned by the recipients of the abovementioned recommendations.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
Denain	5	4		1
Clermont-Ferrand	10	9	1	
Orvault	7	7		
Montpellier	4	4		
TOTAL	26	24	1	1

It emerges that one recommendation was disputed by its recipient. In fact, notwithstanding current practices, the STRMTG considered that it would be excessive to require materials used in the manufacture of new trams, regardless of whether they travel through tunnels, to provide a level of safety vis-à-vis fire risks equivalent to that required by the NF F 16-101 standard concerning the fire behaviour of railway rolling stock.

6.4 - Overall summaries of investigation reports published in 2011

Derailment of a Valenciennes tram following a collision with a car in Denain (Nord) on 8 October 2009



At 2:01 p.m. on 8 October 2009, a tram on the Valenciennes tramway line, travelling in the towards the “Espace Villars” terminus, ran into a car on the intersection with the Rue Jean Jaurès situated in the municipality of Denain (Nord).

The car was pushed forward in the impact and crushed between the tram and a traffic light support post. The tram derailed for a distance of 14 m and crossed over the adjacent track, coming to rest just on the platform of the “Jaurès” station situated in the immediate vicinity of the intersection.

One person was seriously injured in this accident and eight others were slightly hurt.

The direct and immediate cause of the collision was the failure of the light vehicle to stop at the R24 traffic light, which was flashing on red.

- Three factors may have contributed to this collision:
- The road user’s poor perception of the tramline crossing and the associated traffic light
- The poor visibility for both the tram and the vehicle arriving at the intersection, which could delay the perception of an immediate risk of collision
- The peri-urban environment in which the tram was travelling, which may have given its driver an impression of reduced danger.

In addition, two factors contributed to the derailment and the tram’s incursion into the adjacent track and platform:

- The tram’s sensitivity to derailment in collisions
- The non-crumpling nature of the traffic light support post into which the light vehicle crashed.

The accident analysis led BEA-TT to issue five recommendations concerning the four following topics:

- Improvement of the visibility and traffic light system at the intersection of the Rue Jean Jaurès and the tram line
- Improvement of the safety of intersections crossed by tramlines in a peri-urban environment
- Consideration of risks of derailment in collisions with road vehicles at the tram design stage
- Preventive replacement of obstacles installed in the vicinity of danger areas.

Furthermore, to coincide with the analysis of this accident, BEA-TT renewed both recommendations that it had already made on understanding, obeying and assessing the effectiveness of the R24 traffic lights installed at intersections crossed by tramlines. These recommendations had been issued after the investigations conducted into the collisions that occurred in Saint-Herblain on 4 June 2007 and Orvault on 27 April 2010, in the Nantes conurbation.

Fire in a tyre-mounted tram on 26 December 2009 in Clermont-Ferrand (Puy-de-Dôme)



At around 7:12 a.m. on 26 December 2009, the driver of tram no. 15 on the Clermont-Ferrand tramway system noticed smoke emanating from inside one of the modules. He returned the tram to a siding at the “La Pardieu Gare” terminus of the line. Several minutes later, the tram burst into flames. The fire lasted about thirty minutes.

There were no casualties of the fire, but the tram was completely destroyed. Minor damage was caused to the infrastructure.

The direct cause of the accident was the seizing of a brake due to widespread corrosion of the brake pad actuating system, whose design and manufacture failed to ensure its watertightness.

The heat radiated by the heating of this brake in its “on” position led to the pyrolysis of the mudguard and the adjacent communication bellows. The pyrolysis gas then caught fire and the fire spread to the whole tram.

The spreading of flames in the passenger area was facilitated by the short distance and lack of an efficient firewall between the braking system and the communication bellows.

The fire spread easily to the rest of the tram due to the presence of materials that did not provide a level of fire protection equivalent to that specified by the NF F 16-101 standard relating to the fire behaviour of railway rolling stock.

The accident analysis led BEA-TT to issue six recommendations concerning the four following topics:

- The design of the mechanical brakes on the tram
- Insulation between the passenger area and the mechanical braking system
- Fire behaviour of materials used in the construction of the tram
- Organisation of feedback

In addition, BEA-TT encourages manufacturers to develop and use materials for the communication bellows whose burning behaviour and smoke index are an improvement over current devices of this type.

Collision between a tram and a private car in Orvault (Loire-Atlantique) on 27 April 2010



At 2:05 p.m. on 27 April 2010, at the “Cardo/Printemps” roundabout in Orvault (Loire-Atlantique), a tram travelling on line 2 of the Nantes conurbation system collided with a private car that had pulled out into the tramway platform despite the flashing red light.

One person was killed in the accident: the driver of the private car.

The direct cause of this accident was the private car's failure to obey the R22j and R24 traffic lights, which were on red.

The unclear layout of the intersection and traffic lights may have contributed to the driver's failure to notice these signals. This lack of clarity is due to the accumulation of several factors:

- Complexity of the crossroads (car/tram conflicts and a large number of entrances)
- Poor visibility of the traffic lights in the urban context
- Ambiguity or poor perception of certain signals.

The BEA-TT issued 4 recommendations to local stakeholders (operator and urban area community) and national stakeholders (DSCR and CERTU), with a view to:

- Redesigning the crossroads at which the accident occurred and completing the traffic light improvements currently underway at crossroads on intersections in the Nantes conurbation that are crossed by the tramway;
- Continuing the national comparative assessment of stop lights at intersections crossed by a tramway, and improving users' awareness of the R24 traffic light, especially in an urban context.

Collision of two trams in Montpellier (Hérault) on 12 May 2010



The Montpellier tram system has a common section shared by lines 1 and 2 in Rue Jules Ferry, situated on a 7% slope.

At 5:20 p.m. on 12 May 2010, tram 2032 on line 1 stopped in front of a red railway traffic light at the top of the slope in order to let tram 2053 on line 2 enter this common section. When the light changed to green, the driver of tram 2032 tried to set off again but the tram slipped backwards and struck the rear of tram 2053, which it had just allowed to enter a few moments before and which was situated at the exit of the common section at the intersection between both of the lines in question. The impact caused both trams to derail.

Two people were slightly injured in tram 2053 that was hit from behind.

The direct cause of the collision was the uncontrolled movement of tram 2032. This occurred because the newly trained driver did not adopt an appropriate procedure for starting the tram on a slope. This movement was not stopped because the driver, having lost his composure, did not activate the braking system.

The accident analysis led BEA-TT to issue four recommendations concerning the three following topics:

- Operational procedures for starting on a slope and their acquisition through training
- Assessment of the drivers' abilities to react to complex situations, emergencies and stress, and training for these situations
- Implementation of anti-runaway technology on new trams.

7 - Investigations carried out: ski lifts

7.1 - Investigation carried out in 2011

An accident that occurred during the operation of a ski lift prompted BEA-TT, in an interim report published in August 2012 and in application of Article L.1621-20 of the French Transportation Code, to make immediate safety recommendations aiming for more reliable detection of chair lift users who are having problems dismounting.

The following table specifies the type, place and date of the accident in which an adolescent lost his life.

Date	Type and place of accident	Fatalities
23.02.2011	Accident involving a passenger on the "Echo alpin" chair lift in Châtel (Haute-Savoie)	1

7.2 - Recommendations made

Subject of the recommended measures

Three separate recommendations were issued in this context concerning the following areas respectively:

- The inspection of the efficiency of all technical non-dismounting devices installed on existing chair lifts, based on a method defined by STRMTG, prior to the 2011-2012 winter season
- The fitting of such a device to any unequipped chair lifts, prior to the aforementioned operating season if at all possible
- The organisation of a daily check, by the operators, of the efficient operation of these devices.

Recipients

These three recommendations were sent to the following bodies:

- The first and last were sent to the French Agency for Mechanical Ropeways and Guided Transport Systems (STRMG)
- The second was sent to the French General Directorate for Infrastructure, Transport and the Sea (DGITM).

7.3 - Follow-up action planned by the recipients

As shown in the table, the three aforementioned recommendations were accepted by their recipient.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
Châtel	3	3		

Moreover, they have been implemented.

Consequently, on 20 October 2011, the STRMTG disseminated a technical bulletin to all chair lift operators specifying the optimal configuration to which the positioning of the non-dismounting devices must conform, in order to guarantee their efficiency. This bulletin also asked them to perform daily checks of these devices and to record them in their operating logs, as of the 2011 operating season.

In addition, on 5 October 2011, the DGITM published a circular asking the operators of disengageable chair lifts to equip them with an aborted dismount detector for the 2011-2012 season and, imperatively, by 10 February 2012. This timeframe was observed.

7.4 - Overall summary of the investigation report published in 2011

**Accident involving a passenger
on the “Echo alpin” chairlift
in Châtel (Haute-Savoie)
on 23 February 2011**



On 23 February 2011, on the “Echo alpin” chair lift in the Châtel (Haute-Savoie) ski area, an adolescent of British nationality ended up dangling over the abyss, hanging from his seat by a strap on his rucksack, which had just passed the arrival terminal and had started back towards the departure terminal. He lost consciousness before the rescuers could bring him down to the ground and died in hospital 22 days later.

The first findings of the investigation showed that the adolescent did not manage to dismount from his seat in the unloading area. This occurred without the staff responsible for monitoring the dismounting process noticing this fact and without the “aborted dismount” technical mechanism designed to detect the presence of users that remain in their seats, stopping the system.

Therefore, certain conditions were not met in order to ensure the optimal operation of this system. In addition, not all chair lifts are equipped with such a mechanism.

Without awaiting the conclusions of the investigation, and to prevent a repeat of similar accidents, BEA-TT, in application of article L. 1621-20 of the French Transportation Code, deemed it necessary to send three safety recommendations to the DGITM and STRMTG with a view to testing the efficiency of the aborted dismount systems installed on existing chair lifts before the 2011-2012 operating season, fitting this technology to any chairs not yet equipped with such a system before this operating season if at all possible, and organising daily checks of the proper operation of these devices.

APPENDICES

Appendix 1: List of accident and incident investigations carried out since 2002

Appendix 2: Investigations opened in 2011

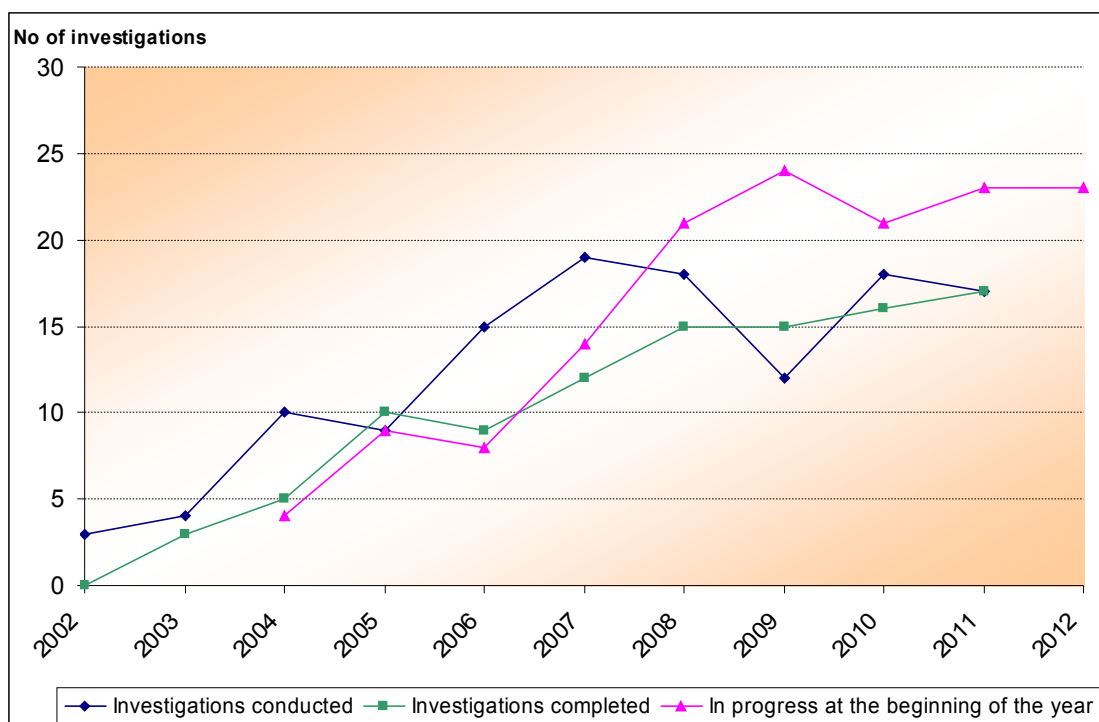
Appendix 3: Monitoring of the implementation of recommendations issued by BEA-TT in the railway transportation field

Appendix 4: BEA-TT organisational chart on 1 September 2012

Appendix 5: BEA-TT institutional texts

Appendix 1: List of accident and incident investigations carried out since 2002

The information in this appendix takes account of investigations undertaken in 2002 and 2003 by the General Council of Bridges and Highways (CGPC), which prefigured the permanent investigation body provided for by law no. 2002-3 of 3 January 2002 on, in particular, the safety of transport infrastructures and systems.



Year	In progress at the beginning of the year	Investigations conducted	Investigations completed
2002		3	0
2003		4	3
2004	4	10	5
2005	9	9	10
2006	8	15	9*
2007	14	19	12
2008	21	18	15
2009	24	12	15
2010	21	18	16
2011	23	17	17**
2012	23		

* not including the Frejus investigation, which resulted in a preliminary report in 2006 and ended with a complementary report in 2008

** not including the Neufchâteau and Châtel investigations, which resulted in preliminary reports in 2011

List of investigations carried out since 2002

Date of accident	Type and place of accident	Fatalities	Mode*
05.11.2002	Pile-up on the A10 in Coulombiers (86)	8	R
06.11.2002	Fire in a carriage on the Paris-Munich train in Nancy (54)	12	RY
2002	Nancy and Caen GLT	0	GT

27.01.2003	Train collision in La Biogna (06)	2	RY
17.05.2003	Coach accident on the A6 in Dardilly (69)	28	R
20.09.2003	Incident on line D of the Rapid Transit System (RER) in Villeneuve-Triage (92)	0	RY
18.11.2003	HGV collision involving a TDS, RN 165 in Nivillac (56)	2	R

18.01.2004	Train of barges in La Voulte-sur-Rhône (07)	1	W
15.02.2004	Moving snow walkway in Val-Cenis (73)	1	S
05.04.2004	Train collision in Saint-Romain-en-Gier (69)	0	RY
17.04.2004	Electrocution on a catenary in Saint-Nazaire (44)	1	RY
22.06.2004	Coach on the RN10 in Ligugé (86)	11	R
28.07.2004	The boat "Santina" in the lock in Blénod-lès-Pont-à-Mousson (54)	0	W
26.08.2004	The boat "Foehn" in Nogent-sur-Seine (10)	0	W
29.08.2004	Pile-up involving a coach on the A63 in Lugos (33)	8	R
30.08.2004	Tail-end collision between two tramway trains in Rouen (76)	0	GT
24.11.2004	Collision between an inter-city train and an articulated lorry in Millau (12)	0	LC

15.01.2005	Coach on the RN 7 in Saint-Martin-d'Estréaux (42)	0	R
16.02.2005	Collision between two rapid-transit trains in Longueville (77)	0	RY
19.04.2005	Training HGV on RD 8 in Saint-Nicolas-du-Tertre (56)	2	R
25.04.2005	Coach on the A13 in Bouafle (78)	3	R
27.05.2005	Francardo (02) railway collision	0	GT
04.06.2005	HGV fire in the Fréjus Tunnel (73)	2	R
09.06.2005	Accident on the LC in Saint-Laurent-Blangy (62)	0	LC
06.08.2005	Metro train fire at Simplon Station (75)	0	GT
August 2005	Fires on NGV coaches in Nancy and in Montbéliard	0	R

*RY=Railway; R=Road; GT=Guided Transport; LC=Level Crossing; S=Ski lift; W=Waterway

Date of accident	Type and place of accident	Fatalities	Mode*
20.01.2006	Coach accident on the RD35 in Arles (13)	1	R
01.02.2006	Pile-up on the A25 in Météren (59)	2	R
25.02.2006	Train derailment in Saint-Flour (15)	0	RY
28.03.2006	The cruiser "Camargue" in Pont-de-la-Voulte (07)	0	W
26.05.2006	Collision between a car and an HGV on the RN134 in Ogeu-les-bains (64)	5	R
13.06.2006	Train derailment in Ferté-sur-Chiers (08)	0	RY
28.06.2006	Near collision at Tencin-Theys Station (38)	0	RY
24.07.2006	Works train derailment in Culoz (73)	0	RY
24.07.2006	Collision between 2 HGVs and a camper van on the RN10 in Reignac (16)	5	R
07.08.2006	Accident involving a tanker on the A55 in Châteauneuf-les-Martigues (13)	1	R
05.09.2006	Coach accident on the A1 in Brasseuse (60)	4	R
08.08.2006	The river boat "Provence" in Gervans (26)	0	W
11.10.2006	Collision between a goods train and a TER in Zoufftgen (57)	6	RY
18.10.2006	Collision between a TER and an exceptionally large goods vehicle in Domène (38)	0	R
10.11.2006	Accident involving a passenger at Chaville Station (92)	1	RY
27.02.2007	Derailment of a maintenance vehicle at Carcassonne Station (11)	0	RY
01.03.2007	Accident involving a passenger at Villeneuve-Triage Station (94)	1	RY
13.03.2007	Collision between an HGV and a school bus in Angliers (89)	1	R
04.04.2007	Collision with an overhead power line by the self-propelled barge "Le Désiré" on the Rhône in Pierre-Bénite (69)	0	W
05.04.2007	Buffers hit by a train at Paris-Est Station (75)	0	RY
22.04.2007	Self-propelled barge losing its load on the Seine in Porte-Joie (27)	0	W
26.05.2007	Accident involving a cruiser in the lock in Rhinau (67)	0	W
04.06.2007	Collision between a tram and a car in Saint-Herblain (44)	1	GT
14.06.2007	Collision between a coach and a SANEF vehicle in Thillois (52)	2	R
11.07.2007	Grounding of the ship "Natissa" near Chasse-sur-Rhône (69)	0	W
22.07.2007	Accident involving a coach in Notre-Dame-de-Mésage (38)	26	R
08.08.2007	Accident involving a coach in Ghyvelde (59)	3	R
13.08.2007	Buffers hit by a train in Versailles Station (78)	0	RY
14.08.2007	Accident involving a coach in Paris 19 th (75)	0	R
09.11.2007	Train derailment in Pertuis (84)	0	RY
21.11.2007	Head-on collision of 2 trains in Barchetta (2B)	0	GT
26.11.2007	Collision between a train and an HGV on the LC in St-Médard-sur-Ille (35)	0	LC
03.12.2007	Collision between a train and a car on the LC in Cadaujac (33)	3	LC
19.12.2007	Collision between a train and an exceptionally large goods vehicle on the LC in Tossiat (01)	1	LC

*RY=Railway; R=Road; GT=Guided Transport; LC=Level Crossing; S=Ski lift; W=Waterway

Date of accident	Type and place of accident	Fatalities	Mode*
09.01.2008	School bus accident on the RD765 in Esquibien (29)	0	R
25.01.2008	Collision between a train and a car on the LC in Neufchâteau (88)	4	LC
19.01.2008	Grounding of the ship "Carina" on the Saône in Trévoux (01)	0	W
23.02.2008	Fire on a coach on the A43 in Marches (73)	0	R
26.02.2008	SNCF employee struck on the LC in Bayard (52)	1	LC
01.03.2008	Fall of a passenger from a cable car in Chamonix (74)	1	S
24.03.2008	Collision between a minibus and cars on the A9 in Gigean (34)	7	R
26.04.2008	Brake failure on a goods train in Montauban (82)	0	RY
23.05.2008	Accident involving a coach on the A10 in Suèvres (41)	7	R
23.05.2008	Collision between two passenger boats on the Rhône in Avignon (84)	0	W
02.06.2008	Collision between a train and a school bus on the LC in Allinges (74)	7	LC
24.06.2008	Fire in a carriage on the Train des Pignes in Mézel (04)	0	GT
07.07.2008	Collision between a train and an HGV on the LC in La Roche-en-Brénil (21)	0	LC
12.07.2008	Collision between a coach and a car on the A6 in Saint-Ambreuil (71)	1	R
11.09.2008	Fire on a Eurotunnel freight shuttle in the Channel Tunnel	0	RY
13.09.2008	Capsizing of a tour boat after collision with a bateau-mouche on the Seine in Paris	1	W
19.10.2008	Pile-up on the A4 in Courcelles-Chaussy (57)	1	R
18.11.2008	TGV bridge struck by the ship "Natissa" in Mornas (84)	0	W

03.02.2009	Collision between a coach and a TER on a LC in Nevers (58)	0	LC
05.03.2009	Collision between a coach and an HGV on the A9 in Pollestres (66)	0	R
07.03.2009	Passengers struck by the line B Rapid Transit Train at the Stade de France (93)	2	RY
08.04.2009	Collision between 2 HGVs carrying dangerous substances on the A49 in Saint-Quentin-sur-Isère (38)	2	R
20.05.2009	Collision between 2 freight trains in the Livernant Tunnel (16)	0	RY
03.07.2009	Collision between a train and a farm trailer in Boisseuil (87)	0	RY
01.08.2009	Collision between a minibus and a car on the A20 in Bonnac-la-Côte (87)	5	R
25.09.2009	Collision between a train and an HGV on the LC in Lalluque (40)	0	LC
08.10.2009	Collision between a tram and a car in Valenciennes (59)	0	GT
31.10.2009	Pile-up on the A54 in Bellegarde (30)	1	R
24.11.2009	Derailment of a railway wagon carrying dangerous substances in Orthez (64)	0	RY
20.12.2009	Derailment of a line C Rapid Transit Train in Choisy-le-Roi (94)	0	RY

*RY=Railway; R=Road; GT=Guided Transport; LC=Level Crossing; S=Ski lift; W=Waterway

Date of accident	Type and place of accident	Fatalities	Mode*
26.12.2009 investigation opened 04.01.2010	Fire in a tyre-mounted tram in Clermont-Ferrand (63)	0	GT
05.02.2010	Coach crash into an underpass with limited clearance in Rouen (76)	0	R
30.03.2010	Collision between a light vehicle and an HGV in Balaruc-les-Bains (34)	3	R
23.04.2010	Collision between a tram and a light vehicle in Olivet (45)	1	GT
27.04.2010	Collision between a tram and a light vehicle in Orvault (44)	1	GT
14.05.2010	Accident involving a tourist road train in Marseilles (13)	0	R
12.05.2010	Collision between two trams in Montpellier (34)	0	GT
22.05.2010	Derailment of railway wagons carrying dangerous substances in Neufchâteau (88)	0	RY
20.06.2010	Accident due to a coach leaving the road on the RN 320 in Porté-Puymorens (66) on 20 June 2010	2	R
09.07.2010	Pile-up between 2 HGVs and 5 light vehicles on the RD 9 in Aix-en-Provence (13)	3	R
15.07.2010	Collision between two heavy goods vehicles on the RD 974 in Asnières-lès-Dijon (21)	2	R
29.07.2010	Coal train derailment in Bully-Grenay (62)	0	RY
02.08.2010	Accident due to a heavy goods vehicle crossing the central reservation on the A9 motorway in Lespignan (34)	4	R
03.08.2010	Sinking of a barge on the Seine in Paris	0	W
27.09.2010	Collision between a regional express train (TER) and an HGV on LC no. 76 in Gimont (32)	0	LC
14.12.2010	Collision between a regional express train (TER) and an HGV on LC no. 19 in Auxerre (89)	0	LC
16.12.2010	Collision and fire of 2 HGVs, one of which was carrying dangerous substances on the A8 in La Trinité (06)	1	R
20.12.2010	Collision between a regional express train (TER) and an HGV on LC no. 100 in Recquignies (59)	3	LC

*RY=Railway; R=Road; GT=Guided Transport; LC=Level Crossing; S=Ski lift; W=Waterway

Date of accident	Type and place of accident	Fatalities	Mode *
10.01.2011	Derailment of a tram in Clermont-Ferrand (63)	0	GT
25.01.2011	Collision between a train and an exceptionally large goods vehicle in Balbigny (42)	0	LC
23.02.2011	Accident involving a passenger on a chair lift in Châtel (74)	1	S
09.03.2011	Derailment of two freight train wagons in Artenay (45)	0	RY
19.04.2011	Collision between 2 HGVs and 1 light vehicle on the A10 in Reugny (37)	4	R
28.04.2011	Collision between 1 HGV and a van on the A10 in Marcillac (33)	7	R
31.05.2011	Collision between a Regional Express Train and an exceptionally large goods vehicle in Mesvres (71)	0	LC
25.06.2011	Collision between a coach and a tram in Fleury-les-Aubrais (45)	0	GT
12.07.2011	Collision of a passenger train with a buffer in Calvi station (2B)	0	GT
14.09.2001	Collision between 2 HGVs and 3 light vehicles on the A9 in Loupian (34)	2	R
12.10.2011	Collision between a Regional Express Train and an HGV in Saint-Médard-sur-Ile (35)	3	LC
13.10.2011	Fall of five cable car cabins in Flaine (74)	0	S
13.10.2011	Crash of a barge into a moored pusher tug in Amfreville (27)	0	W
20.10.2011	Derailment of three freight train wagons in Valence d'Agen (82)	0	RY
23.11.2011	Pile-up involving 4 HGVs and 1 light vehicle on the A25 in Erquinghem-Lys (59)	2	R
04.12.2011	Collision between a Regional Express Train and a light vehicle in Le Breuil (69)	4	LC
03.12.2011	Derailment of a cable car cabin in Tignes (73)	0	S

*RY=Railway; R=Road; GT=Guided Transport; LC=Level Crossing; S=Ski lift; W=Waterway

Appendix 2: Investigations opened in 2011

1 - Investigations into railway accidents

The collision between a goods train and an exceptionally large goods vehicle in Balbigny in the département of Loire on 25 January 2011.

On level crossing no. 222, situated at Chemin du bois vert in Balbigny, a goods train travelling on the railway line between Roanne and Saint-Étienne crashed into an exceptionally large goods vehicle consisting of a tractor unit and two trailers linked by a platform, carrying two steel girders bound for the construction of the Gonon viaduct over the A89 motorway in the Rhône region.

This accident only caused slight injuries to the train driver. On the other hand, it caused major material damage to the exceptionally large goods vehicle, the train and the railway infrastructure.

This was due to the immobilisation of the articulated lorry in the railway area, with the trailer becoming stuck on the humpbacked section of road at this point.

The concluding report to the BEA-TT technical investigation was published in June 2012. It made recommendations concerning the clarification of regulations governing the conditions for the crossing of level crossings by exceptionally large goods vehicles and on raising the awareness of the risks inherent to the crossing of railway tracks within companies providing such transport services.

The line derailment of two freight train wagons in Artenay in the département of Loiret on 9 March 2011.

The 17th and 19th wagons of a train belonging to the Euro Cargo Rail (ECR) company, transporting pallets of mineral water from Riom in the Puy-de-Dôme to Forbach in Meurthe-et-Moselle, derailed just before Artenay station on the Paris to Orléans line.

There were no victims of the accident but major material damage was caused. The railway tracks were damaged for a distance of around 500 metres.

The direct cause of this derailment was quickly determined. It was due to the failure of the central part of the axle on the 17th wagon. This was the first ever failure of this kind to occur on the French railway network. It concerned a wagon of Swedish origin, registered in Germany.

The concluding report to the corresponding technical investigation was published in July 2012. It revealed that the failure of the abovementioned axle was due to fatigue cracking that had begun around ten years previously due to friction with a brake rigging component on the container wagon to which this axle was then fitted. This cracking was subsequently not repaired during maintenance operations carried out in different Swedish workshops.

The recommendations made therein concern the application of the European Visual Inspection Catalogue for freight wagon axles and the quality control of the interventions of workshops responsible for maintaining these components.

Collision between a Regional Express Train and an exceptionally large goods vehicle in Mesvres in the département of Saône-et-Loire on 31 May 2011.

On level crossing no. 66 situated at Mesvres, a Regional Express Train (*train express régional* - TER) travelling from Dijon to Nevers, crashed into the second of three semi-trailers in a convoy of exceptionally large goods vehicles that were carrying wind turbine blades under escort by the French gendarmerie.

There were no casualties of this accident, but significant damage was caused.

The concluding report to this investigation was published in August 2012. It reveals the recurrent failure to apply the regulatory provisions relating to the crossing of level crossings by exceptionally large goods vehicles. This is exacerbated by the room for interpretation that the wording of these regulations allows haulage companies. It also focuses on the management of the journey of the three aforementioned articulated lorries, which failed to take sufficient account of the dangers posed by the crossing of railway tracks on the route through a conurbation that involved several difficulties.

Both of these observations were covered in the recommendations that were issued. They supplement and strengthen the recommendations made following the technical investigation into the accident in Balbigny in January 2011.

Collision between a Regional Express Train and an articulated lorry in Saint-Médard-sur-Ille in the département of Ille-et-Vilaine on 12 October 2011.

An articulated lorry, consisting of a tractor unit equipped with a lifting crane and a semi-trailer, was hit by a Regional Express Train at level crossing no. 11 on the Rennes to Saint-Malo railway line in Saint-Médard-sur-Ille.

This accident cost the lives of three passengers on the train and injured 44 others, in addition to the driver of the HGV involved.

This was the consequence of an inappropriate reaction by this driver who, having failed to notice the flashing red lights announcing the arrival of the train, had pulled out into the railway area and then, noticing the lowering of the half-barriers, braked, stopped on the tracks and hesitated about what to do next.

The level crossing in question had previously been the scene of a similar collision on 26 November 2007, which had led to BEA-TT conducting a technical investigation after which, the managers of the infrastructures concerned were recommended to implement measures designed to facilitate the crossing of this railway crossing by HGVs.

The investigations carried out during the investigation into the accident on October 2011 showed that no significant actions had been undertaken in response to this recommendation, that the level crossing in question had not been classified as a "cause for concern" and that its geometric characteristics could have contributed to the pronounced hesitation of the driver of the HGV concerned.

The concluding report to this new investigation thus recommended an assessment of the implementation conditions for the policy to improve level crossings that are listed as "causes for concern".

Derailment of three wagons and collision with a TGV high-speed train in Valence d'Agen in the département of Tarn-et-Garonne on 20 October 2011

Three hopper wagons loaded with ballast on a goods train operated by the SNCF (French National Railways Company), travelling between Bordeaux and Toulouse, derailed just before Valence d'Agen station. A high-speed train (TGV) travelling on the adjacent line at this very moment was struck by flying ballast and debris that damaged its front, broke its front windows and several other windows. Two of the hopper wagons tipped over, encroaching on the line used by the TGV just as its rear power unit was passing, thus causing significant damage to its side.

There were no casualties of this accident.

The investigations already carried out show that the derailment of the aforementioned hopper wagons was due to the subsidence, unusual amplitude and length of one of the running edges of the track in question, resulting, in particular, in a long cross-level defect. Combined with other non-critical geometric defects, this defect was enough to cause the shedding of the guide wheel on a standard type of hopper wagon.

These investigations also revealed that the parameters currently used in both national and European standards for the maintenance and monitoring of track geometry do not allow for the correction of such long cross-level defects

This accident thus raises questions about the completeness of these parameters and about improvements that could be made to their exploitation.

Collision between a Regional Express Train and a light vehicle in Le Breuil in the département of Rhône on 4 December 2011.

In the municipality of Le Breuil, a car that happened to be travelling at night on a rural lane accessed via the former minor road no. 385, was hit by a Regional Express Train on level crossing no. 65, equipped with St. Andrew's cross signals, on the single-track railway line from Givors to Paray-le-Monial.

The rural lane on which this accident occurred is a dead-end which, about fifty metres after the former RD 385 minor road, leads to a few plots of farmland and a gate barring the way to a purification plant.

Four of the five passengers in the car that was hit were killed. The fifth was very seriously injured.

This accident raises very direct questions about opening - or keeping open - level crosses equipped with St. Andrew's cross signals, which are only used as access routes for a few residents, to public traffic.

It also queries the progress made in the implementation of measure no. 18 of the Level Crossing Safety Plan (Plan de sécurisation des passages à niveau) adopted in 2008, which provided for the installation of automatic traffic lights and audible signalling systems at all level crossings equipped with St. Andrew's cross signals that are crossed by trains travelling at over 40 km/h, by 2013.

2 - Investigations into road accidents

Collision between two HGVs and a light vehicle on the A10 motorway in Reugny in the département of Indre-et-Loire on 19 April 2011

An articulated lorry, consisting of a tractor unit and a semi-trailer, travelling in the slow lane of the A10 motorway towards Paris, crashed into a light vehicle at a speed of 84 km/h, pushing it into the rear of a refrigerated lorry which was stopped at the end of a traffic jam, approximately two kilometres from the Monnaie toll station, in the municipality of Reugny. The three vehicles involved immediately burst into flames.

This accident caused the deaths of the three occupants of the light vehicle.

The concluding report to the investigation conducted by BEA-TT was published in April 2012.

It reveals the lack of any reaction from the driver of the articulated lorry that caused the crash, who did not slow down or attempt any avoidance manoeuvre on the approach to the traffic jam that had formed following a minor collision that had occurred further ahead.

It also shows that the raging fire which broke out was probably due to damage caused by the impact to the electrical supply system of the HGV that caused the crash, and that the speed and intensity of the blaze were facilitated by the air pulsed outwards from the refrigeration unit of the semi-trailer that was hit by the car, which had ripped open one of the trailer's rear doors.

The recommendations made in this report focus on the in-situ signalling of traffic jams that occur on motorways and on equipping refrigerated trailers with devices that automatically shut down their operation in the event of a major impact.

Crash of a van into a semi-trailer that had overturned on the carriageway of the A10 motorway in Marcillac in the département of the Gironde on 28 April 2011.

An articulated lorry consisting of a tractor unit and a semi-trailer, travelling at night on the right-hand lane of the A10 motorway in a north-south direction in the municipality of Marcillac, turned over onto its right-hand side, slid along the carriageway and came to rest blocking all traffic lanes and the emergency hard shoulder. Shortly afterwards, a van travelling in the same direction, smashed head-on into the floor of the semi-trailer.

The driver of the articulated lorry and the six occupants of the van died.

The concluding report to this investigation was published in November 2011. It is summarised in chapter 4 of this Activity Report. It has not yet been possible to identify the cause of the loss of control of the articulated lorry with certainty. The most plausible hypothesis is that its driver fell asleep at the wheel.

Collision between two HGVs and three light vehicles on the A9 motorway in Loupian in the département of Hérault on 14 September 2011

An HGV travelling towards Spain on the A9 motorway suddenly swerved to the left after a tyre burst, in the municipality of Loupian. It collided with a first car that was overtaking it, then crossed the central reservation of the motorway and crashed into another HGV

travelling in the opposite direction. Two light vehicles then crashed into the damaged HGVs.

This accident involved seven people – drivers and passengers – two of whom died. The five others were slightly injured.

The investigations carried out focussed on the causes of the burst tyre at the origin of this accident.

Pile-up involving four HGVs and a light vehicle on the A25 motorway in Erquinghem-Lys in the département of Nord on 23 November 2011.

An articulated lorry, which had stopped in thick fog in the right-hand lane of the A25 motorway in the municipality of Erquinghem-Lys, was hit by a car from behind. A first articulated lorry that was following suddenly braked, changed lane and managed to continue on its way in the left-hand lane of the motorway. Three other HGVs arrived on the scene. By performing an emergency braking procedure, the first two lorries managed to stop without colliding. The third crashed into the one in front. Due to the massive force of the impact, the four vehicles, which were then stopped on the motorway carriageway, were propelled forward.

Two people died in the accident and another was seriously injured, all occupants of the private car.

Several factors contributed to this pile-up: the presence of patches of fog which reduced the visibility, the prolonged immobilisation of an HGV in the middle of a lane for as yet unidentified reasons, the poor condition of the tyres on the car that hit it and, finally, the late braking of the articulated lorry that collided with the one in front.

The concluding report to the corresponding technical investigation was published in September 2012. It reiterates and emphasises the critical importance for safety reasons of adapting one's driving to suit the weather conditions, on the one hand, and of constantly keeping the tyres of vehicles in good condition, on the other.

3 - The investigation into a waterway accident

Crash of a barge into a pusher tug in Amfreville-sous-les-Monts on the River Seine in the département of Eure on 13 October 2011.

While entering the large Poses lock in Amfreville-sous-les-Monts on the River Seine at around 5:00 a.m., the 110 m long barge "Bucentaure", sailing from Le Havre and loaded with 2,700 tonnes of sand and gravel, crashed into a pusher tug moored to a floating pontoon which was, in turn, double-moored against two barges.

At the time, the group of vessels consisting of the pusher tug, floating pontoon and the two barges was situated in the garage downstream of the Amfreville-sous-les-Monts locks. These buildings are used for carrying out renovation works on these locks and approach structures.

The pusher tug sank, taking its pilot down with it. He managed to swim to the bank.

The ensuing investigations focused on the conditions for indicating and signalling floating equipment that is likely to be positioned in unauthorised places where they may disrupt traffic, while carrying out works on waterways.

4 - Investigations into accidents concerning guided transport

Failure of the guidance system on a tram in the Clermont-Ferrand tyre-mounted tram system, in the département of Puy-de-Dôme on 10 January 2011

As it travelled over an expansion device, the two front rollers on the guide system of a tram on the tyre-mounted tramway system serving the Clermont-Ferrand conurbation were torn from their rail. An alarm was activated, and an emergency braking procedure brought the tram to a halt. At the request of the central control centre, the driver overrode the safety mechanisms and continued his route to the next station, without checking that the guide system was working properly. After stopping at the next station, the driver attempted to reactivate the alarm, did not succeed and overrode it again. At the next turn in the route, the tram departed from its normal path and crashed, at 36 km/h, into a retaining wall running parallel to the line.

A female passenger in the tram was slightly injured.

The concluding report to this investigation was published in March 2012. It made recommendations on the design, monitoring and maintenance of the guide system for the trams in the tyre-mounted tramway network in question and on the organisation of the inspections and feedback implemented by the operator.

Collision between a tram and a coach in the Orleans conurbation in the département of Loiret on 25 June 2011

A tram collided with a coach serving the inter-urban transport network of the *département* of Loiret, at the intersection of the Rue René-Ferragu and Rue Marcelin-Berthelot in the municipality of Fleury-les-Aubrais. Due to the impact, two of the tram's three bogies derailed and encroached onto the adjacent tramline and the pavement alongside. The coach was pushed for a distance of five metres.

Four occupants of both vehicles involved were slightly injured.

The direct cause of this accident was the tram driver's failure to obey the traffic light that instructed him to stop.

This collision raises questions about the ergonomics of driver assistance devices on trams and on the management conditions for complex crossroads consisting of a section of highway whose use is shared by trams and road vehicles within a distance of about fifty metres.

Collision of a passenger train with a buffer at Calvi¹ station in the département of Haute-Corse (Corsica) on 12 July 2011

In rush hour at the height of the summer season, a train consisting of an autorail railcar and a trailer crashed into a buffer upon its arrival at Calvi station, at a speed of 5 km/h. The buffer was situated at the end of the platform to which the train had been directed.

¹ The Corsican national railway network (*Réseau des chemins de fer de la Corse*) is not part of the French railway network. The conditions for its operation are governed by the scope of Decree no. 2003-425 of 9 May 2003 relating to the safety of guided public transport systems.

Just one passenger, thrown forward during the impact, was slightly injured.

The concluding report to this investigation was published in April 2012.

It was revealed that the direct cause of this accident was the insufficient control of the speed of the train by its driver who was distracted by children running along the platform, which at that time was full of travellers.

The recommendations made therein focus, in particular, on the training and employment conditions for drivers of the *Chemins de Fer de la Corse* (Corsica Railways) company, on modifications to Calvi station and on the management of safety on the rail network in question.

5 - Investigations into ski lift accidents

Accident involving a passenger on the “Echo alpin” chair lift in the Châtel ski area in the département of Haute-Savoie on 23 February 2011

An adolescent seated at the far right-hand edge of a seat on the “Echo alpin” chairlift in Châtel, failed to dismount upon arrival at the upper terminal and ended up suspended over the abyss, hanging by a strap on his rucksack from his seat, which had started back to the lower terminal. He lost consciousness before the rescuers could bring him down to the ground and died in hospital 22 days later.

Without waiting for the completion of its investigations and on the basis of the elements that it had already gathered, in August 2011 BEA-TT, in application of article L. 1621-20a of the French Transportation Code, issued three immediate recommendations designed to rapidly improve the reliability of the detection of users having problems dismounting. Chapter 7 of this report covers these recommendations in detail. They were implemented at the start of the 2011-2012 operating season.

The concluding report to this investigation was published in July 2012. In addition to the aforementioned recommendations, it recommends the clarification of the normative requirements designed to prevent risks of rucksack or clothing attachments becoming trapped in chair lift seats.

Fall of five cable car cabins at Aup de Véran in Flaine in the département of Haute Savoie on 13 October 2011.

During the mandatory inspection that must be performed before each winter season, an initial group of four cabins on the Aup de Véran cable car became stuck as they passed a pylon, without this incident being detected. Sometime later, three other cabins crashed into them in succession. Five of these seven cabins then slid along the cable, which derailed. They broke loose and fell around thirty metres.

The four agents who were performing the inspection were aboard two cabins following those that broke loose. Therefore, there were no casualties.

This accident may have been caused by the jamming of an excessively long door hose in a component of the pylon in question. It may have occurred due to the angle of the cabin equipped with this hose being steeper than permitted by the standards that apply to this field.

The investigations carried out aimed to determine both the circumstances that led to the use of a hose of unsuitable length and the reasons for the occurrence of the excessive swinging of the cabin.

Derailment of a cable car on the Grande Motte cableway in Tignes in the département of Savoie on 3 December 2011

Several bearing rollers on the carriage of the descending cable car on the Grande Motte cableway derailed from their track ropes while passing the intermediate pylon. The cabin operator, observing this derailment, shut down the system. It took 7½ hours to evacuate the 45 passengers in both of the ascending and descending cabins.

There were no casualties of this accident.

The first investigations carried out revealed that the partial derailment of the descending cabin could have been caused by the loosening of a scraper attached to the front of its carriage in order to remove the snow and ice that can accumulate on the cables.

The extremely slow evacuation raised questions about whether the rescue equipment in the cable car in question was adapted to the specific weather conditions encountered on 3 December 2011, i.e. a strong, icy wind that stiffened the evacuation ropes.

Appendix 3: Monitoring of the implementation of recommendations issued by BEA-TT in the railway transportation field

Monitoring Department (*Département Veille*)

Database Division (*Division Base de Données*)

**Monitoring of French Land Transport Accident
Investigation Bureau (BEA-TT) recommendations by the
French Railway Safety Authority (EPSF)**

Tracking of changes

Version	Date	Reason for the modification	Author
1	22/08/2008	Creation	S.Quéva
2	19/08/2009	Updates and additions	S.Quéva
2.1	18/09/2009	Updates	S.Quéva
3	13/09/2010	Modification of the document structure in order to classify events according to the year in which the report was published. Updates based on the last items obtained.	S.Quéva
4	05/01/2012	Addition of 2010 reports and updates	J. Davoine

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Preamble

This document is the result of the monitoring by the French Railway Safety Authority (EPSF), of the recommendations issued by BEA-TT in the accident reports that it publishes. This monitoring is based on two sources of information. The first concerns the inspections and audits carried out in the framework of its mission to monitor and control the authorisations that are issued, as defined in Decree no. 2006-369 of 28 March 2006. The second information source is the annual safety report transmitted to EPSF by the infrastructure manager and rail companies pursuant to article 17 of Decree no. 2006-1279 of 19 October 2006.

1 Reports published before 2007

For each report, the recommendations are classified in the following way

- Adopted recommendation (green colour)
- Partially adopted recommendation (blue colour). This status is given to recommendations sent to several entities, at least one of which has adopted the recommendation;
- Recommendation in progress (orange colour). This status concerns recommendations for which the actions undertaken do not yet allow the recommendation to be considered adopted or for which EPSF has not yet been informed of actions in progress.

Of the reports published before 2007, only three accident reports have recommendations declared to be not yet adopted by the entities concerned.

1.1 Saint-Laurent-Blangy – 09/06/06

Collision of a Regional Express Train (TER – *Train Express Régional*) on a level crossing in Saint-Laurent-Blangy.

On Thursday 9 June 2005, A Regional Express Train collided with a semi-trailer HGV loaded with gas bottles, which had broken down on level crossing (LC) no. 83 situated at Saint-Laurent-Blangy in the Pas-de-Calais *département*.

Despite the very serious accident caused by the explosion of the load, none of the 150 passengers on the train were injured.

BEA-TT Report of 28/12/06

Recommendation R1 (CG 62, RFF)

Continue researching solutions to remove this LC (physical removal or new route), in order to reach a decision and implement the solution as quickly as possible.

Actions undertaken

[SNCF (French Railway Company) letter of response to the BEA-TT Report – 17/12/07]

Before the end of the second quarter of 2007, RFF shall conduct an analysis around the St Laurent Blangy industrial estate with two aims in mind:

- Eliminate the level crossing by building a rail bridge in close proximity to the current crossing;
- Reduce HGV traffic on the LC, especially those transporting dangerous substances.

Action status

[Appendix 9 – RFF 2009 Annual Report – 10/06/2010]

In 2009, a meeting was held between RFF and the Arras urban community.

An agreement to fund the study was signed at the end of November 2009.

In principle, the study should begin before the end of 2009.

[Appendix 10 – RDD 2010 Annual Safety Report]

Feasibility Study completed but not officially sent. Signature of an AVP convention with studies undertaken, if possible, before 31/12/2011.

Apart from the recommendation shown above, all recommendations of the report published in 2006 have been adopted.

1.2 Saint-Flour – 25/02/06

Derailment of an inter-city train (Corail) in Saint-Flour.
On Saturday 25 February 2006, inter-city train no. 5941, heading from Paris towards Béziers derailed at Kilometre Point 692.480 in the municipality of Saint-Flour.
The locomotive and first carriage were thrown against the rock face.
Two of the 52 passengers on the train were slightly injured.

BEA-TT Report of 02/11/06

Recommendation R1 (SNCF)

On lines equipped with double-headed rails and according to factors that include the equipment, condition of the tracks, alignment, topography and types of signalling, draw up a methodology allowing for the definition of “special areas” in which the speed limits of trains could be set at a level that would prevent derailment in the event of a rail failure.

Actions undertaken

[Q sheet – Annual RFF Safety Report]

Development of a tool to classify IUR lines 7 to 9.

Action status

[Q sheet – Annual RFF Safety Report]

Rating of lines 7 to 9 carried out.

A new rating tool for all passenger lines in groups 7 to 9 has been created and is now in use; in particular, it incorporates the presence of double-headed rails into its assessment criteria and will be updated each year.

Recommendation adopted

Recommendation R2 (RFF, SNCF)

In the event of a defect observed in a double-headed rail, which requires the replacement of the damaged part, welded repairs must be avoided if at all possible. Instead, the entire rail should be replaced.

Actions undertaken

[Q sheet – Annual RFF Safety Report]

Acquisition of reserve stocks of different types of double-headed rails

[RFF annual report – 29/05/2009]

As far as possible, replace double-headed rails without performing thermite welding.

Action status

[Q sheet – Annual RFF Safety Report]

Creation of stocks in two operations in 2007: Toulouse-Auch and Neussargues-St Chely d'Apcher.
PAS sheet 2008-6

[Appendix 9 – RFF Annual Report – 10/06/2010]

Monitoring of the status of stocks was registered in the track commission at the end of March 2009

[Appendices 9/10 - RFF Annual Report 2010 – 09/06/2011]

[Appendix 3 - SNCF Annual Report – 26/05/2010]

The recommendations of reports published before 2007 have all been adopted

Recommendation adopted

Recommendation R3 (RFF, SNCF)

On sections of lines equipped with double-headed rails, prioritise mass replacements of sleepers and only perform these mass replacements when associated with the raising of ballast.

Actions undertaken

[Q sheet – Annual RFF Safety Report]

Systematically combine any mass replacement of sleepers with the raising of ballast

[RFF annual report – 29/05/2009]

Action identical to the Q Sheet of the RFF Annual Report of 2008

Action status

[Q sheet – Annual RFF Safety Report]

In 2007, all operations (major maintenance operations (OGE) and renewal) provided for the raising

of ballast. PAS sheet 2008-7

[Appendix 9 – RFF Annual Report – 10/06/2010]

The Action Plan provides for an inventory of the annual needs for sleepers. This task envisaged in 2008 could not be accomplished due to a lack of operations in 2008. It shall be continued in 2009. The second task concerned the organisation of a Stoneblower experiment, which took place during the first half of 2009. The results of the experiment were satisfactory and its economic appropriateness is being analysed.

[Appendices 9/10 - RFF Annual Report 2010 – 09/06/2011]

For major maintenance operations, only carry out mass replacements when associated with the raising of ballast. Benchmarking against another method.

Recommendation adopted

Recommendation R4 (RFF, SNCF)

Draw up an upgrading programme for lines open to passenger traffic and equipped with double-headed rails.

Eventually, organise the gradual replacement of double-headed rails with Vignoles rails, given the ageing of this stock, its rising maintenance costs and the high risk of derailment in the event of a rail failure.

Actions undertaken

[Q sheet – Annual RFF Safety Report]

Eventual replacement of all double-headed rails with Vignoles rails

[RFF Annual Report – 29/05/2009]

Upgrading programme for passenger line rails equipped with double-headed rails.

Action status

[Q sheet – Annual RFF Safety Report]

Renewal programme:

- 2007: €34 M
- 2008: €48 M projected

PAS 2008-8 Sheet

[Appendix 9 – RFF Annual Report – 10/06/2010]

The 2008/2013 schedule has been extended until 2015 due to the combined effects of the Performance Contract and the Recovery Plan

[Appendices 9/10 - RFF Annual Report 2010 – 09/06/2011]

2008/2012 schedule extended until 2015

[Appendix 3 - SNCF Annual Report 2010 – 26/05/2010]

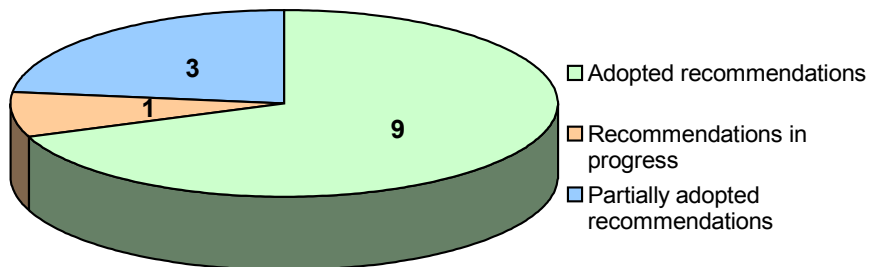
The recommendations of reports published before 2007 have all been adopted

2 Reports published in 2007

In 2007, 13 recommendations (included in four reports) were issued by BEA-TT with regard to the railway sector for which EPSF acts as the French safety authority. The following chart illustrates the status of these recommendations by classifying them according to:

- Adopted recommendation (green colour)
- Partially adopted recommendation (blue colour). This status is given to recommendations sent to several entities, at least one of which has adopted the recommendation;
- Recommendation in progress (orange colour). This status concerns recommendations for which the actions undertaken do not yet allow the recommendation to be considered adopted or for which EPSF has not yet been informed of actions in progress.

**Statuses of recommendations issued
in reports published in 2007**



2.1 La Ferté-sur-Chiers – 13/06/06

Derailment of a goods train in Ferté-sur-Chiers.

On Tuesday 13 June 2006, the last wagon of an iron ore train, heading from Dunkirk towards Dieulouard derailed in the municipality of La Ferté-sur-Chiers. The accident only caused one minor casualty (a maintenance agent), but it damaged 10 km of track.

BEA-TT Report of 07/09/07

Recommendation R1 (SNCF)

When work is performed on a wagon as an accident repair and repairs to the Lenoir damping system are required (inadequate detection of an “A” dimension), specify the number of the journal box concerned, on both the initial assessment and repair plans.

Actions undertaken

[SNCF letter in response to the BEA-TT Report – 17/12/07]

SNCF Reference Standard modified as a consequence.

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

Recommendation adopted

Recommendation R2 (SNCF, RFF)

On the French Rail network, search for similar track geometry situations to those at Kilometre Point 190.200 on the North-East route in June 2006 (with a close and regular series of truing defects and superelevations liable to cause a dynamic resonance effect; simultaneous presence of a warp defect at the alert level combined with the inherent warping at the parabolic connection on bend exits).

Develop rules for interventions on tracks to correct these situations (reworking of truing according to quantified values after the detection of repeated and periodic truing defects on bend exits).

Actions undertaken

[Q sheet – Annual RFF Safety Report]

Computerisation of geometry defect records of between 10 and 30 m.

Launch of a research project to correlate geometry defects with wagon behaviour.

[SNCF letter in response to the BEA-TT Report – 17/12/07]

Definition of a warning threshold envisaged for 2009/2010.

Action status

[Appendix 3 - SNCF Annual Report 2010 – 26/05/2010]

[Appendices 9/10 - RFF Annual Report 2010 – 09/06/2011]

Recommendation adopted

Recommendation R3 (SNCF, RFF)

Remind the agents directly concerned by train traffic of the usefulness of ground-to-train radio in emergency situations and of the performance of emergency gestures for people situated on the tracks.

Actions undertaken

[Q sheet – Annual RFF Safety Report]

The deployment of GSM-R will change the communication methods available to agents of the Delegated Infrastructure Manager (GID) and the railway company. In this context, new procedures will be implemented.

[SNCF letter in response to the BEA-TT Report – 17/12/07]

Feedback sheets outlining the gestures and measures used to stop trains in emergency situations.

Action status

[RFF Annual Report – 29/05/2009]

PAS Sheet 2008-17 mentions three stages, the first of which has been carried out:

- Provide feedback for La Ferté and decide whether it is necessary to modify the procedures or provide a reminder of them;
- Obtain the designation of a GSM-R maintenance experiment pilot within the Delegated Infrastructure Manager's organisation (GID);
- Define and obtain approval of communication methods and their functionalities made available to agents situated along the tracks in the context of GSM-R

[Appendix 9 – RFF Annual Report – 10/06/2010]

A 6-month experiment starting in mid-March 2009 took place on two work sites with a view to defining and obtaining the approval of communication methods and the functionalities made available to agents situated along the tracks in the context of GSM-R. In principle, feedback on this experiment has been available since the end of June 2009.

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

[Appendices 9/10 - RFF Annual Report 2010 – 09/06/2011]

Implementation of new communication procedures in the framework of GSM-R deployment.

Recommendation adopted

2.2 Tencins-Theys – 28/06/06

Near-miss between two trains at Tencins-Theys Station.

On the morning of 28 June 2006, an equipment train arrived at Tencin-Theys Station. The Chambéry-Grenoble Regional Express Train (TER) was stationary on the same track, awaiting permission to set off. The driver of the equipment train performed an emergency stop procedure and managed to stop around twenty metres behind the TER, thus avoiding an accident.

While there were no casualties or material damage, the consequences could have been serious if the circumstances had been slightly different.

BEA-TT Report of 09/11/07

Recommendation R1 (SNCF and RFF)

Move the Pg2 passage pedal upstream of switch point rail V2/V4 and as close as possible to it, and examine similar situations throughout the entire French railway network (*Réseau Ferré National*) in order to apply the same type of measures, after a local analysis of manoeuvres.

Actions undertaken

[Q sheet – Annual RFF Safety Report]

Risk analysis of similar situations

Movement of the pedal envisaged during works at the start of 2009

[SNCF letter of response to the BEA-TT report – 13/02/08]

The installations will be modified in agreement with RFF.

A letter has been sent to the regions, drawing their attention to this type of situation. A study will lead to these situations being handled on a case-by-case basis.

[RFF Annual Report – 29/05/2009]

When scheduling the works, include the movement of the Tencin pedal

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

Recommendation adopted

[Appendix 9 - RFF Annual Report 2009 – 10/06/2010]

The technical plan to neutralise switch point rail B (service track access) has been drawn up.

The technical verification of the plan will be carried out by the end of January 2010, which will allow for neutralisation to be carried out in the field (in principle, at the end of March 2010). For the possible passage of trains onto a single temporary track, instruction S3B will be modified to include the obligation to place a stop marker upstream of the pedal prior to use of the single temporary track.

Both of these provisions will prevent any possibility of a train coming from the opposite direction being able to activate the pedal in question unexpectedly, and its relocation will therefore not be required.

[Appendix 10 - RFF Report 2010 – 25/06/2011]

The pedal problem had been temporarily resolved by neutralising the connection that provided access to the service track. For the garaging needs of work trains, this appliance will be reactivated and measurements and studies will be performed.

Recommendation R2 (SNCF and RFF)

Modify the D2 disc control circuit by causing its automatic closure when at least one of the two zones of track 2 is occupied at Tencin-Theys Station.

Actions undertaken

Action status

[Appendix 3 - SNCF Annual Report 2007 – General Items – 28/05/2008]

Recommendation adopted

[Q sheet – Annual RFF Safety Report]

Modification made

Recommendation adopted

Recommendation R3 (SNCF)

Remind the traffic control agents that, while they remain on duty, they must coordinate all interventions while clearly and explicitly explaining each person's tasks.

Actions undertaken

Letter sent to the regions.

Finalisation of a sheet on the subject of recommissioning.

Action status

Starting in mid-March 2009, a 6-month experiment was conducted on 2 work sites in order to define and obtain the approval of the communication methods and their functionalities that were provided for agents working trackside in the framework of GSM-R. In principle, feedback on this experiment has been available since the end of June 2009.

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

[Appendices 9/10 - RFF Annual Report 2010 – 09/06/2011]

Implementation of new communication procedures in the framework of GSM-R deployment.

Recommendation adopted

2.3 Chaville – 10/11/06

Passenger accident at Chaville Rive Droite Station.

On Friday 10 November 2006, following traffic problems, local train no. 113473, unusually, did not stop at Chaville Rive Droite Station.

A passenger then activated the emergency signal, opened a door and jumped off the moving train.

In falling, he suffered serious injuries when colliding with a concrete post on the station platform and died shortly afterwards.

BEA-TT Report of 09/11/07

Recommendation R1 (SNCF)

For rolling stock requiring a major maintenance operation in the workshop, study modifications capable of linking the ability to open doors manually after the activation of an intercom alarm signal, to a speed limit that is below the slowest detectable speed; draw up an implementation programme for these modifications.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 11/02/08]

An inventory has been performed. Several trains are already equipped and others are undergoing modifications or are being scheduled to do so.

The Stock Directorate has been asked to conduct a feasibility study for rolling stock that has already been renovated.

No modifications are envisaged for stock whose removal from service is planned for the near future.

Action status

[SNCF Annual Report 2007 – Rail Company Mission – Appendix 3 – Investments made in 2007]. Continued investments in 2007:

- Lateralisation of lights warning of possibility of unlocked doors on Transilien stock
- Management of door queues for Z2 stock
- Overriding of emergency door opening controls while in motion

During “comfort” operations of Z2N trains (Z20500), the door operation has been modified to keep the doors closed if the intercom alarm signal is used when the speed reaches 10 km/h on acceleration or 6 km/h on deceleration.

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

After an inventory was taken of the stock concerned: a modification order was drafted for the Z20500s; completion rate of 27% on 01/12/08. A modification order is currently being drafted for the Z5600s and 8800s and its application will begin in the 1st quarter of 2010. No projected modifications for the Z6400s and VB2Ns.

[Appendix 3 - SNCF Annual Report 2009 – 26/05/2010]

The deployment of the actions is in progress

Recommendation R2 (SNCF)

Rework and specify the regulations that apply to the service modifications, by strictly limiting the cancellations of scheduled stops, especially after the train has left its station of origin.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 11/02/08]

A framework document is being drafted. Taking account of the risks caused by the different situations, it will explain the implementation procedures for measures to be implemented for the very rare cancellation of one or more scheduled stops.

Action status

[Appendix 3 - SNCF Annual Report 2007 – General Items - 28/05/2008]

A new directive has been published and incorporated into the company's requirements system: VO0352 “Modification of the commercial service of a Transilien train: principles for the cancellation of one or more scheduled stops” of 25/07/2008.

Recommendation adopted

2.4 Paris-Est – 05/04/07

In the morning of Thursday 5 April 2007, the Transilien train providing the service between Château-Thierry and Paris, ran into the buffers at low speed on track 21 at Paris-Est Station. Material damage was limited but 58 minor casualties were treated by the emergency services.

BEA-TT Report of 10/12/07

Recommendation R1 (SNCF)

Improve drivers' awareness of the different specificities of brake control, particularly for "full service applications" and "emergency applications" and this action must be reflected in the driving reference standards and in the content of continuing driver training courses.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 25/03/08]

Training action and rewriting of the references for the stock associated with the TM 606 linear brake manipulator.

Action status

[SNCF letter of response to the BEA-TT – 25/03/08]

Completion by PPOS (Professional Practice Observable in Situation) carried out by DPX (Local Managers) for the drivers concerned, by the end of the accreditation cycle (end of 2007).

Computer-assisted teaching dedicated to the TM 606 is currently being developed. Available from 1 September 2008.

[Appendix 3 - SNCF Annual Report 2007 – General Items – 28/05/2008]

Actions undertaken

Recommendation adopted

Recommendation R2 (SNCF)

With regard to the "braking system" part of the design of future self-propelled stock, opt for a brake manipulator configuration that integrates emergency application control, as fitted to modern self-propelled stock (MI2N, AGC, Z-TER).

Actions undertaken

[SNCF letter of response to the BEA-TT report – 25/03/08]

This requirement is repeated in all specifications for stock currently being developed or on the point of being ordered.

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items - 28/05/2008]

Actions implemented

Recommendation adopted

Recommendation R3 (SNCF)

Make safety training more responsive to feedback: shorten the implementation period for corrections to driving handbooks, especially when the subject relates to a safety function such as braking; shorten the implementation period for driver awareness-raising actions on subjects are strongly associated with traffic safety (topics covered when drivers are accompanied on lines and during continuing training events).

Actions undertaken

[SNCF letter of response to the BEA-TT – 25/03/08]

Individual local managerial action has been preferred to collective actions, as shown by the response to recommendation R1

Guarantees of traceability are provided by SITAR (Computerised Monitoring and Traceability of Traction Capabilities)

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items - 28/05/2008]

Actions implemented.

Recommendation adopted

Recommendation R4 (SNCF and RFF)

On Z2N self-propelled stock, study the feasibility of reducing the speed limit below which passenger access doors are unlocked before the stoppage of the train. If this is feasible, modify the entire fleet of Z2N self-propelled stock.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 25/03/08]

Feasibility study in progress since the investigation of the incident at Paris-Est on 5 April 2007.

Action status

[Appendix 3 – SNCF Annual Report 2007 – Railway Company Missions – 28/05/2008]

During “comfort” operations of Z2N trains (Z20500), the door operation has been modified to keep the doors closed if the intercom alarm signal is used when the speed reaches 10 km/h on acceleration or 6 km/h on deceleration.

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

Deployment of actions in progress

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Deployment of actions in progress

[Appendix 3 – SNCF Annual Report 2010 – 25/05/2011]

5 recommendations adopted concerning this incident.

Recommendation adopted**Recommendation R5 (RFF, SNCF)**

For tracks at Paris-Est Station receiving trains consisting of Z2N wagon sets, study the relevance and feasibility of the implementation of a system capable of absorbing a significant proportion of the energy of a train arriving at buffers at low speed.

Actions undertaken

[Q sheet – Annual RFF Safety Report]

Request by RFF for a technical and financial study submitted to IG-T

Action status

[Q sheet – RFF Annual Safety Report]

Investment ranked according to incidentology (low priority)

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

An investment was presented

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

An investment was presented

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010]

The draft file was produced

Appendix 3 – SNCF Annual Report 2010 – 25/05/2011

5 recommendations adopted concerning this incident.

[Appendix 9 – RFF Annual Report 2010 – 09/06/2011]

Awaiting the results of a technical and financial study carried out by IGT

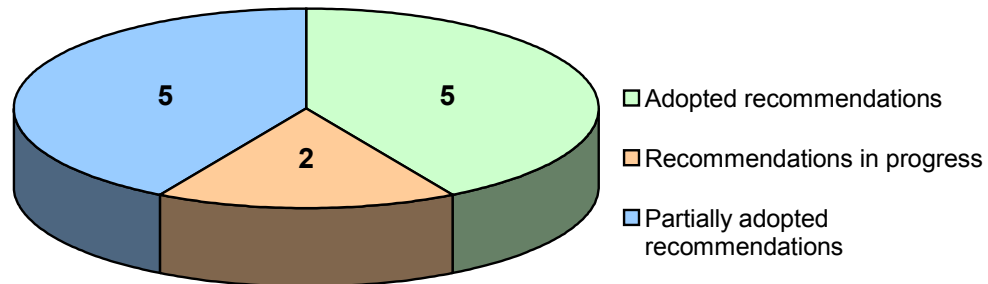
Recommendation adopted

3 Reports published in 2008

In 2008, 12 recommendations (included in five reports) were issued by BEA-TT with regard to the railway sector for which EPSF acts as the French safety authority. The following chart illustrates the status of these recommendations by classifying them according to:

- Adopted recommendation (green colour);
- Partially adopted recommendation (blue colour)). This status is given to recommendations sent to several entities, at least one of which has adopted the recommendation;
- Recommendation in progress (orange colour). This status concerns recommendations for which the actions undertaken do not yet allow the recommendation to be considered adopted or for which EPSF has not yet been informed of actions in progress.

**Statuses of recommendations issued
in reports published in 2008**



3.1 Carcassonne – 27/02/07

Derailment of a maintenance appliance at Carcassonne Station.
At about 12:40 p.m. on Tuesday 27 February 2007, an SNCF Infrastructure maintenance appliance derailed at Carcassonne Station, encroaching onto track 2 on which trains travel at 110 km/h. This incident caused no casualties and little damage to the track infrastructure was found.

BEA-TT Report of 09/04/08

Recommendation R1 (SNCF)

Remind traffic control agents of the importance of keeping agents involved in movements at the station fully informed, especially agents who are less familiar with the station's infrastructure.

Actions undertaken

[SNCF letter in response to the BEA-TT Report – 02/07/08]

Drafting of national-level Feedback sheet in progress.

Action status

[SNCF letter in response to the BEA-TT Report – 02/07/08]

This sheet will be distributed in the third quarter of 2008

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

Recommendation adopted

Recommendation R2 (SNCF, RFF)

Examine the implementation of a unified derail on track 4 between switch point rails 120b and 118a.

Actions undertaken

[SNCF letter in response to the BEA-TT Report – 02/07/08]

Feasibility study (SNCF) showing that it is possible to install a unified derail between switch point rails 120b and 118a. It is necessary to take account of possible changes.

[RFF letter of response to the BEA-TT Report – 01/07/08]

RFF studied the possibility of the emergence of a risk that is similar to or higher than that for the accident of 27 February 2007, based on two track modification hypotheses.

Action status

[SNCF letter of response to the BEA-TT Report – 02/07/08]

Awaiting RFF approval.

[RFF letter of response to the BEA-TT Report – 01/07/08]

This file remains under the surveillance of the departments concerned

[RFF Annual Report – 29/05/2009]

Implementation conditioned by either of the 2 following hypotheses: "Principalisation of track 4 or use of Carcassonne station and track 4 as the basis of works in 2012. Awaiting a response on the implementation of either of the scenarios.

[Appendix 9 - RFF Annual Report 2009 – 10/06/2010]

A definitive letter to BEA-TT must be drafted when the solution has been chosen: SGSI unit and SGR. Pending.

[Appendix 3 - SNCF Annual Report 2009 – 26/05/2010]

[Appendices 9/10 - RFF Annual Report 2010 – 09/06/2011]

Definitive letter to BEA-TT to be written when the solution has been chosen.

Action currently being processed.

3.2 Villeneuve-Triage – 01/03/07

Collision with a person at Villeneuve-Triage Station.

At 6:54 a.m. on 1 March 2007 a person who had climbed down onto the one of the tracks at Villeneuve-Triage Station was hit by a train and died immediately.

BEA-TT Report of 13/03/08

Recommendation R1 (SNCF, RFF)

Ensure the posting of a sufficient number of “Do not cross the tracks” signs, or any other equivalent system, and keep them clean enough to read.

Actions undertaken

[SNCF letter in response to the BEA-TT Report – 11/06/08]

National study carried out to provide a diagnosis of the installations of each establishment. The aim, in particular, is to update the conditions for the installation of the signage and its maintenance.

[RFF letter of response to the BEA-TT Report – 10/06/08]

Directive IN 1724 is currently being updated. This will provide an opportunity to remind local managers of the Delegated Infrastructure Manager (GID) of their missions in terms of maintaining all corresponding installations in good condition.

[RFF Annual Report – 29/05/2009]

Benefit from the reprinting of IN 1724 to issue a reminder to local managers (GID actions)

Action status

[SNCF letter of response to the BEA-TT Report – 11/06/08]

In 2007, erection of platform banners at 66 stations reminding people of the ban on walking on the tracks

[SNCF Annual Report – General Items – 27/05/09]

The corresponding text has been rewritten and approval by RFF is in progress. The diagnosis of the equipment at each establishment is currently underway.

Recommendation R2 (SNCF, RFF)

On the logical passenger journey at Villeneuve-Triage Station, erect at least one sign showing the presence of an underpass and the obligation to use it in order to reach the other platforms.

Actions undertaken

[SNCF letter of response to the BEA-TT Report – 11/06/08]

Awareness-raising campaign in 64 stations in the Ile-de-France region.

Erection of signage visible from the two possible access routes to the central underpass at Villeneuve-Triage.

[RFF letter of response to the BEA-TT Report – 10/06/08]

This recommendation will be implemented by RFF after an installation study. The installation should be effective for the end of 2008.

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items - 28/05/2008]

The sign, visible from the platform access routes, was erected on 18 June 2008.

Recommendation adopted

[RFF Annual Report 2009 – 29/05/2009]

Recommendation adopted

3.3 Pertuis – 09/11/07

Derailment of a train in Pertuis.

At 8:11 p.m. on Friday 9 November 2007, the train providing the Briançon-Manosque link, derailed in the municipality of Pertuis.

The consequences were exclusively material damage to the rolling stock and 300 m of track.

BEA-TT Report of 26/06/08

Recommendation R1 (SNCF, RFF)

Produce an assessment of the condition of the thermite welds of high rails on bends, for areas of continuous welded rail (CWR) between Aix-en-Provence and Manosque, limited to the identified sections (from Kilometre Point (KP) 361.850 to KP 345.495 and from KP 345.495 to KP 347.266). The inspection method will be explained: visual inspection of the bottom of the flange using an appropriate system or examination of the rail flange by ultrasound inspection.

Actions undertaken

[RFF Annual Report – 29/05/2009]

Define and implement an inspection method for the 2 specified areas of CWR between Aix-en-Provence and Manosque.

[SNCF Annual Report – 27/05/2009]

A verification procedure has been developed for seeking incipient cracks in changes of section (flange / welding bead) on the underside of the rail.

After inspection of the Pertuis area, two rails, on which the welds had caused a slight echo, were removed and are undergoing analysis.

Action status

[SNCF Annual Report – 27/05/2009]

The laboratory report and then the definitive conclusions to R1 should be finalised during 02/09.

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010] **Recommendation adopted**

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010] **Recommendation adopted**

Recommendation R2 (SNCF, RFF)

Via the annual feedback on rail failures, on sections of line in the French Rail Network that potentially poses similar risks (same context as Pertuis), define relevant indicators (such as the failure rate per km), capable of revealing sections that require the performance of a health check of rail welds according to the procedure established by recommendation R1 (or an equivalent procedure).

Actions undertaken

[SNCF Annual Report – 27/05/2009]

Assessment of identified areas by SNCF rail and welding experts in progress

Action status

[SNCF Annual Report – 27/05/2009]

The “thermite weld failure density” indicator was finalised in September 2008. The results of the assessment will be known during April 2009.

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010] **Recommendation adopted**

[Appendix 9 - RFF Annual Report 2009 – 10/06/2010] **Recommendation adopted**

Recommendation R3 (RFF)

Produce a feasibility study for producing an inventory of sounds representative of an “abnormal movement” in order to train the ear and perception of the different railway companies’ drivers exposed to such a situation (perception of the sound emitted according to the rail defect, the axle load of the traction unit and the type of traction unit as well as speed of movement).

Actions undertaken

[SNCF Annual Report – 29/05/2009]

Survey of European infrastructure managers to find out whether they provide railway companies with specific resources for training drivers to detect broken rails and, more generally, to recognise abnormal banging noises or movements.

Action status

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010] **Recommendation adopted**

3.4 Versailles Rive Gauche – 13/08/07

At 10:27 a.m. on Monday 13 August 2007, a Transilien train providing the service between Paris-Invalides and Versailles Rive Gauche, ran into the buffers on track 3 at Versailles Rive Gauche Station at a speed of 6 km/h.

There were no casualties amongst the passengers, the driver or other SNCF agents.

The accident caused material damage to fixed installations and rolling stock.

BEA-TT Report of 28/03/08

Recommendation R1 (SNCF)

On Z2N self-propelled stock, study the feasibility of reducing the speed limit below which the passenger access doors are unlocked prior to the stoppage of the train. If this is feasible, modify the entire fleet of Z2N self-propelled stock.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 02/07/08]

Feasibility study underway since the investigation into the Paris-Est incident on 5 April 2007.

Action status

[Appendix 3 – SNCF Annual Report 2007 – Railway Company Missions – 28/05/2008]

During “comfort” operations of Z2N trains (Z20500), the door operation has been modified to keep the doors closed if the intercom alarm signal is used when the speed reaches 10 km/h on acceleration or 6 km/h on deceleration.

[SNCF Annual Report 2008 – General Items – 27/05/2009]

The feasibility study was carried out and it was decided to lower the door unlocking threshold on all Z2N stock from 6 km/h to 3 km/h. The fitting of modified boards on wagon sets is scheduled for 2009 and 2010.

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Actions currently being processed

[Appendix 3 – SNCF Annual Report 2010 – 25/05/2011]

Recommendation adopted

Recommendation R2 (SNCF, RFF)

For dead-end lines receiving trains consisting of Z2N wagon sets, study the relevance and feasibility of technical provisions capable of either preventing buffer impacts or minimising the consequences for people situated on the train or on the platform. It would also be useful to assess and compare the beneficial effects resulting from the implementation of:

- A shock-absorbing device designed to slow down a train in danger of hitting the buffer
- And/or a final speed control beacon (at an agreed distance from the buffer and controlling at around 4 km/h) in order to cause an additional deceleration of the train, or indeed its stoppage.

Actions undertaken

Shock-absorbing device

[SNCF letter of response to the BEA-TT – 02/07/08]

Technical proposals for the implementation of a shock-absorbing device following the recommendation made after the Paris-Est incident will be sent by the SNCF to RFF. The latter is expected to adopt a principled position that will influence the study on the Versailles Rive-Gauche site.

Control beacon.

[SNCF letter of response to the BEA-TT report – 02/07/08]

With the response to recommendation R1, the SNCF will repeat the study of the siting of the track beacon and its consequences on the driving ergonomics. Subject to the positive outcome of this study and funding of the investment by RFF.

[SNCF Annual Report 2008 – General Items - 27/05/09]

The SNCF Engineering Directorate conducted a feasibility study that will be available during the first half of 2009.

Action status

Investment ranked according to incidentology (low priority)

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010]

A technical and financial study was conducted at the end of June 2008

Recommendation adopted

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Deployment of action in progress

3.5 Culoz – 24/07/06

Derailment of a work train in Culoz.

At about 6:30 p.m. on Monday 24 July 2006, part of a work train derailed, fouling the lower and side clearance gauges. When crossing a bridge over the River Rhône, the mass protruding beyond the clearance gauge hit the deck of the first span, which collapsed.

Only one person was slightly injured but there was significant material damage: the bridge deck was destroyed along with the active part of the train.

BEA-TT Report of 15/12/08

Recommendation R1 (SNCF, RFF)

For the rail transportation of specialised equipment (approved for railway works) that forms part of a work train, from the work site to the garage area and vice-versa, make the departure authorisation dependent on the prior submission of a certificate of travelworthiness, duly signed by the representative of the operator of this specialised equipment, to the marshalling agent responsible for issuing the departure authorisation. (He or she may also transmit the “train ready for departure” information to the Delegated Infrastructure Manager’s agent, who can then authorise access to the network by opening the corresponding signal).

Actions undertaken

[SNCF letter of response to the BEA-TT report – 10/03/2009]

In the Chambéry region, this recommendation is the subject of an experiment with a new procedure for the movement of specialised equipment (approved for railway works) that forms part of a work train. The conclusions of this experiment will be presented during the first half of 2009.

[RFF letter of response to the BEA-TT – 20/03/2009]

The SNCF Delegated Infrastructure Manager (GID) will propose modifications to the text(s) concerned by this recommendation, in accordance with the Safety Management System (*Système de Gestion de la Sécurité*) of the RFF and SNCF GID. In particular, RFF will approve and publish the text(s) relating to article 10 of Decree no. 2006-1279 after consulting EPSF.

Action status

[Appendix 3 - SNCF Annual Report 2009 – 26/05/2010]

Recommendation adopted

[Appendix 9 - RFF Annual Report 2009 – 10/06/2010]

Additional examination by EPSF, SETV, SNCF GID and RFF of the IN 1418 project to be conducted (future RFN CG MR 3 A N°2)

[Appendix 10 - RFF Annual Report – 25/06/2011]

IN 1418 must be replaced by 2 documents, one of which has been finalised.

Recommendation R2 (SNCF, RFF)

For future track works equipment, with a complex architecture relating to reference standard IN 1418, check the capacity for negotiating stretches of distorted track and apply the protocol stipulated by the UIC 518 sheet to vehicles with new technologies, which provides for the measurement of wheel/rail interaction forces Y and Q. For a train with an architecture similar to that of the P21/95, subject at least the axle of the work unit to such measurements.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 10/03/2009]

This recommendation has already been taken into account in the draft specific operating regulation (*règle d'exploitation particulière*) (RFN CG MR3 A no. 3) concerning specialised equipment or equipment bound exclusively for infrastructure maintenance operations, which will soon be proposed to RFF for approval and publication. In the transitional period up to the implementation of this regulation, the examining organisation (SNCF – Industrial Production Department for Equipment and Tooling [*Direction de la production industrielle Engins Outillage* – DPI EO]) shall apply this recommendation from mid-2008 for equipment whose files are currently being examined.

[RFF letter of response to the BEA-TT report – 20/03/2009]

The axle test for the negotiation of distorted stretches of track must be limited to relevant cases. The text in question is currently being drafted by the SNCF Delegated Infrastructure Manager (GID), which is responsible for its production, and shall take account of this recommendation. Upon receipt, and pursuant to the drafting and updating process for this type of text relating to article 10 of Decree no. 2006-1279, RFF will publish it and make it applicable, after consulting EPSF and obtain its approval by RFF.

Action status

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Recommendation adopted

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010]

Additional examination by EPSF, SETVF, SNCF GID and RFF of the IN 1418 project to be carried out (future RFN CG MR 3 A N°2)

[Appendix 10 – RFF Annual Report – 25/06/2011]

IN 1418 must be replaced by 2 documents, one of which has been finalised.

Recommendation R3 (RFF, SNCF)

Make changes to the reference standard relating to the movements of work trains; when these trains are moving outside their work route on lines equipped with ground-to-train radio, and regardless of the equipment of support agents, provide for a ground-to-train radio link aboard the train, of the RST analogue type or RST GSMR.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 10/03/2009]

The SNCF is gradually moving towards a widespread implementation, which cannot be achieved in the short-term and will take about ten years:

- All new SNCF stock will be equipped with RST when needing to travel on adapted lines
- All unequipped SNCF stock, which still constitutes most of the fleet, will be upgraded progressively in line with the ground deployment of GSM-R.

In the meantime, the SNCF will resort to the occasional use of portable RST equipment, although this does not perform to the same standards in terms of sensitivity of reception.

[RFF letter of response to the BEA-TT report – 20/03/2009]

Specific conditions must [...] apply to equipping work trains with ground-to-train radio, especially as it is not considered to be a safety installation as defined by Decree no. 2006-1534 of 06 December 2006 implementing articles 1, 1-1 and 1-2 of Law no. 97-135 of 13 February 1997 concerning the creation of the *Réseau Ferré de France* (RFF) public establishment, with a view to the renewal of rail transportation.

Action status

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Recommendation adopted

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010]

To follow in the framework of the rewriting of IN 1418.

[Appendix 10 – RFF Annual Report – 25/06/2011]

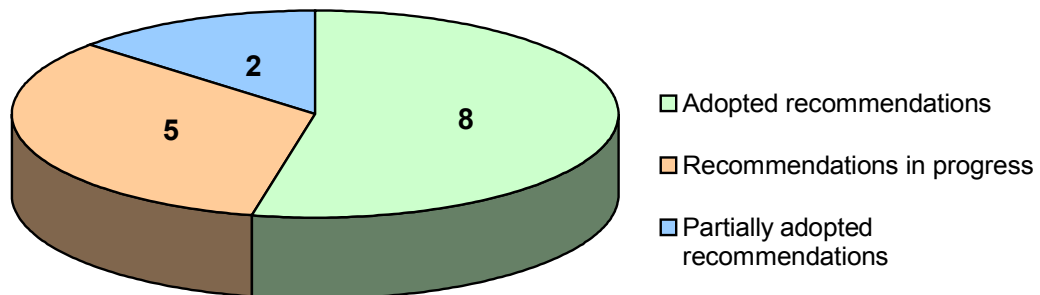
IN 1418 must be replaced by 2 documents, one of which has been finalised.

4 Reports published in 2009

In 2009, 15 recommendations (included in five reports) were issued by BEA-TT with regard to the railway sector for which EPSF acts as the French safety authority. The following chart illustrates the status of these recommendations by classifying them according to:

- Adopted recommendation (green colour);
- Partially adopted recommendation (blue colour). This status is given to recommendations sent to several entities, at least one of which has adopted the recommendation;
- Recommendation in progress (orange colour). This status concerns recommendations for which the actions undertaken do not yet allow the recommendation to be considered adopted or for which EPSF has not yet been informed of actions in progress.

**Statuses of recommendations issued
in reports published in 2009**



4.1 Montauban – 26/04/08

At 6:36 a.m. on Saturday 26 April 2008, freight train 467 473 of the Veolia Cargo France Railway Company, travelling from Bordeaux-Bassens towards Boussens, made an emergency stop at Montauban Station and was unable to obey the signalling protecting the convergence point of the Brive-Toulouse and Toulouse-Agen lines, despite the appliance of the brakes. The train travelled for approximately 3,300 metres between the processing of the emergency braking manoeuvre at the warning signal announcing the closure of the stop signal and the train's actual stopping point.

There were no casualties and no material damage, thanks to the quick reactions of the signalman and the lack of railway traffic at the convergence point or on the track occupied by train 467 473 at that time.

This incident could have deteriorated into a serious accident if the circumstances had been slightly different.

BEA-TT Report of 16/01/09

Recommendation R1 (Veolia)

When establishing traction unit rotations, specify the time of the standard preparation of traction units prior to the freight train manoeuvring and constitution phases.

Actions undertaken

[VEOLIA letter of response to the BEA-TT report – 03/03/09]

Publication of the "Train preparation" Training Sheet feedback on 15/07/08, stipulating that the standard preparation must be carried out while the locomotive is uncoupled.

Publication of a memorandum by the General Management on 25/07/08, concerning three obligations for standard preparations on traction units:

- Perform the standard preparation on an uncoupled locomotive;
- Make it a standard practice to record the standard preparation of each locomotive in the rotation of traction units and on the duty chart so the locomotive can be found uncoupled from its wagon set;
- Involve agency heads in passing on this provision in the field.

Action status

Recommendation adopted

Recommendation R2 (Veolia)

Ensure that the marshalling agent checks the accuracy of the train composition record (included in the waybill)

Actions undertaken

[VEOLIA letter of response to the BEA-TT report – 03/03/09]

Publication of Safety Information (*Info Sécurité*) no. 39 on 27/05/08: "Traceability of inspection, marshalling and train brake testing operations": implementation of a ground-driver liaison sheet.

VCF – SOCORAIL meeting on 02/07/08, with chosen action: "Improvement and formalisation of the ground-driver relationship through implementation of a liaison sheet".

Inspection, on 01/09/08, of the implementation of the liaison sheet within the VCF South-West agency.

Action status

Recommendation adopted

Recommendation R3 (Veolia)

Strengthen and improve the efficiency of the railway company's hierarchical control (and control in the framework of contractual relationships) over train marshalling and driving operators.

Actions undertaken

[VEOLIA letter of response to the BEA-TT report – 03/03/09]

Drafting of a VCF-SOCORAIL Action Plan on 02/07/09:

- Improve the KN1 for SOCORAIL operators by permanently assigning a Ground Activity Manager at the VCF South-West agency.
- Specify the measures implemented by SOCORAIL to improve the organisation of labour on the Bassens site and ensure that the Activity Manager checks on the actual implementation of these actions.

On 23/10/08, all of the subcontractor's agents were monitored at KN1.

On 05/12/08, closure of the action plan drawn up by SOCORAIL.

In the 2nd half of 2008, a field accompaniment mission was assigned to the VCF activity expert on the following topics:

- Analysis of monitoring methods applied in the field by VCF Business Managers (frequency, activation mode, preparation and organisation, tools and methods used);
- Procedures for detecting weaknesses in operators' organisations by VCF Activity Managers (ability to observe, questioning, use of monitoring, etc.).
- Proposals for improvement of field monitoring methods adapted to each agency.
- Management mode for campus trainees during practical work placements: (analysis of current practices, reception conditions, efficiency of tutoring, monitoring handbook, proposals for improvements)

Action status

Recommendation adopted

Recommendation R4 (Veolia)

For each train departing on the line, make it standard practice to perform a "Braking efficiency test", as close as possible to its departure point.

Actions undertaken

[VEOLIA letter of response to the BEA-TT report – 03/03/09]

Publication of Safety Information (*Info Sécurité*) no. 37 on 05/05/08 on the topic:

Braking efficiency test" making it compulsory to perform a "Braking efficiency test, as close as possible to the departure point.

Permanent monitoring of the correct performance of dynamic brake tests through analysis of ATESS cassettes.

Action status

Recommendation adopted

NB.

At the "Sharing For Progress" feedback meeting on 08/04/09, the EPSF drew the attention of railway companies to the appearance of the "Brake test" recommendation.

4.2 Zoufftgen – 11/10/06

On Wednesday 11 October 2006, large-scale track works on the French network required the neutralisation of one of the two tracks on the Thionville-Bettembourg section of international line from 8:50 a.m. to 4:30 p.m. Consequently, trains travelling in both directions took the other track operated according to the Stationary Wrong-Track Running Signalling system.

While an SNCF freight train was travelling on this track from Thionville towards Bettembourg, a regional passenger train (TER) entered the same track in the opposite direction via Bettembourg station. These two trains collided head-on at about 11:44 a.m., on French soil just tens of metres from the border, near Kilometre Point (KP) 203.700 (municipality of Zoufftgen).

BEA-TT Report of 28/02/09

Recommendation R8 (CFL, SNCF, RFF)

Examine the feasibility of taking the SAAT as far as Bettembourg, while displaying the last train announced on the control panel.

Actions undertaken

[RFF letter of response to the BEA-TT report – 10/06/09]

The possibility of taking the SAAT as far as Bettembourg was analysed but the findings were inconclusive. This led to the consideration of another solution deemed to be more efficient, involving the creation of an interconnection between the SAAT RFF and ZNL CFL systems. The SNCF is studying its feasibility and, in particular, tests are currently being performed.

[SNCF letter of response to the BEA-TT report – 08/06/09]

The compatibility of the functionalities and the interconnection of systems require an interface that is currently being developed by a the company selected in the framework of similar projects with the DB, as the German and Luxembourg systems are similar (Strasbourg – Khel and Forbach – Saarbrücken). In addition, this system is in operation for the testing of equipment between the French station of Mont St Martin and the station of Rodange in Luxembourg.

As soon as the interface has been developed and is operating in satisfactorily, it will be installed at Bettembourg.

To its complete efficiency, its implementation shall be accompanied by appropriate training for operators.

Action status

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010]

Action underway

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

An action to interconnect the Luxembourg (ZNL) and French (SAAT) systems is underway

[Appendix 3 – SNCF Annual Report 2010 – 25/05/2011]

The idea of taking SAAT as far as Bettembourg has been abandoned in favour of the interconnection of monitoring. CFL is currently installing a new post on the Bettembourg side and is taking its monitoring as far as the border

[Appendix 10 – RFF Annual Report – 26/05/2011]

Study in progress concerning the interconnection of the SAAT SNCF and the ZN CFL.

Recommendation R11 (CFL, SNCF, RFF)

Modify the ground-to-train radio systems so that the radio alert and the radiotelephone communications transmitted by the Bettembourg or Thionville posts are received at the systems of districts situated on the other side of the border.

Actions undertaken

[RFF letter of response to the BEA-TT report – 10/06/09]

Commissioning of GSM-R on the border section with Luxembourg and Thionville (FR) – French border scheduled for 05/07/09.

[SNCF letter of response to the BEA-TT report – 08/06/09]

On 05/07/09, which is the commissioning date for GSM-R on the French part of the border section, a new GSM-R SNCF post will be brought into service at the Bettembourg control station and at the Thionville switching station with computer-controlled relays.

These two stations shall have a warning button allowing for the issuing of an RST GSM-R warning in the French border section. The border instruction will be republished on this occasion to take account of these modifications.

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010]

In July 2009: implementation of IANA (automatic transfer of warnings between the CFL and French systems) and a GSM-R console in the Bettembourg central control station and in the Thionville switching station with computer controlled relays. These systems must be adapted during the switchover of the RSR to GSM-R in Luxembourg.

Action status

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Recommendation adopted

[Appendix 9 – RFF Annual Report 2009 – 10/06/2010]

The IANA system has been in place since 14/09/2009

Currently, the GSMR-T is in place on the French side and the analogue RST is in place on the CFL side.

Recommendation R12 (SNCF, RFF, EPSF)

In the event of a radio failure, examine more stringent regulations requiring the correction of the anomaly (change of traction unit, implementation of a portable radio unit, etc.) according to stricter criteria.

Actions undertaken

[RFF letter of response to the BEA-TT report – 10/06/09]

After examination, RFF, in agreement with EPSF and the SNCF, was not in favour of more stringent regulations in the event of ground-to-train radio failure.

[SNCF letter of response to the BEA-TT report – 08/06/09]

Taking account of the elements presented in the SNCF letter of response to the BEA-TT report on 08/06/09, the SNCF was not in favour of more stringent regulations in addition to what has already been done.

[EPSF letter of response to the BEA-TT report – 12/06/09]

EPSF recommends the performance of a study, under the responsibility of RFF, in order to examine the opportunities available to agents for stopping two trains that are heading towards one another, in different situations. For each individual case, this study must determine whether it is necessary to consider each situation as being different from protection from an obstacle and, if so, to determine the measures that could be taken, particularly in the absence of radio or in the event of radio failure.

This study must also provide:

- The availability rate for RST and GSM-R;
- The frequency of precursor events (e.g. implementation of single temporary tracks) and the probability of occurrence of the use of the overtaking loop)
- Mapping of the RST and GSM-R equipment on the network and the development programme.

Action status

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Recommendation adopted**Recommendation R14 (CFL, SNCF, RFF)**

Establish effective telephone links that can be used to shut down voltage quickly in an emergency situation on the French border-Thionville section of line at the request of the Bettembourg district control office.

Actions undertaken

[RFF letter of response to the BEA-TT report – 10/06/09]

On the date of the letter, telephone links were operational.

The Bettembourg district control office can thus establish a direct telephone link with the Est-France Central Substation (CSS) in charge of the catenary power supply on the section of French line – Thionville.

Similarly, the Thionville switching station with computer-controlled relays can communicate directly with the Luxembourg CSS in charge of the catenary power supply on the Luxembourg section – Luxembourg border.

[SNCF letter of response to the BEA-TT report – 08/06/09]

The telephone links between the Bettembourg district control office and the Est France central substation (CSS) on the one hand, and between the Thionville switching station with computer-controlled relays and the Luxembourg CSS, on the other, are operational and their use is defined by an SNCF/CFL agreement. The reprinting of the border instruction scheduled for the 05/07/09 will take account of these specificities.

Action status

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Recommendation adopted**Recommendation R18 (CFL, SNCF, RFF)**

For agents with safety responsibilities, ensure their preparation for the most probable emergency situations, including:

- Identification of the risks to be managed
- Formalisation of reaction scenarios
- Training and implementation of exercises.

Actions undertaken

[RFF letter of response to the BEA-TT report – 10/06/09]

With regard to agents with safety responsibilities such as those targeted by this recommendation, RFF is not directly involved, apart from in funding the training of agents of the SNCF Delegated Infrastructure Manager (GID) that have safety duties as defined by this order.

[SNCF letter of response to the BEA-TT report – 08/06/09]

Train dispatchers, traffic control agents and signalmen:

- Strengthening of training in the different languages used by operators of the cross-border sections;
- Implementation of a common safety management reference standard;
- Special or rare procedures (emergency measures, but also operation of stationary wrong-track running signalling, issuing of crossing authorisations and operations relating to electric traction) shall lead to refresher training courses for operators. The individual monitoring of operators is carried out in the framework of safety monitoring.

Drivers:

- In addition to initial training courses, emergency and degraded situations are all reviewed in continuing training courses (scenarios defined in specifications) over a three-year cycle;
- Simulation tools are implemented in order to perform practical exercises;
- A joint accompanying operation between the SNCF Traction DPX and their counterparts on foreign networks must be performed over cross-border routes each year.

Action status

[Appendix 3 – SNCF Annual Report 2009 – 26/05/2010]

Recommendation adopted

4.3 Saint-Médard-sur-Ille – 26/11/07

On 26 November, an HGV loaded with gravel was hit by the Rennes-Saint-Malo Regional Express train (TER) on the Saint-Médard-sur-Ille level crossing. 40 people were injured, 20 of whom were hospitalised – all of them train passengers. Railway traffic was interrupted for several hours.

BEA-TT Report of 11/12/09

Recommendation R1 (*Département* of Ille-et-Vilaine and RFF)

Study and implement measures capable of facilitating the crossing and passing of HGVs on this level crossing (modifications or operating measures for roads or railways).

Actions undertaken

[RFF letter of response to the BEA-TT report – 12/03/2010]

The R1 recommendation forms part of the national approach to performing safety diagnoses of level crossings open to road traffic [...]. Level crossing no. 11 in Saint-Médard-sur-Ille is concerned by this process. Following the accident on 26 November 2007, and in agreement with the circulars, a meeting between RFF and the *Conseil Général* (CG35 - *département*-level council) of the Ille-et-Vilaine *département* in charge of performing the safety diagnosis, was scheduled for 30 April 2010. The aim of this meeting will be to launch the safety diagnosis for level crossing no. 11. RFF will contribute to the consideration of railway aspects in the implementation of the diagnosis and the definition of the additional safety measures required.

Action status

[Appendices 9/10 of the RFF Annual Report 2010 – 09/06/2011]

After a meeting of representatives of the municipality, CG35 and RFF, a 2-phase solution was envisaged. RFF is currently awaiting information from CG35 for the proposal of a draft agreement.

Recommendation R2 (SNCF)

Integrate the consultation of the regional Level Crossing Expert into the texts governing SNCF project management for all projects likely to affect the safety of a level crossing.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 02/03/2010]

The two documents (IN 2934 and IN 2702) specifying the principles for the organisation of safety shall be supplemented with the requirement imposed on the Project Manager to consult the establishment's Level Crossing Expert (new positioning of the Regional Level Crossings Expert since 1 January 2010) for all projects likely to affect the safety of level crossings.

This stipulation will also be the subject of a written notice sent to the Infrastructure Establishments (*Etablissements Equipement*) before the end of the first half of 2010.

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

[Appendix 3 – SNCF Annual Report 2010 – 26/05/2011]

Recommendation currently being processed

4.4 La-Roche-en-Brenil – 07/07/08

On 7 July 2008, an HGV loaded with asphalt, heading to a nearby industrial estate, was hit by the Autun/Avallon Regional Express Train (TER) on the La-Roche-en-Brenil level crossing. 6 people were slightly injured – all of them train passengers.

BEA-TT Report of 14/12/09

Recommendation R1 (SNCF, RFF)

Remind railway operations departments that are aware of significant modifications to road traffic on a level crossing:

- To verify the maintenance of safety conditions, especially with regard to criteria established by the Order of 18 March 1991;
- And then, where necessary, to alert the stakeholders concerned and the authorities in charge, in order to ensure the implementation of appropriate measures to restore the safety of this level crossing.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 02/03/2010]

A letter in which the circumstances concerning the occurrence of the LC 19 accident in La-Roche-en-Brenil were concisely outlined was sent to all directors or Regional Establishments on 16 February 2009 with a view to familiarising in charge of the management of level crossings about several points including:

- When asked for their opinion of a case involving a level crossing, ensure compliance with the provisions of the Order of 18 March 1991, both during intermediate phases of projects and in definitive situations;
- If necessary, activate the administrative procedure relating to changing the classification of the LC;
- Correspondingly, draw up the draft case for the implementation of additional infrastructure items;
- Envisage means of informing road users

This letter also specifies that if safety at the level crossing is affected during a project, the stakeholders (in particular, the project manager and project owner) and the authority concerned must be alerted.

[RFF letter of response to the BEA-TT report – 23/03/2010]

This letter is consistent with the organisational structure currently established by RFF for addressing safety issues during the execution of non-railway projects in the areas around level crossings. RFF has thus arranged to send a letter in which its regional directorates are reminded of the implications of such projects and the organisational provisions to be taken into account. The memorandum drafted by the French Department of Technical Studies for Roads and Motorways (SETRA – *Service d'études techniques des routes et autoroutes*) on "Roadworks close to level crossings" will be enclosed with the reminder letter. In fact, although it does not directly apply to the accident on Level Crossing no. 19, it presents possible solutions that could be applied generally to other configurations of works.

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

Recommendation adopted.

4.5 Stade de France – 07/03/09

On 7 March 2009, supporters from outside Paris, after attending a football match at the Stade de France stadium in the municipality of Saint-Denis, headed back to their coach by following the railway line near the stadium. At about 11:25 p.m., they were hit by an RER B Regional Express Railway train. Two people were killed in the accident, three were seriously hurt and one person was slightly injured.

BEA-TT Report of 15/12/09

Recommendation R3 (SNCF, RFF)

Implement organisational systems and specifications for closing mechanisms capable of guaranteeing that the access doors and gates to the railway area will be sufficiently dissuasive to third parties, while remaining easily accessible to authorised persons.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 03/03/2010] and [RFF letter of response to the BEA-TT report – 23/03/2010]

Launch of a specific joint SNCF and RFF study before the end of 2010 to reassess the specifications of the current closing mechanisms. This study should take account of the impact on organisations and the human factor (ease of use and checking, adaptation to the local context, etc.).

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

Recommendation currently being processed.

Recommendation R4 (SNCF)

Remind agents in track maintenance crews of the importance of checking that fences and access points are in good condition during their rounds. Specify the service expected of SUGE (General Surveillance) agents during their surveillance rounds, especially with regard to the proper locking of access points when they are assigned this mission.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 03/03/2010]

Since the end of March 2009, the following specific measures have been implemented in order to ensure the proper closing of access points situated within the perimeter of the Stade de France stadium:

- A patrol is carried out on the day of the event, including at the weekend, by an agent of the Infrastructure Unit (*Etablissement Equipement*);
- If there are doubts about a closing device, the agent performing the patrol shall lock the access point using a chain and padlock;
- If this is impossible, the agent shall report it to the SNCF General Surveillance department so that its agents can stand guard at this access point;
- The traceability of this patrol is ensured by the annotation of a document that is sent by fax to the Stade de France Monitoring Unit situated at the Paris Nord Operational Traffic Management Centre (*Centre Opérationnel de Gestion des Circulations*).

A memorandum for the attention of all agents of Infrastructure Units will be drafted and sent before the end of March 2010.

Action status

[Appendix 3 – SNCF Annual Report 2007 – General Items – 28/05/2008]

Recommendation adopted

Recommendation R5 (RFF)

Review the policy of erecting signs announcing the ban on access to railway property and the associated dangers, on doors and gates leading to railway platforms. Define the implementation procedures for this policy.

Actions undertaken

[RFF letter of response to the BEA-TT report – 23/03/2010]

The policy of defining the areas occupied by the railway property of RFF, formalised in document PO IF 2 B 42 no. 1 of 22 October 2008, and in Practical Guide NG IF 2 B 42 no. 2 of 22 October 2008, provides for the definition of security measures, according to the risks of intrusion. The implementation of this policy began in 2009 with the identification of sensitive areas. The policy

document will be amended by the end of 2010 so that signs can be erected at the entry points to the French railway network situated near sites of public gatherings.

Consequently, around the Stade de France, doors and gates leading to railway platforms will be systematically equipped with specific signage. The choice of the sign will aim to prohibit access to the French railway network by unauthorised people, provide a reminder of the penalties incurred and warn people about the risks to intruders caused by railways.

Action status

[Appendix 9/10 – RFF report on safety for 2010 – 09/06/2011]

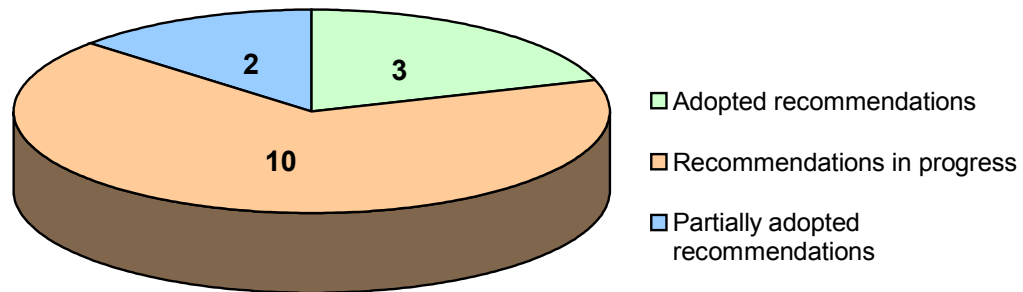
Practical Guide NGIF 2 B 42 no. 2 is ready.

5 Reports published in 2010

In 2009, 15 recommendations (included in five reports) were issued by BEA-TT with regard to the railway sector for which EPSF acts as the French safety authority. The following chart illustrates the status of these recommendations by classifying them according to:

- Adopted recommendation (green colour);
- Partially adopted recommendation (blue colour)). This status is given to recommendations sent to several entities, at least one of which has adopted the recommendation;
- Recommendation in progress (orange colour). This status concerns recommendations for which the actions undertaken do not yet allow the recommendation to be considered adopted or for which EPSF has not yet been informed of actions in progress.

**Statuses of recommendations issued
in reports published in 2010**



5.1 Orthez – 24/11/09

On Tuesday 24 November 2009, the first two wagons of a train carrying dangerous substances derailed just before Orthez station, causing a propane leak.

There were no victims of the accident, but people in nearby houses and a hospital were forced to remain indoors.

Due to material damage (to wagons and tracks) traffic was not restored until 30 November.

BEA-TT Report of December 2010

Recommendation R1 (RFF, SNCF Infra)

Examine the relevance of introducing a periodic measurement of superelevation and a binding rule on the maximum superelevation, which may take account of the value of the connection slope.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 17/04/11] and [RFF letter of response to the BEA-TT report – 18/03/11]

Proposals in response to this recommendation:

- Determine a representative sample of bends which are potentially at risk, with the following criteria:
 - Bend radii equal to or less than 500 m
 - Superelevation close to the superelevation limit
- Organise and perform the measurement of superelevation on this sample
- Analyse the results and decide to intervene and/or legislate on the rules and surveillance according to the situations encountered.

The overall duration of this action is between 18 and 24 months

Action status

[Appendix 3 - SNCF Annual Report 2010 – 26/05/2011]

Actions currently being processed.

Recommendation R2 (VTGF, AFWP)

Ensure the checking, by entities in charge of maintenance, of the relevance of the maintenance rules relating to the body-truck connections on tank cars with a wide wheelbase and strengthen the requirements relating to the traceability of interventions on these units.

Actions undertaken

[VTGF letter of response to the BEA-TT report – 08/03/2011]

Implementation of separate measures according to the type of wagon:

- For tank cars with a wide wheelbase: identification of the wagons concerned, then the systematic replacement of the side bearings (friction surfaces) on the chassis and their fasteners with new parts during the major main services. Creation of a rule to support the drafting of workshop orders in the operating database.
- For all wagons equipped with fixed side friction blocks: implementation of the monitoring of wear on side bearings during intermediate services (every 4 to 6 years) by systematic measurement, replacement of side bearings during services if wear limits are exceeded, strengthening of traceability of operations with the mandatory recording of the position of parts that are fitted or exchanged (archiving will be carried out by the workshop and owner – entity in charge of maintenance).

Modifications to the maintenance instructions have begun.

Action status

Actions currently being processed

Recommendation R3 (VTGF, AFWP)

Ensure that entities in charge of maintenance modify and supplement the criteria relating to side bearing clearance in rigid wagons with a wide wheelbase, so that they are consistent with the standards relating to the track and are sufficient to guarantee the wagons' fitness to negotiate the track distortion.

Actions undertaken

[VTGF letter of response to the BEA-TT report – 08/03/2011]

Establishment of a working group by AFWP comprising the entities in charge of maintenance (ECM), the SNCF Stock Directorate (DM), the Stock Engineering Centre (CIM) and the RFF infrastructure manager study, approve and, if necessary, change “the consistency of side bearing clearance with standards relating to the railway track”

Action status

Actions currently being processed

Recommendation R4 (EPSF)

Examine the opportunity to transmit the R2 and R3 recommendations to all national safety authorities with a view to implementation in their respective member states.

Actions undertaken

No response.

Action status

Actions currently being processed.

Recommendation R5 (RFF, SNCF)

Implement a rail greasing policy guaranteeing sufficient greasing in areas whose severe geometric characteristics and high levels of freight traffic lead to a particularly high risk of derailment due to wheel climb.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 17/04/11] and [RFF letter of response to the BEA-TT report – 18/03/2011]

- Reappraisal, with RFF, of the greasing policy on the French Railway Network (*Réseau Ferré National*), currently defined by Directive IN 0206 “greasing of rails by rolling stock”. In this framework, specific situations, such as the movement of particularly rigid traffic or a high density of freight traffic on sections with severe alignment characteristics, will be analysed.
- Drafting of a better characterisation of greasing quality.

Action status

[Appendix 3 – SNCF Annual Report 2010 – 26/05/2011]

Action currently being processed.

Recommendation R6 (SNCF)

In the event of a derailment or a presumed derailment, stipulate, in the drivers’ reference standard, the use of precise and unambiguous terms in communications with office-based agents, e.g. “Derailment, request obstacle protection”.

Also stipulate, where necessary, the requirement for the driver to clearly report the presence of dangerous materials aboard the train.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 17/04/11]

Modification of article F44.09 (train derailed on open track) in chapter F (TT0516) of the drivers’ reference standard, in order to submit the reporting of dangerous materials to the train dispatcher or the traffic agent in the event of derailment.

Action status

[Appendix 3 - SNCF Annual Report 2010 – 26/05/2011]

Recommendation currently being processed.

Recommendation R7 (SNCF)

In the job texts of agents responsible for managing traffic (train dispatchers and traffic agents), state the emergency measures to be implemented in the event of a train accident involving dangerous materials.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 17/04/11]

Examination of a way to improve the clarity of job document DC 3790 intended for train dispatchers and entitled “Reference handbook – Safety operations carried out by train dispatchers”, with regard to the measures to be taken by the train dispatcher when notified of the presence of dangerous materials aboard a train involved in an accident.

Action status

[Appendix 3 – SNCF Annual Report 2010 – 26/05/2011]

Actions currently being processed.**Recommendation R8 (SNCF)**

To the traffic dispatchers' reference standard (IN 3790), add the emergency shutdown of the catenary voltage as a means of stopping trains in emergency situations and of reducing the risk of explosion in the event of the leakage of dangerous materials.

Seek out and delete any local reference standards likely to cause confusion or doubt regarding the application of the emergency shutdown.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 17/04/11]

- Drafting of a new version of text DC 3790 for use by train dispatchers, which will clearly explain the use of the emergency shutdown as a way of stopping trains in an emergency and/or of reducing the risks of explosion in the event of a leakage of dangerous materials.
- Sending of a letter of directives referenced DCF-S/CVE/10-137 and dated 06 August 2010 to all Infra Traffic Establishments (EIC). Its purpose is to remind dispatchers of the possibility of using the emergency shutdown in order to stop traffic in an emergency.
- Search for local reference standards intended for sub-station train dispatchers and traffic agents, which could cause confusion or doubt regarding the application of the emergency shutdown, in order to correct or possibly repeal them.

Action status

[Appendix 3 - SNCF Annual Report 2010 – 26/05/2011]

Actions currently being processed.

5.2 Livernant Tunnel – 20/05/09

On 20 May 2009, the arm of a forestry machine loaded onto an ECR train collided with an SNCF cruiser train in the Livernant Tunnel.

One person was slightly injured in the accident (the SNCF train driver), but the accident caused significant damage to both of the trains, their load, the track and the railway infrastructure.

BEA-TT Report of December 2010

Recommendation R1 (to DBSR via EPSF and EBA)

Check the training and familiarity of personnel (loading advisors and trained visitors) involved in the process for transporting sensitive shipments, and provide for the actual participation of advisors when loading is carried out by an inexperienced company.

Actions undertaken

[Letter from EPSF to DBSR – 28/01/2011]

Transmission of recommendations intended for DBSR

Action status

Recommendation adopted.

Recommendation R2 (to DBSR via EPSF and EBA)

Supplement the text of the “Sensitive shipment” agreement, by including:

- The signature of the loader certifying his or her familiarity with the advisor’s recommendations and his or her commitment to complying with them.
- Mention of the possibility for the loader to request the presence of the advisor if needed during loading.

Actions undertaken

[Letter from EPSF to DBSR – 28/01/2011]

Transmission of recommendations intended for DBSR.

Action status

Recommendation adopted

Recommendation R3 (to DBSR via EPSF and EBA)

Check the initial and continuing training of all visitors concerning the checking and inspection of loads during transportation and, in particular, such operations performed on sensitive shipments.

Actions undertaken

[Letter from EPSF to DBSR – 28/01/2011]

Transmission of recommendations intended for DBSR.

Action status

Recommendation adopted

Recommendation R4 (SNCF)

Examine the relevance of making changes to the application documents intended for drivers (TT 0057) so that they suspect an encroachment into the clearance gauge of the passing train upon hearing an unusual banging noise while passing a goods train at night or in low visibility conditions.

Actions undertaken

[SNCF letter of response to the BEA-TT report – 25/02/11]

Modification of Sheet 103 of the 15 September 2010 edition of handbook TT0057, in order to incorporate the possibility of an abnormal noise from a passing train and providing a link to Sheet 443 (train travelling in dangerous conditions).

Modification of articles F11.02 and F44.06 of the main line train driver reference standard (TT00516) to provide a reminder that abnormal banging noises could be caused by the fouling of the clearance gauge by another train travelling on the adjacent tracks and, in this case, it is necessary to stop or ensure the stoppage of the traffic responsible for the incident.

Action status

[Appendix 3 – SNCF Annual Report 2010 – 26/05/2011]

Actions currently being processed.

Recommendation R5 (EPSF, DGITM – Directorate-General for Infrastructures, Transport and the Sea)

Examine the procedures which, by adapting regulatory text IN 1514-S2C or through recommendations concerning the job-specific documents of railway companies, will prompt train drivers to presume the fouling of the passing train's clearance gauge when they notice an unusual banging noise during the passing of a goods train at night or during poor visibility conditions.

Actions undertaken

[EPSF letter of response to the BEA-TT report – 28/01/11]

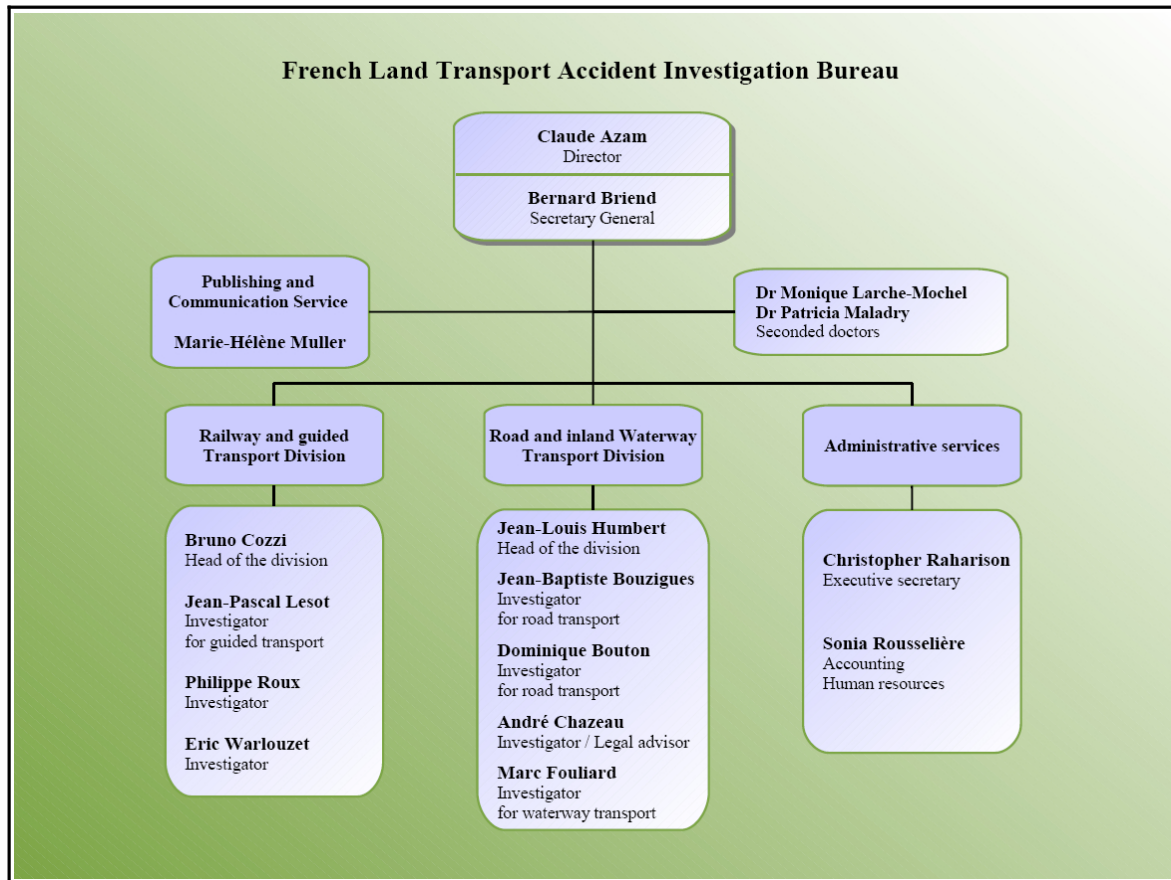
Publication of a recommendation relating to the noticing of a banging noise or an abnormal movement by an agent on the train.

Transmission of the BEA-TT report to the EBA, which is responsible for passing it on to the DB.

[DGITM letter of response to the BEA-TT report – 24/03/11]

Rewriting of all Technical Orders including of 23 June 2003 relating to the safety regulations that apply to the French Railway Network, so that a new order can be published.

Appendix 4: BEA-TT organisational chart as at 1 September 2012



Appendix 5: Institutional texts

- Articles L.1621-1 to L. 1622-2 of the transportation code derived from amended Law no. 2002-3 of 3 January 2002 relating to the safety of transportation infrastructures and systems, technical investigations and the underground storage of natural gas, hydrocarbons and chemical products
- Decree no. 2004-85 of 26 January 2004 relating to technical investigations into maritime events and land transport accidents or incidents, amended by Decrees no. 2006-1276 of 19 October 2006 and no. 2012-668 of 4 May 2012

TITLE II: COMMON PROVISIONS RELATING TO THE TECHNICAL INVESTIGATION AND SAFETY INVESTIGATION AFTER A TRANSPORT ACCIDENT OR INCIDENT

Chapter I: Conditions of the technical investigation and safety investigation

Section 1: Definitions

Article L1621-1

For the purposes of this Title:

1° Land transport includes rail or guided transport as defined in article L. 2000-1, in addition to road transport and waterway transport;

2° Land transport accidents or incidents are considered to be those in which the accident or incident has taken place on French territory;

3° "Marine event" shall be taken to mean any marine accident or incident as defined by the Code of International Standards and recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code), adopted in London on 16 May 2008;

4° Marine events that may lead to a technical investigation, conducted in compliance with the code mentioned in 3°, are:

a) Marine events involving commercial vessels flying the French flag wherever they may be situated, in addition to civilian vessels flying a different flag when the marine event occurs in French inland waters or in French territorial waters;

b) Marine events, wherever they occur, that have cost the life of or caused serious injury to French nationals, or caused or threatened to cause serious harm to French territory, the environment, installations or structures over which France exercises its jurisdiction.

Section 2: Procedure

Article L1621-2

Subject to the provisions of article L. 1621-1, a technical investigation may be conducted into any land accident or incident and any marine event.

Any serious civil aviation accident or incident shall be the subject of a safety investigation under the conditions provided for in articles 11,12 and 13 of regulation (EU) no. 996/2010 of the European Parliament and Council of 20 October 2010 concerning investigations and the prevention of accidents or incidents in civil aviation and repealing Directive 94/56 EE, in addition to those determined by the agreement between the authority responsible for safety investigations and the legal authorities, pursuant to article 12 of the said regulation, where necessary.

Article L1621-3

The sole purpose of the technical investigation and safety investigation provided for by article L. 1621-2 is to prevent future marine events and land transport or civil aviation accidents or incidents.

Without prejudice, where necessary, to any legal investigation that might be opened, these investigations consist of collecting and analysing relevant information, determining the circumstances and the definite or possible causes of the event, accident or incident and, if necessary, formulating safety recommendations.

Article L1621-4

A technical investigation or safety investigation report shall be drawn up by the permanent body or authority responsible for safety investigations mentioned in article L. 1621-6, which shall make this report public, in an appropriate form, at the end of the investigation. This report shall not state the names of people. It shall only mention information resulting from the investigation that is required to determine the circumstances and causes of the accident or incident and understand the safety recommendations.

Before the report is made public, the investigators may gather observations of the authorities, companies and personnel involved, which shall be bound by the obligation of professional secrecy concerning the details of this consultation.

Article L1621-5

The Public Prosecutor shall receive a copy of the Technical Investigation Report in the event of the institution of legal proceedings.

Section 3: Powers of investigation

Article L1621-6

The technical investigation and safety investigation mentioned in article L. 1621-2 shall be conducted by a permanent specialist body and by the authority in charge of safety investigations or under their control, respectively, under the following conditions:

1° For marine events and land transport accidents or incidents, members of the permanent body, members of the inspection and monitoring bodies whose services may be used by the permanent body and, where necessary, the members of a commission of investigation established at the request of the permanent body to the Minister for Transport, shall have the status of Technical Investigators;

2° For civil aviation accidents or incidents, only members of the authority responsible for safety investigations shall have the status of Safety Investigators. However "Initial Information Investigators" may be accredited to perform investigations of this nature, under the control of the authority responsible for safety investigations.

Article L1621-7

In the framework of the technical investigation or the safety investigation, the organisation and the people responsible for the investigation shall act with complete independence and shall neither receive nor request instructions from any authority or organisation whose interests could conflict with their assigned mission.

Article L1621-8

A decree in the French Council of State (*Conseil d'Etat*) shall establish the conditions for the commissioning of Technical Investigators, Safety Investigators and people responsible for investigations, the conditions for the accreditation of Initial Information Investigators and the conditions for the appointment of members of Commissions of Investigation.

It shall also define the situations in which investigators of foreign nationality may be authorised to participate in investigations on French soil or aboard French vessels and the procedures for this participation, when it is required for the proper conduct of the investigation.

Article L1621-9

In the event of a land transport accident or incident, the Public Prosecutor shall be informed of the intervention procedures for investigators.

If necessary, in case of a marine event, the Administrator of Maritime Affairs responsible for the investigation provided for in Article 86 of the French Merchant Navy Disciplinary and Penal Code (*Code disciplinaire et pénal de la marine marchande*) shall also receive the same information as the Public Prosecutor.

Article L1621-10

Technical Investigators, Safety Investigators and Initial Information Investigators may gain immediate access to the site of the accident or incident, the means of transport or the wreck thereof and its contents so that they can record any relevant observations in situ.

The legal authority shall be given advance notice of the investigators' interventions. If necessary, the Technical Investigators, or failing that, the Initial Information Investigators, shall take any steps required to ensure the preservation of clues.

Article L1621-11

I. - For land transport accidents or incidents and marine events, Technical Investigators shall have immediate access to the contents of on-board recorders and technical data recording systems, including parameters that may help to explain the causes and circumstances of the accident or incident, and may proceed with their exploitation under the following conditions:

1° When an investigation or judicial inquiry is opened, the recorders and recording media that were previously seized by the legal authority according to the procedures provided for in articles 97 and 163 of the French Criminal Procedure Code (*Code de procédure pénale*), shall be made available

to the Technical Investigators at their request, who shall make copies of the elements contained therein, under the control of an officer of the Criminal Investigation Department (*Police judiciaire*);

2° When an investigation or judicial inquiry has not been opened, the recorders and recording media may be removed by the Technical Investigators or, if instructed by the permanent body, by the Initial Information Investigators, in the presence of an officer of the French Criminal Investigation Department.

A request for the participation of an officer of the Criminal Investigation Department shall be submitted to the Public Prosecutor's office.

II- For civil aviation accidents or incidents, the gathering, conservation and exploitation of evidence shall be carried out by the authority responsible for safety investigations under the conditions provided for in the second paragraph of article L. 1621-2.

Article L1621-12

I. – For land transport accidents or incidents and marine events when an investigation or judicial inquiry has not been opened, the Technical Investigators or, if instructed by the permanent body, the Initial Information Investigators may, in the presence of an officer of the Criminal Investigation Department and for the purpose of examination or analysis, take samples of debris, fluids, parts, components, assemblies or mechanisms that they believe might help to determine the circumstances and causes of the accident or incident.

A request for the participation of an officer of the French Criminal Investigation Department shall be submitted to the Public Prosecutor's Office.

II- For land transport or civil aviation accidents or incidents and marine events, the items or documents retained by Technical Investigators or Safety Investigators shall be returned as soon as their retention seems no longer required for determining the circumstances and causes of the accident or incident.

If a criminal investigation is conducted, the Public Prosecutor or the Examining Magistrate informed of the possibility of the return of these items or documents shall be given prior notice thereof. There shall be no entitlement to compensation for the retention or the alteration or destruction of items or documents submitted for examination or analysis, if required by the investigation

III. - For civil aviation accidents or incidents, the gathering, conservation and exploitation of evidence shall be carried out by the authority in charge of safety investigations under the conditions provided for in the second paragraph of article L. 1621-2.

Article L1621-13

I. – For land transport accidents or incidents and marine events when an investigation or judicial inquiry has been opened, the Technical Investigators, with the agreement of the Public Prosecutor or Examining Magistrate and for the purpose of examination or analysis, may proceed with the sampling of debris, fluids, parts, components, assemblies or mechanisms that they believe might help to determine the circumstances and causes of the accident or incident.

Technical Investigators may only subject the debris, fluids, parts, components, assemblies and mechanisms that have been seized to examinations or analyses which are likely to modify them, with the agreement of the legal authority.

In the absence of an agreement, they shall be informed of expert appraisal operations carried out by the competent legal authority. They shall be entitled to attend these operations and exploit the resulting findings for the needs of the technical investigation.

II- For civil aviation accidents or incidents, the gathering, conservation and exploitation of evidence shall be carried out by the authority in charge of safety investigations under the conditions provided for in the second paragraph of article L. 1621-2.

Article L1621-14

I. – For land transport accidents or incidents and marine events, Technical Investigators may meet anyone concerned and obtain the disclosure, with no right to refusal on grounds of professional secrecy, of any information or document concerning the circumstances, companies, organisations and equipment relating to the accident or incident, including the construction, certification, maintenance, use of equipment, transport preparation, operation, information and monitoring of the means of transport involved. The investigators may organise these meetings in the absence of anyone whose interests might be served by obstructing the safety investigation. Technical Investigators cannot use the testimonies, information and documents gathered for any purposes other than the technical investigation itself, unless their disclosure is justified by an overriding public interest.

Under the same conditions, Technical Investigators may request the disclosure of any information or documents of a personal nature concerning the training, qualifications and the fitness of personnel for driving or operation, or the inspection of this means of transport. However, any such information of a medical nature can only be disclosed to doctors that are attached to the permanent body or appointed to assist these investigators.

A copy shall be made of documents placed under seal by the legal authority, for the attention of these investigators.

The conditions for the application of part I of this article shall be established by decree in the French Council of State.

II. – For civil aviation accidents or incidents, the gathering, conservation and exploitation of evidence shall be carried out by the authority in charge of safety investigations under the conditions provided for in the second paragraph of article L. 1621-2.

Article L1621-15

Doctors attached to the permanent body or appointed to assist the Technical Investigators shall, at their request, receive the results of examinations or samples taken from persons responsible for the operation, information and inspection of the transport equipment involved in the accident or incident, in addition to forensic evaluation reports concerning the victims.

Section 4: Provisions relating to the secrecy of criminal investigations and professional secrecy

Article L1621-16

The personnel of the permanent body or of the authority responsible for safety investigations, persons in charge of the investigation, including Initial Information Investigators and members of commissions of investigation, in addition to any experts whose services might be used, shall be bound by an obligation of professional secrecy under the conditions and subject to the penalties provided for in article 226-13 of the French Criminal Code.

Article L1621-17

I. # Notwithstanding the provisions of article L. 1621-16, the head of the permanent body or of the authority responsible for safety investigations shall be empowered to transmit information resulting from the technical investigation or the safety investigation to the following recipients, if he or she considers that this information is likely to prevent a marine event or a land transport or civil aviation accident or incident:

1° Administrative authorities responsible for safety;

2° Heads of construction or maintenance companies for infrastructures, transport equipment or fittings;

3° Natural and legal persons responsible for the operation of transport infrastructures or equipment;

4° Natural and legal persons responsible for the training of personnel.

II. # The head of the permanent body or of the authority responsible for safety investigations and, where necessary, the presidents of commissions of investigation shall, in the framework of their mission, be empowered to make information of a technical nature concerning the investigators' findings, the progress made in the technical investigation or safety investigation and, possibly, its provisional conclusions, available to the public.

Article L1621-18

With the authorisation of the Public Prosecutor or Examining Magistrate, information concerning on-going judicial proceedings, which allows for the performance of research or scientific or technical investigations that may prevent the occurrence of accidents or facilitate the compensation of victims, may be transmitted to authorities or organisations empowered for this purpose, by order of the French Minister for Justice, issued, when necessary, after consultation with the Ministry or Ministries involved. Officials working for these authorities or organisations, who receive this information, shall be bound by an obligation of professional secrecy, under the conditions and subject to the penalties provided for by articles 226-13 and 226-14 of the French Criminal Code.

Article L1621-19

Information or documents relating to a criminal investigation or judicial inquiry secrecy obligation may be disclosed to Technical Investigators and Safety Investigators with the agreement of the Public Prosecutor.

Article L1621-20

During the course of their investigations, the permanent body or the authority responsible for safety investigations may issue safety recommendations if they consider that their immediate implementation is likely to prevent an accident or incident.

Chapter II: Sanctions relating to the Technical Investigation

Article L1622-1

The obstruction of the actions of Technical Investigators and Safety Investigators mentioned in articles L. 1621-6 and L. 1621-10, in any of the following ways, shall be punishable by one year of imprisonment and a €15,000 fine:

- 1° By opposing the performance of the duties for which they are responsible;
- 2° By refusing to submit recordings, equipment, relevant information or documents by concealing them, altering them or by making them disappear.

Article L1622-2

Legal persons recognised as being criminally responsible, under the conditions provided for by article 121-2 of the French Criminal Code, for infractions defined by article L.1622-1, shall, in addition to the fine imposed according to the procedures set out by article 131-38 of the French Criminal Code, incur the penalties mentioned in article 131-39 of the same Code.

The ban mentioned in 2° of article 131-39 of the same Code concerns the activity during the performance of which, or at the time of which the infraction was committed.

Decree no. 2004-85 of 26 January 2004 relating to technical investigations after maritime events and land transportation accidents or incidents.

NOR: EQUIP0301770D

The Prime Minister,

Concerning the report of the Minister of Infrastructure, Transport, Housing, Tourism and the Sea.

Having regard to the 1973 International Convention for the Prevention of Pollution by Ships, signed in London on 2 November 1973, as modified by the 1978 protocol, published by Decree no. 83-874 of 27 September 1983, in particular article 12 thereof;

Having regard to the 1974 International Convention for the Safety of Life at Sea, signed in London on 1 November 1974 and published by Decree no. 80-369 of 14 May 1980;

Having regard to the 1978 International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, signed in London on 7 July 1978 and published by Decree no. 84-387 of 11 May 1984;

Having regard to the United Nations Convention on the Law of the Sea, signed at Montego Bay on 10 December 1982 and published by Decree no. 96-774 of 30 August 1996, in particular article 94 thereof;

Having regard to Directive 1999/35/EC of the Council of 29 April 1999 relating to a system of mandatory surveys for the safe operation of regular ro-ro ferry and high-speed passenger craft services, in particular article 12 thereof;

Having regard to Directive 2002/59/EC of the European Parliament and Council of 27 June 2002 relating to the establishment of a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC, in particular article 11 thereof;

Having regard to the French Criminal Procedure Code (*Code de procédure pénale*), in particular article 776 thereof;

Having regard to the amended French Framework Law on Domestic transportation (*Loi d'orientation des transports intérieurs*) no. 82-1153 of 30 December 1982, in particular Article 9 thereof;

Having regard to French Law no. 2002-3 of 3 January 2002, relating to the safety of transportation infrastructures and systems, technical investigations and the underground storage of natural gas, hydrocarbons and chemical products, in particular section III thereof;

Having regard to the amended Decree of 8 November 1926 concerning the reorganisation of the French General Inspectorate of departments of the Merchant Marine Register;

Having regard to amended Decree no. 84-810 of 30 August 1984 relating to the saving of lives at sea, habitability onboard ships and the prevention of pollution;

Having regard to amended Decree no. 85-659 of 2 July 1985, establishing the organisational structure of the central administration of the French Ministry of Urban Planning, Housing and Transport;

Having regard to Decree no. 86-1175 of 31 October 1986 relating to the General Council of Bridges and Highways (*Conseil général des ponts et chaussées*) and the General Inspectorate of Infrastructure and the Environment (*Inspection générale de l'équipement et de l'environnement*);

Having regard to Decree no. 97-464 of 9 May 1997 relating to the creation and organisation of departments with national jurisdiction;

Having regard to the opinion of the Joint Central Technical Committee of the French Ministry of Infrastructure, Transport, Housing, Tourism and the Sea, of 10 July 2003;

Having regard to the opinion of the Permanent Inter-ministry Group for Road Safety of 22 July 2003;

Having heard the French Council of State (*Conseil d'Etat*);

Chapter 1: Common provisions

Article 1

The permanent specialist bodies responsible for conducting

technical investigations into events at sea and land transport accidents or incidents in application of article 14 of the abovementioned Law of 3 January 2002, are departments with national jurisdiction, hereinafter referred to as the "French Sea Event Investigation Bureau" (BEA mer) et "French Land Transport Accident Investigation Bureau" (BEA-TT).

Article 2

The authorities of the French State and its public establishments, and of the local authorities for the transportation services and infrastructures for which they are responsible, shall immediately inform the competent investigation bureau of any events, accidents or incidents that seriously jeopardise the safety of people, in particular when they involve transportation carried out by professionals.

For the performance of their missions, the investigation bureaus may call upon the services of any competent departments of the French State in their respective fields.

Article 3

The organisation of the bureaus of investigation shall be established by order of the Minister for the Sea or by order of the Minister for Transport, depending on the field of investigation.

Article 4

The Director of each Investigation Bureau shall be appointed for a period of five years. He or she shall be assisted by a Secretary-General. Their appointment empowers them to act as Technical Investigators.

Article 5

The Director of each Investigation Bureau shall lead the bureau's actions. He or she shall have authority over the staff.

He or she shall be the secondary authorising officer for the department's revenue and expenditure.

He or she may delegate the authority for civil servants and agents under his or her authority to sign any official documents, decisions, contracts, conventions and amendments, in addition to any order forms and accounting documents.

Article 6

The Director of each Investigation Bureau shall establish the scope of investigation and the method for the technical investigations. He or she shall designate the technical investigators responsible for the organisation and conduct of the investigations.

Article 8

Doctors attached to the Investigation Bureaus and the doctors appointed by the Directors to assist them, in addition to doctors who are members of investigation committees, shall be sent any information or documents of a medical nature that they request in relation to the people mentioned in article 20 of the abovementioned Law of 3 January 2002. Based on the information gathered, they shall select elements likely to shed light on the circumstances and causes of the event, accident or incident that is the subject of the investigation.

Article 9

The recipients of safety recommendations issued at the time of a technical investigation shall, within a period of ninety days following their receipt, unless another timeframe has been expressly stipulated in the recommendations, inform the Director of the Investigation Bureau of their intended response to these recommendations and, if necessary, the timeframe required for their implementation.

The Director may make these recommendations public, accompanied, if necessary, by the responses received from the recipients.

The same provisions apply to the safety recommendations that

may be issued following the feedback and accidentology studies.

Article 10

The investigation reports drawn up under the conditions set out in article 23 of the abovementioned Law of 3 January 2002, in addition to the studies and statistics, shall be made available to the public by any means.

Article 11

The Director of each Investigation Bureau shall draw up an annual report on its activities, which shall be made public.

Chapter 2: Provisions relating to the French Marine Events Investigation Bureau and to technical investigations into marine events.

Article 12

Amended by Decree no. 2012-668 of 4 May 2012 – art. 2
BEA mer is attached to the Inspector General of Maritime Affairs. Its mission is to conduct technical investigations into marine events. It is also responsible for gathering, exploiting and disseminating information relating to the practices and information derived from feedback into marine events. It shall also conduct studies and research concerning feedback and accidentology.

Article 13

Amended by Decree no. 2012-668 of 4 May 2012 – art. 2
The Director of the BEA mer shall be appointed by order of the Minister for the Sea, on proposal of the Inspector General of Maritime Affairs. The Director shall be a Category A public official with at least twenty years' professional experience in the field of maritime activities and safety.

Article 14

Amended by Decree no. 2012-668 of 4 May 2012 – art. 2
The opening of an investigation shall be decided by the Director of the BEA mer, on his or her initiative or at the request of the Minister for the Sea, under the conditions set out hereinafter.
I. – In the event of a very serious accident at sea, as defined by the Code of International Standards and Recommended Practices for a Safety Investigation into a Marine Accident or Incident (code for accident investigations), adopted in London on 16 May 2008, and involving one or more commercial or fishing vessels exceeding fifteen metres, or pleasure vessels that have a crew and transport more than twelve passengers for commercial purposes, a technical investigation shall be systematically carried out.
II. - In the event of a serious marine accident, an assessment shall be made by BEA mer prior to any decision to open a technical investigation.
Examples of "serious marine accidents" are: a fire, explosion, collision, grounding, breakdown, a crack in the hull or a presumed defect that makes the vessel unfit for the sea or leads to pollution or a breakdown requiring towing or rescue by the coastal services. The decision regarding whether or not to open a technical investigation in the event of a serious accident shall take account of the type of event, its degree of severity, the type of vessel, cargo and the opportunity to learn lessons regarding maritime risk prevention.
If a safety investigation is not launched, the reasons for this decision shall be recorded and sent to the European Commission in accordance with the model shown in Appendix II of Directive 2009/18/EC of the European Parliament and Council of 23 April 2009, which establishes the basic principles governing investigations into accidents in the maritime transportation sector and amends Directive 1999/35/EC of the Council and Directive 2002/59/EC of the European Parliament and Council.
III. - In the event of any other marine event, the Director of BEA mer shall decide whether it is necessary to conduct a technical

investigation, taking account of the type of event, its degree of severity, the type of vessel, its cargo and lessons to be learned in the field of maritime risk prevention.

IV. - The technical investigation, whether mandatory or decided by the Director of BEA mer, shall be opened as soon as possible after the occurrence of the marine event and, in all circumstances, within a period of two months of its occurrence.

Article 14-1

Created Decree no. 2012-668 of 4 May 2012 – art. 2
Evidence, especially information originating from electronic and magnetic recordings and videotapes, such as those from the trip data recorder, shall be gathered as soon as possible. This evidence shall be kept in such a way as to prevent it from being overwritten or from interfering with any other equipment likely to be of use to the technical investigation. It shall be made available to the investigators pursuant to the relevant codes and resolutions of the International Maritime Organisation, European law and articles L. 1621-10 to L. 1621-14 of the French Transportation Code.

Article 15

In addition to the Director and Secretary-General, BEA mer includes technical investigators, selected from French State officials in Category A or an equivalent level. Their appointment empowers them to conduct technical investigations. BEA mer also includes technical and administrative agents. Depending on whether they have tenured or contract positions shall be assigned or recruited on proposal of the Director of BEA mer. For each investigation, the Director of BEA mer shall propose to the Minister either the use of the Bureau's own resources, or the formation of an investigation commission. For the latter, the Minister, on the Director's proposal, shall designate the President of the Commission who shall be selected from amongst BEA mer investigators, in addition to the other members of the commission who are chosen according to their skills and provide guarantees of independence and impartiality. The members of the commission shall have the capacity of Technical Investigators. BEA mer may call upon the services of experts, who may be foreign nationals and who shall be subject to the obligation of professional secrecy under the same conditions as BEA mer agents. The remuneration of Technical Investigators and experts who are not assigned to BEA mer or who are not made available to the Bureau, shall be established by joint order of the Ministry for the Budget and of the Minister for the Sea.

Article 16

Technical Investigators, other than those mentioned in the first paragraph of article 15, shall be empowered by the Minister for the Sea on the proposal of the Director of BEA Mer, subject to them having no record of any conviction or judgement mentioned in Bulletin no. 2 of the French National Criminal Records Office (*Casier judiciaire national*). This power may be withdrawn from them in the interests of the department according to the same procedure.

Article 17

Amended by Decree no. 2012-668 of 4 May 2012 – art. 2
When they are aware of a marine event involving one or more Member States or non-member States, as either the flag State or a State with important interests at stake, the competent French administrative authorities shall exchange any information they have concerning the event with this or these State(s). If France is involved in a marine accident with other States, the States concerned shall, pursuant to the applicable international agreements and conventions and in particular, the code for investigations into accidents mentioned in section I of article 14, designate the State with the main responsibility for the investigation. A non-member State may only conduct an investigation into a marine accident involving the French State as the flag State, coastal State or State with important interests at stake if it can

guarantee that it shall rigorously apply the recommended standards and practices of the aforementioned code for investigations into accidents, in particular with regard to the independence and qualification of investigators, confidentiality of statements by witnesses and the protection thereof.

If a State other than France is designated as being in charge of the technical investigation, the Director of BEA mer shall, with the investigation body concerned, organise the French participation in this investigation.

The Director of BEA mer may accept the responsibility to conduct a technical investigation or carry out specific tasks relating to this investigation by delegation to a Member State. He or she shall then establish the intervention procedures for BEA mer.

Article 17-1

Created by Decree no. 2012-668 of 4 May 2012 – art. 2

If BEA mer is designated as the leader or joint leader of a technical investigation into a marine accident involving one or more foreign States, it shall establish the procedures for the participation or association of foreign technical investigators pursuant to the applicable international conventions and agreements, in particular the International Maritime Organisation's code for investigations into accidents, mentioned in section I of Article 14.

Article 17-2

Created by Decree no. 2012-668 of 4 May 2012 – art. 2

If a ro-ro ferry or a high-speed passenger ship is involved in a marine event that occurs in French domestic or territorial waters, BEA mer shall launch the technical investigation procedure and shall remain in charge of it until the State that is mainly responsible for the investigation has been designated by common accord between the States concerned.

The same procedure applies if the marine event occurs in waters other than French domestic or territorial waters and if France is the last Member State in which the ro-ro ferry or high-speed passenger ship called.

Article 17-3

Created by Decree no. 2012-668 of 4 May 2012 – art. 2

In the case of a marine event involving at least two Member States and in the absence of an agreement concerning the designation of the State with main responsibility for the technical investigation, the Director of BEA mer shall open a parallel investigation and notify the European Commission of this action.

Article 17-4

Created by Decree no. 2012-668 of 4 May 2012 – art. 2

When it is designated as the organisation with main responsibility for the investigation, BEA mer shall, within twelve months of the date of the accident, publish a report presented in accordance with Appendix I of Directive 2009/18/CE of 23 April 2009, mentioned in section II of Article 14.

If the investigation does not concern a very serious or serious marine accident as defined by this decree, and if its conclusions are not likely to lead to the prevention of future marine events, BEA mer shall publish a simplified report.

If the final report cannot be produced within the specified timeframe, BEA mer shall publish an interim report within twelve months of the date of the accident.

A copy of the final report and, if applicable, of the interim report or simplified report, shall be sent by BEA mer to the European Commission.

Article 17-5

Created by Decree no. 2012-668 of 4 May 2012 – art. 2

BEA mer shall notify the European Commission of marine events and data gathered in the framework of technical investigations, pursuant to Appendix II of Directive 2009/18/EC of 23 April 2009, and mentioned in section II of article 14, so that they can be recorded in the European database for marine casualties.

BEA mer is the French organisation empowered to consult the

database. It participates in the database development works under the auspices of the Commission

Chapter 3: Provisions relating to the French Land Transport Accident Investigation Bureau (*Bureau d'enquêtes sur les accidents de transport terrestre et aux enquêtes techniques*) after a land transport accident or incident.

Article 18

BEA-TT is attached to the Vice-President of the General Council of Bridges and Highways.

Its mission is to conduct technical investigations into land transport accidents or incidents, which may concern railway transport systems or guided transport systems, road transport or inland waterway transport, provided that the accident or incident has occurred on French territory.

It is also responsible for gathering, exploiting and disseminating information relating to the practices and lessons learned from feedback into accidents or incidents concerning these modes of transport.

It shall also conduct studies and research concerning feedback and accidentology.

Article 19

The Director of BEA-TT shall be appointed by order of the Minister for Transport on proposal of the Vice-President of the General Council of Bridges and Highways, and selected from amongst category A State officials with at least twenty years of professional experience in fields relating to transportation and its infrastructures.

Article 20

Amended by Decree no. 2012-668 of 4 May 2012 – art. 3

The opening of an investigation is decided by the Director of BEA-TT, on his or her initiative or at the request of the Minister for Transport.

The Director may propose regulations to the Minister for Transport relating to the preservation of elements of the technical investigation and to the use of onboard records for the purposes of technical investigations.

Article 20-1

Created by Decree no. 2012-668 of 4 May 2012 – art. 3

An investigation must be performed by BEA-TT after any serious railway accident. The Director of BEA-TT may also decide to open an investigation after an accident or incident, which in similar circumstances could have caused a serious railway accident.

Article 21

In addition to the Director and Secretary-General, the BEA-TT includes technical investigators, designated from French State officials in Category A or an equivalent level. Their appointment empowers them to act as Technical Investigators. The BEA TT also includes technical and administrative agents. Depending on whether they have tenured or contract positions, these investigators and agents shall be assigned or recruited on proposal of the Director of the BEA-TT.

For each investigation, the Director of BEA-TT shall propose to the Minister either the use of the Bureau's own resources and, if necessary, the services of non-permanent technical investigators recruited under the conditions established in article 22 of this decree, or the creation of an investigation commission. For the latter, the Minister, on the Director's proposal, shall designate the President of the Commission who shall be chosen from amongst BEA-TT investigators, in addition to the other members of the commission who are chosen according to their skills and provide guarantees of independence and impartiality. The members of the commission shall have the capacity of Technical Investigators.

The BEA-TT may call upon the services of experts, who may be foreign nationals and who shall be subject to the obligation of

professional secrecy under the same conditions as BEA-TT agents.

The remuneration of Technical Investigators and experts who are not assigned to BEA-TT or who are not made available to the bureau shall be established by joint order of the Ministry for the Budget and of the Minister for Transport.

Article 22

The Director of BEA-TT may also call upon the services of technical investigators that have been made available or recruited on a temporary basis. They are selected from amongst practising or retired members of inspection and monitoring bodies; they may also be practising or retired employees of a transport or infrastructure management company.

Article 23

Amended by Decree no. 2006-1279 of 19 October 2006 - art. 65 JORF 20 October 2006

Technical Investigators, other than those mentioned in the first paragraph of article 21, shall be commissioned by the Director of the French Land Transport Accident Investigation Bureau, subject to them having no record of any conviction or judgement mentioned in Bulletin no. 2 of the French National Criminal Records Office (*Casier judiciaire national*).

This power may be withdrawn from them in the interests of the department according to the same procedure.

Article 24

Amended by Decree no. 2012-668 of 4 May 2012 – art. 3

The Director of BEA-TT may authorise Technical Investigators attached to equivalent foreign bodies to participate in investigations relating to an accident or incident that occurred on French soil, when a vehicle registered in their country of origin is involved, or when the operator or manufacturer of the mode or system of transport in question is based in their country of origin.

The Director of BEA-TT shall organise the French participation in the technical investigations conducted by a foreign State under the conditions provided for by international agreements and European Union Law.

Chapter 4: Final provisions

Article 25

Amended by Decree no. 2012-668 of 4 May 2012 – art. 4

The provisions of chapters 1 and 2 of this decree, as far as they concern marine events, are applicable in New Caledonia and French Polynesia, subject to the powers delegated to these territories, set out in articles L. 1862-1 and L. 1871-1 of the French Transportation Code (*Code des transports*), as well as in Wallis-et-Futuna and in the French Southern and Antarctic Territories.

Article 26

Decree no. 81-63 of 20 January 1981 relating to technical and administrative investigation commissions into ship accidents and incidents, is repealed.

Article 27

The Minister for the Interior, Internal Security and Local Freedoms (*Ministre de l'intérieur, de la sécurité intérieure et des libertés locales*), the Minister for Justice and Keeper of the Seals (*Garde des sceaux*), the Minister for Foreign Affairs (*Ministre des affaires étrangères*), the Minister for Defence (*Ministre de la défense*), the Minister for the Economy, Finance and Industry (*Ministre de l'économie, des finances et de l'industrie*), the Minister for Infrastructure, Transport, Housing, Tourism and the Sea (*Ministre de l'équipement, des transports, du logement, du tourisme et de la mer*), the Minister for Agriculture, Food, Fisheries and Rural Affairs (*Ministre de l'agriculture, de l'alimentation, de la pêche et des*

affaires rurales), the Minister for the Civil Service, State Reform and Regional Development (*Ministre de la fonction publique, de la réforme de l'Etat et de l'aménagement du territoire*), the Minister for Overseas Affairs (*Ministre de l'outre-mer*), the Minister Delegate for the Budget and Budgetary Reform (*Ministre délégué au budget et à la réforme budgétaire*), the Secretary of State for Transport and the Sea (*Secrétaire d'Etat aux transports et à la mer*) and the Secretary of State for State Reform (*Secrétaire d'Etat à la réforme de l'Etat*), shall each be responsible for the execution of this decree, which shall be published in the Official Journal of the French Republic (*Journal officiel de la République française*).

By the Prime Minister:
Jean-Pierre Raffarin

The Minister for Infrastructure, Transport, Housing, Tourism and the Sea.
Gilles de Robien

The Minister for the Interior, Internal Security and Local Freedoms
Nicolas Sarkozy

The Minister for Justice and Keeper of the Seals
Dominique Perben

The Minister for Defence
Michèle Alliot-Marie

The Minister for the Economy, Finance and Industry
Francis Mer

The Minister for Agriculture, Food, Fisheries and Rural Affairs
Hervé Gaymard

The Minister for the Civil Service, State Reform and Regional Development
Jean-Paul Delevoye

The Minister for Overseas Affairs
Brigitte Girardin

The Minister Delegate for the Budget and Budgetary Reform
Alain Lambert

The Secretary of State for Transport and the Sea
Dominique Bussereau

The Secretary of State for State Reform
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