

BEA-TT

**French Land Transport
Accident Investigation
Bureau**

reports



2007

ACTIVITY REPORT



RÉPUBLIQUE FRANÇAISE



Ministère
de l'Écologie, de l'Énergie,
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et de l'Aménagement
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**French Departmental Council for the
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**French Land Transport Accident
Investigation Bureau**

2007

ACTIVITY REPORT

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Glossary

- **CGPC** : French Departmental Council for Bridges and Highways (now the CGEDD)
- **CMVOA** : French Ministerial Unit for Operational Monitoring and Alerts
- **CGEDD** : French Departmental Council for the Environment and Sustainable Development
- **CNO** : French National Operations Centre
- **COGIC** : French Operational Centre for Inter-ministerial Crisis Management
- **DDE** : French Departmental Public Works Directorate
- **DRE** : French Regional Public Works Directorate
- **DSCR** : French Road Safety and Traffic Directorate
- **EPSF** : French Railway Safety Authority
- **INRETS** : French National Institute for Transport and Safety Research
- **HGV** : Heavy Goods Vehicle
- **LV** : Light Vehicle
- **RH** : Road Haulage
- **SDIS** : French Departmental Fire and Rescue Services
- **SIC** : French Information and Communication Service
- **STRMTG** : French National Agency for Ropeway and Guided Transport Safety
- **TDS** : Transport of Dangerous Substances

A review of 2007

For the BEA-TT, 2007 was the third year of full service since it was founded in 2004.

The year was marked firstly by a notable rise in its main activity, namely conducting technical investigations into accidents and incidents.

This rise meets high and perhaps lasting expectations from the public and media that the causes of accidents will be determined and prevention increased.

Twelve investigations were concluded in the publication of the investigation report in 2007 as compared to ten in 2006.

The most significant increase was in workload: nineteen new investigations were opened in 2007, as compared to fifteen in 2006 and nine in 2005. The most serious accident to be investigated was the Polish coach crash in Laffrey, the stretch of road between Gap and Grenoble, on 22 July 2007, in which 26 people lost their lives.

The BEA-TT also continued to study spontaneous fires involving heavy vehicles (coaches and heavy goods vehicles) and to use its road database in 2007.

The reports are uploaded onto the BEA-TT website www.bea-tt.equipement.gouv.fr. At the close of 2007, 32 published reports were accessible on this site, which was visited by 13,508 Internet users in 2007 (9,068 in 2006) of whom 21% were foreigners in more than seventy countries.

Experiences in 2007 also confirmed the importance of international aspects in BEA-TT activity.

It was ascertained that companies established outside of France were amongst the transport operators that were directly involved in the three most serious rail accidents and the four most serious road accidents which were subject to investigation. This situation calls for active international cooperation, which the BEA-TT endeavours to implement whenever possible. This is especially relevant to the rail sector, for which there are or soon will be counterpart bodies to the BEA-TT in the majority of European countries, whereas this is not yet the case for road transport.

A cooperation agreement was therefore reached with the British Rail Accident Investigation Branch (RAIB) in 2006 in order to clarify the methods of co-operation in the event of an investigation involving the Channel Tunnel. This agreement is also being used for the ongoing investigation into the Zoufftgen rail crash with our Luxembourgian colleagues.

In addition the BEA-TT regularly takes part in meetings of the network of

rail investigation bodies led by the European Railway Agency (ERA), and in follow-up seminars to the SafetyNet project undertaken by the European Commission on road safety.

In 2007 it also contributed to the safety training workshops organised by France in Estonia and Bosnia in the framework of railway-related projects with these countries.

In this climate of increased activity, the resources of the BEA-TT have also grown.

In 2007, its authorised workforce rose from ten to twelve with the addition of two investigators, one of whom joined the rail and guided transport team, and the second the roadway team.

At the close of 2007, the BEA-TT had two senior managers, six permanent investigators, three clerks and one vacancy to be filled. Two doctors from the Transport Labour Inspectorate were also seconded to it.

Adapting the resources of the BEA-TT to its increased workload is set to continue in 2008 in order to meet the target of concluding the twenty investigations underway in late 2007 in under a year.

The institutional and regulatory framework of the BEA-TT did not change significantly in 2007 following the initial transposition of the European Rail Safety Directive 2004/49 in 2006.

At the close of 2007, however, the regulatory implementation of the scheme for monitoring and reporting accidents remained to be completed, as did the follow-up to the implementation of recommendations made by the BEA-TT.

This follow-up is to be undertaken by the EPSF on behalf of the rail sector and is set to be defined for other modes of land transport with the central government departments that play the role of safety authority, as was requested by the Director of the Cabinet of the French Minister of Transport in July 2007.

Internally, the BEA-TT must also capitalise on the experience acquired by its first generation of investigators by initiating a quality control procedure aiming to clarify and formalise its frames of reference and working methods.

Finally, it must be reiterated that the BEA-TT teams, irrespective of their expertise and commitment, would have been unable to work effectively without the support of countless partners and external bodies which have been willing to provide us with their assistance: temporary investigators and experts, particularly from the CGEDD, the French Marine Accident Investigation Office (BEAmer), the technical agencies of the French Minister of Transport such as the STRMTG, or other bodies including the INRETS; criminal investigators and legal authorities, which give the BEA-TT access to often crucial information; decentralised State services (prefectures, transport labour inspectorates, DRE, DIR, DDE, emergency services, etc.) whose support and cooperation facilitate and boost investigations; central services and safety authorities (EPSF), infrastructure managers, transport companies such as the SNCF and regional authorities, which

provide information and feedback to the BEA-TT.

I would like to take this opportunity to offer you all my sincerest and warmest thanks.

A handwritten signature in black ink, consisting of a stylized 'J' followed by a series of loops and a final flourish.

Jean-Gérard KOENIG

Directeur du BEA-TT

1 Remit and organisation of the BEA-TT

1.1 The reasons behind technical accident investigations

With their human cost and occasionally spectacular or tragic nature, transport accidents remind us that men, materials and organisations remain fallible despite advances in safety.

Serious or complex accidents and incidents call for specific preventive action in the form of a technical investigation aiming to determine the circumstances and causes of the event, and then to devise useful preventive recommendations as soon as possible in order to prevent reoccurrence.

Such a technical investigation must remain wholly separate from the legal investigation, whose objectives (establishment of liability) and constraints (in particular, timeframes) are not the same.

To undertake their work effectively, technical investigators must have access to all useful data, evidence and information, even when covered by investigative secrecy or professional confidentiality. These privileges must therefore be prescribed by law.

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

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

In France, the first technical investigation bodies to be created were in the air (BEA in 1946 for civil aviation) and maritime (BEAmer in 1997) transport sectors.

Not before 2004 was an equivalent structure implemented for land transport. In the event of a serious accident, as in the Gare de Lyon train station in Paris in 1988 (56 fatalities) or the Mont Blanc Tunnel in 1999 (39 fatalities), the French Minister of Transport formed an “ad hoc” investigating committee drawing from the CGPC.

In the light of its experiences, it appeared necessary to implement a body for land transport which was similar to those for air and maritime travel and had an adapted legislative status.

It was the law of 3 January 2002¹, which was adopted in the aftermath of the tragic fire in the Mont Blanc Tunnel, which gave this legislative basis to technical investigations in the field of land transport. It made provision for these investigations to be conducted by a permanent and specialised body, which would be given access to all the data useful to the investigation, even those covered by investigative secrecy, medical confidentiality or professional confidentiality.

¹ Law 2002-3 of 3 January 2002 in relation to the safety of transport infrastructures and systems and to investigations following transport accidents

The law also established the principles of independence of these investigators and publication of the final report.

Decree no. 2004-85 of 26 January 2004, published in application of this law, officially created the BEA-TT (French Land Transport Accident Investigation Bureau) and defined the remits and operating conditions described below.

1.3 Remits and methods of intervention

The BEA-TT is a service with nationwide authority reporting to the Vice Chairman of the CGPC (now the CGEDD). This position does not comprise any hierarchical authority that may undermine the independence of the investigations by the BEA-TT.

The main remit of the BEA-TT is to conduct technical investigations into serious land transport accidents and certain other accidents or incidents. However, it also aims to encourage the dissemination of facts and findings from previous accidents, and can undertake studies or research into past experiences and accident analysis.

Its area of intervention covers railways, urban guided transport (underground, tramway), ski lifts, roadways (particularly heavy good vehicles and public transport by coach or bus), and waterways, each of these sectors having its own regulations and economic, technical, professional or even cultural logic.

The decision to open technical investigations is made by the Director of the BEA-TT. In the rail sector, investigations into the serious accidents designated by the European Rail Safety Directive 2004/49 are mandatory. In other rail-related cases, the Director of the BEA-TT decides on the appropriateness of the investigation. For non-rail modes of land transport, the decision of the Director of the BEA-TT is taken at the request, or with the agreement, of the French Minister of Transport.

Each investigation must examine the event from numerous angles including infrastructure, operations, rolling stock, staff training, medical aspects, regulations, etc.

Such a wide range of investigations to be conducted leads the BEA-TT to identify and mobilise all the skills and abilities required by each case.

Following the investigations or studies, the BEA-TT makes its reports public on its website www.bea-tt.equipement.gouv.fr.

The safety recommendations that it makes are sent to the relevant recipients, which in turn inform the BEA-TT of the resulting actions that they intend to take. The BEA-TT may make its recommendations and the recipients' responses public, but it is not responsible for monitoring or inspecting their implementation.

1.4 Transposition of the rail safety directive

In the rail sector, European directive 2004/49 specifies the role of the various parties, particularly that of accidents and incident investigation bodies.

In France, this body is the BEA-TT, and the transposition of the directive to it began in 2006. It largely concerns three points:

- granting the Director of the BEA-TT decision-making power over the opening of rail investigations, which previously fell to the French Minister of Transport,
- reporting to the BEA-TT, via the infrastructure manager and railway companies, accidents and incidents in which its involvement may be sought, and
- monitoring the effective implementation of the recommendations made by the BEA-TT, to be undertaken by the national safety authority (in France, the EPSF).

On the first point, the transposition was completed with the publication of law 2006-10 of 5 January 2006 (Art. 18) and of decree 2006-1279 of 19 October 2006 (Art. 65).

On the second point, the obligation to report accidents and incidents is laid down in the aforementioned decree. However, the list of reportable events remained to be determined at the close of 2007, the corresponding ruling being scheduled for 2008.

On the third point, at the time of writing the transposition was still outstanding. Pending this transposition, the EPSF began to follow-up the recommendations of the BEA-TT on a voluntary basis in 2008.

1.5 Organisation and resources

The BEA-TT is organised around its main remit, namely conducting technical investigations into accidents and incidents. To do so, it calls upon three categories of contributors:

- firstly, its own permanent investigators,
- secondly, temporary investigators, who are commissioned for the needs of an investigation by the Director of the BEA-TT and enjoy the legal status of technical investigators; they may be the active or retired employees of a transport company, infrastructure manager, or civil service body with inspection or control assignments, and
- finally, experts designated to respond to specific issues.

Furthermore, the BEA-TT can, under the terms of its founding decree, call on all the competent State services in its field: this is notably the case for monitoring and reporting accidents.

In practical terms, permanent investigators organise the investigations, where appropriate with the support of temporary investigators and experts selected to provide the range of external skills and abilities which have been deemed necessary for each investigation.

At the close of 2007, the authorised workforce of the BEA-TT was twelve employees: two senior managers, six permanent investigators (including two additional

investigators who joined it in the course of the year), three clerks and one vacancy. Two doctors from the General Transport Labour Inspectorate were also seconded to it to deal with medical aspects.

Seven commissioned non-permanent investigators also contributed to the work of the BEA-TT in 2007.

Its operating budget totalled approximately €400,000 in 2007.

1.6 Monitoring and reporting accidents and incidents

To track safety-related events, the BEA-TT receives two types of information:

- firstly, direct accident reports from the managers and operators concerned; and
- secondly, the daily reports produced and circulated by major operators, the emergency services, or the crisis management service.

Direct reports cover only part of the operators concerned. From 2005 onwards, the corresponding procedures were established with the SNCF and the RATP in addition to the constabulary and police for accidents involving public transport or dangerous substances. They remain to be extended to the other transport networks referred to in the decree founding the BEA-TT, particularly urban transports outside the Paris region, which is set to be undertaken in 2008.

The daily reports currently have four sources:

- the French National Centre for Traffic Information: daily listing
- the SNCF: daily listing of the CNO
- the French Ministry of the Interior (Civil Defence - COGIC), and
- the French Ministry of Transport (report of the CMVOA and press review of the SIC).

On the basis of this information, which may be supplemented by an evaluative investigation, the BEA-TT selects for which accidents and incidents a technical investigation appears useful.

2 The investigations conducted in 2007 : overview

2.1 Investigations conducted in 2007

In 2007 twelve investigations ended in the publication of the report and recommendations by the BEA-TT, i.e. two more than in 2006. These accidents led to seventeen fatalities, the majority of which occurred as the result of road accidents.

Five of these investigations concerned rail or guided transports, including one collision at a level crossing. Five others centred on road accidents and the remaining two were accidents involving river transportation. They are outlined in the chapters hereinafter.

All the investigations opened prior to 2007 were therefore concluded with the exception of two cases (derailment in Culoz for which the expert evidence is still underway, and the Zoufftgen rail crash for which the investigation is complex due to the international aspects).

2.2 Causal factors identified

The main factors identified are reiterated here for illustrative and not statistical purposes.

The human factor was the immediate cause of accident in eleven cases (drowsiness at the wheel or inattention, driving error or lack of control, excess speed, failure to respect the regulations and driver taken ill). It played an aggravating role in four cases, with seatbelts not worn when the vehicle had been fitted therewith, drowsiness at the wheel, or incorrect occupation of the vehicle.

Infrastructure was determining in one single case (condition of the surface). It was, however, an aggravating factor in at least three cases (narrowness of the road or, in railway transport, safety failed to trigger and poor shock absorption).

Vehicle-related factors were aggravating in four cases: type of goods being transported, non-blocking of the doors, ergonomics of the braking controls, structural defect and ill-adapted equipment.

Organisational or regulatory factors were also highlighted, particularly in eight cases in which they contributed to the accident. They notably concerned the inspection (medical follow-up, activity tracking and quality control) and organisation of the work (staff turnover, introduction of safety signs, and determining the journey).

2.3 Recommendations made

Following these ten investigations, 44 recommendations (16 for railways, 13 for roadways and 15 for waterways) were made. As some of them were sent with the same wording to several recipients, this corresponds to 61 recommendations (21 for railways, 18 for roadways and 22 for waterways).

The recipients

The 61 recommendations that were put forward can be broken down as follows:

- nineteen to infrastructure managers or road operating companies,
- eighteen to regulatory or supervisory authorities (central government departments),
- three to the organising authorities of road transport or main road contracting authorities,
- seven to transport companies,
- eight to supervisory services, and
- six to other recipients (largely professional organisations).

2.4 Actions taken following the recommendations

The action taken or planned by the recipients

The decree of 26 January 2004 states that the recipients of recommendations must make the resulting action that they intend to take and, where appropriate, the timeframe required for their implementation known to the Director of the BEA-TT within a deadline that is in principle set at ninety days. This response is normally made public, as are the recommendations themselves, on the BEA-TT website.

Of the 61 recommendations put forward to the recipients:

- in 42 cases, the recommendation was accepted and its implementation confirmed, occasionally subject to a deadline or financing,
- in one case, the recommendation was not accepted or met with strong reservations, and
- in eighteen cases, no response was given to the recommendation.

It is worthwhile reiterating that the BEA-TT has no authority to check the subsequent action that has in fact been taken further to the recommendations made.

In the rail sector, this role falls to the EPSF. For other modes of land transport, the BEA-TT remains prepared to examine, alongside the central government departments concerned, how such follow-up could be undertaken.

2.5 Investigations opened in 2007

Nineteen investigations were opened in 2007, as listed in annex 3, as compared to fifteen in 2005. This rise does not stem from a higher number of accidents, but the wish to increase the involvement of the BEA-TT.

These nineteen investigations concerned:

- for **railways/guided transport**, ten events including two derailments, one rail crash, three collisions on level crossings, one passenger accident,

two buffer impacts and one tramway accident

- for **roadways**, five accidents all involving coaches or buses, three of which left the road and two crashed with heavy goods vehicles, and
- for **waterways**, four accidents including one involving a passenger boat, one beaching, one loss of cargo, and one entanglement with a power line.

Between the year 2002 (start of the creation process of the BEA-TT) and the close of 2007, 61 investigations were undertaken (cf. annex 3). They can be categorised into the various modes of land transport as follows:

Rail transport:	25 (including six accidents on level crossings)
Guided transport:	4
Ski lifts:	1
Road transport:	21
Waterways:	10

It can be noted that the two main areas are rail and road accidents, yet waterways are also frequently affected, which runs counter to their image of a “peaceful” form of transport. However, this breakdown by mode of transport has no statistical significance on accident rates, the threshold for undertaking an investigation being very different from one mode to another.

3 The investigations conducted : rail and guided transport

3.1 Investigations conducted in 2007

Five investigation reports were circulated amongst the railway sector in 2007. These investigations concerned the following accidents:

Date	Accident	Fatalities	Mode
13/06/2006	Derailment of a freight train in La Ferté-sur-Chier	0	RY
28/06/2006	Near collision in Tencin-Theys	0	RY
18/10/2006	TER-wide load vehicle crash in Domène	0	LC
10/11/2006	Passenger accident in Chaville train station	1	RY
05/04/2007	Train collision into a buffer in Paris-Est train station	0	RY

RY = railway; LC = level crossing

Two of these investigations concerned serious accidents as defined by the European Rail Safety Directive 2004/49: the derailment at La Ferté-sur-Chiers (cost of more than €1M) and the accident in Chaville (one passenger was killed).

3.2 Recommendations made

Following these five investigations, 16 recommendations were made. Some of them were sent with the same wording to several recipients, corresponding to 21 recommendations sent.

Type of measures recommended

Par nature de mesure recommandée, les 16 recommandations distinctes se répartissent comme suit (en prenant garde à leur importance très variable) :

- three concern the outfitting of the vehicles,
- one concerns regulations governing rail operations,
- three concern the development of rail infrastructures,
- one concerns feedback,
- three concern staff training and the organisation of the work,
- three concern the organisation of inspections, and
- two concern the organisation of the maintenance of rolling stock or the infrastructure.

The recipients

The 21 recommendations put forward can be broken down by category of

recipient as follows:

- twelve to the rail infrastructure manager,
- six to rail companies,
- two to the regulatory or supervisory authorities (central government departments), and
- one to other supervisory services.

3.3 Actions taken or planned by the recipients

The table below shows the action taken or planned by the recipients of the recommendations.

Investigation	Recommendations			
	Number	Accepted	Not accepted	Unanswered
La Ferté	5	5		
Tencin-Theys	5	5		
Domène	3	3		
Chaville	2	2		
Paris-Est	6	5	1	
Total	21	20	1	

The non-accepted recommendation (modification of the type of buffers) was not deemed relevant (subject to an additional technical study) in view of the investments required as compared to the risk avoided.

The figures above are based on the initial responses that the recipients of recommendations must normally send to the BEA-TT within ninety days. They are set to be supplemented by the monitoring of the effective implementation of the BEA-TT recommendations by the EPSF, which began in 2008. The initial assessment of this monitoring for the incidents that have been investigated since 2004 can be found in Annex 5.

3.4 Global summary of the investigation reports

A summary presentation of the investigations with a brief reminder of the recommendations made in each case can be found in Annex 1.

4 The investigations conducted : road transport

4.1 Investigations conducted in 2007

Five investigation reports were circulated amongst the road transport sector in 2007. These investigations concerned the following accidents:

Date	Accident	Fatalities
20/01/200	Coach accident in Arles	1
26/05/200	HGV-LV crash on the RN134 in Ogeu	5
24/07/200	HGV-camping car crash on the RN10 in Reignac	5
07/08/200 6	Fire of a tanker on the A55 in Châteauneuf-les-Martigues	1
05/09/200	Coach accident on the A1 in Brasseuse	4

4.2 Recommendations made

Following these five investigations, thirteen separate recommendations were made. Some of them were sent with the same wording to several recipients, corresponding to eighteen recommendations sent.

Type of measures recommended

The thirteen separate recommendations can be broken down by type of measure as follows:

- one concerns the regulations governing road transport,
- two concern the development of infrastructures or road facilities,
- one concerns the organisation of infrastructure operations,
- four concern the training of professional drivers,
- two concern the organisation of roadside and in-house inspections, and
- three concern the conveying of information to users.

The recipients

The eighteen recommendations put forward can be broken down by category of recipient as follows:

- four to infrastructure managers or operators,
- two to the transport organising authorities,
- six to the regulatory authorities (central government departments),
- three to the supervisory services (Prefecture, transport labour inspectorate), and
- three to professional organisations.

4.3 Actions taken further to the recommendations

The table below shows the action taken or planned by the recipients of the recommendations.

Investigation	Recommendations			
	Number	Accepted	Not accepted	Unanswered
Arles	3	1		2
Ogeu	1			1
Reignac	7	4		3
Châteauneuf/martigues	5	2		3
Brasseuse	2	2		
Total	18	9		9

4.4 Global summary of the 2007 investigation reports

A summary presentation of the investigations with a brief reminder of the recommendations made in each case can be found in Annex 2.

5 The investigations conducted : waterways

5.1 Investigations conducted in 2007

Two investigation reports were circulated amongst the waterways transport sector in 2007. These investigations concerned the following accidents:

Date	Accident	Fatalities
28/03/200	Collision of a cruising boat against La Voulte bridge	0
08/08/200	Striking a rock by a river liner in Gervans	0

5.2 Recommendations made

Following these two investigations, fifteen separate recommendations were made. Some of them were sent with the same wording to several recipients, corresponding to 22 recommendations sent.

Type of measures recommended

The fifteen separate recommendations can be broken down by type of measure recommended as follows:

- three concern the operation of the boats,
- three concern the skills of the crews,
- two concern the knowledge of the dangers of navigation,
- three concern the regulations applicable to the construction of boats,
- one concerns the procedure for issuing certificates of seaworthiness to boats,
- one concerns the supervision of navigation, and
- two concern the rules of navigation.

The recipients

The 22 recommendations put forward can be broken down by category of recipient as follows:

- ten to the regulatory authorities (central government departments),
- four to the supervisory authorities (decentralised services),
- three to infrastructure managers,
- one to a contracting authority of a bridge crossing the waterway,
- three to professional organisations, and
- one to a river transport company.

5.3 Actions taken further to the recommendations

The table below shows the action taken or planned by the recipients of the recommendations.

Investigation	Recommendations			
	Number	Accepted	Not accepted	Unanswered
La Voulte	12	8		4
Gervans	10	5		5
Total	22	13		9

Of the five outstanding responses concerning the accident in Gervans, four were expected from a decentralised state service including two which were addressed in the response from the affected central government department.

5.4 Global summary of the 2007 investigation reports

A summary presentation of the investigations with a brief reminder of the recommendations made in each case can be found in Annex 3.

6 Studies and feedback

Alongside its main remit to conduct technical investigations, the BEA-TT also has the task of studying feedback from accidents that are notable in accident analysis because of their gravity or causal factors. In this vein, it continued to monitor the database of reported road accidents, and examined the frequency of fires involving HGVs or coaches in 2007.

6.1 Database of reported events

In addition to accidents giving rise to a technical investigation, it is worthwhile describing and recording a number of events uncovered during monitoring. This is because when they fall within the categories that are often covered by technical investigations, they can clarify the context and the possible scenarios of similar accidents, provide feedback to the BEA-TT, and guide decisions regarding the conduct of subsequent technical investigations.

In 2007, the database implemented in 2005 concerned the 4,522 road accidents reported to the BEA-TT, largely by the CNIR, including 1,641 fatal accidents resulting in 1,897 deaths. In particular, it focused on some of the categories involved (public passenger transport, heavy goods vehicles, dangerous goods, etc.) and certain types of accidents.

The table below shows all such accidents reported to the BEA-TT in 2007, which cover approximately 40% of fatal road accidents.

		Type of transport						Total
		PT	RH	DG	ST	PC	Other	
Number	Accidents	359	1464	131	45	2450	73	4522
	Fatal accidents	122	320	9	9	1171	10	1641
	Deaths	156	366	10	14	1338	13	1897
%	Accidents	7,94%	32,38%	2,90%	1,00%	54,18%	1,61%	100,01%
	Fatal accidents	7,43%	19,50%	0,55%	0,55%	71,36%	0,61%	100,00%
	Deaths	8,22%	19,29%	0,53%	0,74%	70,53%	0,69%	100,00%
Fatal accident rate for this type of data		34%	22%	7%	20%	48%	14%	36%

The number of accidents stemming from specific monitored circumstances (driving against the traffic, crossing the central reservation, level crossing, fire of any cause) remains, in absolute value, unchanged from year to year (around 350) but has fallen in percentage with regard to the number of reported accidents (15% of the accidents reported in 2005, below 10% in 2006, and 8% in 2007). Drowsiness at the wheel, another factor requiring special attention, is still difficult to identify in detail in the data available to the BEA-TT.

For other modes of land transport, the compilation of similar databases or the use of pre-existing databases (as is the case for river navigation) has been planned.

6.2 Study of spontaneous fires involving coaches

In 2007, the BEA-TT continued to study the fires involving heavy vehicles (HGVs and coaches) of which it was aware. Such fires can have very serious consequences when they occur in confined areas, as was the case in the Channel Tunnel in 1996, the Mont-Blanc Tunnel in 1999, and the Fréjus Tunnel in 2005.

A summary of the results hereby obtained in 2007 can be found in Annex 6.

ANNEXES

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Annex 1 : Rail and guided transport : global summary of investigation reports

- derailment of a freight train in La Ferté-sur-Chiers on 13 June 2006
- near collision between two trains in Tencin-Theys train station on 28 June 2006
- crash involving a train and a wide-load vehicle on a level crossing in Domène on 18 October 2006
- fall of a passenger from a moving train in Chaville train station on 10 November 2006
- collision of an incoming train into a buffer in Paris-Est train station on 5 April 2007

Derailment of a freight train

in La Ferté-sur-Chiers

on 13 June 2006



On Tuesday 13 June 2006, on the Charleville-Longuyon line, the rear carriage of iron ore train 72187, which was travelling at a speed of 100 km/h on track 1 from Dunkirk to Dieulouard (Meurthe et Moselle), derailed at kilometre point 190.200 in the district of La Ferté-sur-Chiers (Ardennes). The front bogie of this rear carriage (the last of a train comprising 44 carriages) mounted the outside rail upon exiting a turn with a radius of 676 metres. At kilometre point 198.700, the derailed bogie collided with a rail section that had been stored by the side of the line, knocking it onto the track and causing the rear bogie of the carriage to derail and block the adjacent track. The back of the train came to a standstill at kilometre point 200.130, having travelled 9,930 metres.

The accident led to only one minor injury (a track maintenance worker). Track 1 was badly damaged over a distance of some 10 km, and track 2 was partially covered with ballast. The electrical and signalling systems were not damaged. The damage was valued at a total of over €3.5 million in January 2007. The “operating” consequences were significant, because both lines were affected.

As regards the track itself, no defects were detected that would have required train services to be halted or traffic to slow down in the derailment zone.

The carriage (a privately-owned carriage belonging to the steel company Arcelor) had received normal maintenance and its inspection uncovered no significant anomalies in its geometry. The carriage’s load distribution appeared to be satisfactory.

As there was no “visual” evidence to explain what parameters were to blame for the derailment, a numerical analysis was commissioned from two organisations: the SNCF’s Centre for Materials Engineering (CIM) and the INRETS. Their calculations (using the VOCODYM application in the case of the CIM, and the VOCOLIN application in the case of the INRETS) were made possible by the results of the carriage’s full geometric inspection by the Etablissement de Maintenance du Matériel de Picardie (Picardy Equipment Maintenance Company).

The cause of the derailment appeared to be linked primarily to the condition of the track, even though its geometry was in line with the standard values for rail tracks. Continuous analogue measurement of the track parameters (based on the “Mauzin” values) brought to light five similar points where the line had straightened, 20 metres apart, in the zone preceding the derailment, in a transition curve at the end of a turn where a lack of a natural camber was accentuated by a raised point on the left-hand rail. Dynamic coupling took place between the rear carriage (whose coupler was not equipped with a rear fastening mechanism) and the track: periodic transverse excitations with a wavelength of 20 metres caused

the carriage to oscillate transversely, and ultimately caused the wheel flange to climb up to the leftmost point of the rail (11 mm). Furthermore, the rails appeared to be insufficiently greased, thus increasing the coefficient of friction between the wheel and the rail and increasing the risk of wheel flanges mounting the rail.

Three recommendations were made in the report:

- The SNCF and the RFF should draw up rules for track maintenance so as to rectify these situations (correction of straightening problems according to the values quantified after detection of repetitive and periodic straightening defects at the end of bends).*
- As regards the maintenance of carriages, the SNCF will need to improve the traceability of the detection of insufficient play (and of corresponding repairs) in the friction damping system of Y25 bogies.*
- As regards operational aspects, the SNCF will need to improve the reactivity of its operators when faced with an emergency situation, through the use of ground-train radio and emergency procedures.*

**Near collision between two
trains**

in Tencin-Theys train station

on 28 June 2006



On 28 June 2006, train 885750 (the TER regional train between Chambéry and Grenoble) was stopped on track 2 in Tencin-Theys station, as it waited for the line to be declared clear by a rail maintenance train dispatched previously. Having passed through the station of Pontcharra-sur-Bréda, train 738584 arrived behind train 885750 on the same track. The driver of train 738584 was surprised by the unexpected presence of the other train, but having already slowed down in accordance with the signalling on the line, he managed to stop his train twenty metres from the back of the stationary train.

This incident demonstrated that two trains were located on the same track section at the same time, a situation that contravenes regulations.

This particular line is equipped with a double-track manual block system that does not allow the track to be declared clear at the previous station until the train has passed the semaphore at the next station and the semaphore is closed. Proof that the train has actually arrived at the next station is provided by a treadle actuated by the train.

Four causes were underlined:

- The main direct cause of the incident was human error: the line was declared clear inaccurately when the rail maintenance train dispatched towards Grenoble departed from the station. This allowed a second train, the 738584, to enter a section of track that was already occupied, without the driver being notified of the fact,
- The second direct cause was also linked to human error and involved the failure to protect train 885750, which was stopped at the station. When train 738584 approached the station, its driver did not encounter the protection signal (disc D2) in the closed position and therefore had not prepared to stop safely behind a stationary train,
- The third cause was a lack of organisation on the part of the employees operating the station that morning. The duty station controller for the previous night had not correctly performed the handover to his successor, namely he failed to coordinate the various tasks relating to the safety of railway traffic,
- The fourth cause, which relates to the installations, was the ineffectiveness of the protection systems designed to ensure that track sections are declared clear safely: the safety systems governing the operation of the block system (actuation of a treadle, closing of the semaphore) were bypassed fortuitously, despite the fact that the track was occupied.

Hence, three recommendations were made:

- *two calling for modifications to the installation: changing the location of a treadle and modifying the protection signal's control circuit, and*
- *a third relating to how teamwork is coordinated by the duty station controller.*

**Crash involving a train and
a wide-load vehicle
at a level crossing in Domène
on 18 October 2006**



At 1.05 pm on Wednesday 18 October 2006, TER regional train 885717 running on the Grenoble–Montmélian line collided with a wide-load vehicle on level crossing no. 18, Rue de l'Industrie in Domène (38). The accident caused no casualties but damaged the material involved.

The direct cause of the accident was the presence of a wide-load vehicle manoeuvring on the right of way of the level crossing when the tracks were open for the circulation of trains in accordance with the normal system.

The company responsible for the haulage failed to respect the statutory obligations in relation to the use of level crossings by wide-load vehicles. These breaches, particularly the failure to inform the SNCF in advance, made it impossible for the latter to indicate to the haulage contractor the timeslot in which the level crossing could be used, or to ensure it a safe passage by activating the procedure for temporarily halting the circulation of trains in the area. Similarly, the forces of law and order were not informed and were therefore unable to be present during the manoeuvres.

Failures to respect these obligations are not currently regulated and the potential penalties are low.

In view of preventing such risks, the three recommendations aimed to implement a more rigorous control-sanction system for wide-load vehicles and the obligation for haulage contractors to provide evidence that they have met the duties incumbent upon them by the order requiring individual authorisation to be sought for such vehicles crossing points presenting particular danger.

**Fall of a passenger from
a moving train**

in Chaville train station

on 10 November 2006



At approximately 10.22 am on 10 November 2006, a passenger in train 133473, which had left Paris-Saint-Lazare and was travelling to Versailles Rive Droite, leapt out at the Chaville Rive Droite station whilst the train was moving at a speed of 88 km/h and after the alarm signal had been activated, and was seriously injured by falling onto the platform.

Train 133473 had initially been set to follow a local service route between Saint-Cloud and Versailles Rive Droite by stopping at every station, particularly Sèvres - Ville d'Avray and Chaville. This route was changed after the departure of the train to have it travel directly from Saint-Cloud to Versailles Rive Droite, and thereby cancel the stops at Sèvres - Ville d'Avray and Chaville.

The driver of train 133473, who was informed in his cab of the activation of the alarm signal and the opening of a door whilst the train was moving, stopped in Viroflay Rive Droite train station to inspect his train and reset the alarm signal. Whilst doing so, he was informed by the driver of the following train 133479 that a lifeless body was on the ground in Chaville Rive Droite, not far from the head of the platform towards Versailles.

The emergency response team that was sent to the scene attended to the casualty, who was taken to the hospital by paramedics and died shortly after being admitted.

The direct cause of this accident was the attempt by a passenger, who presumably panicked at the cancellation of the stop at his destination station (Sèvres - Ville-d'Avray), to disembark the moving train.

Two factors that constitute indirect causes concern the design of the rolling stock and the operating management procedures:

- the lack of a system blocking the doors whilst the train was moving further to the activation of the alarm signal in the rolling stock in question, and
- cancellation by the SNCF of stops at certain stations, including after the departure of the train from its originating station, in the event of disruptions.

The recommendations made following the technical investigation bear on two categories of measures:

- studying, for the rolling stock set to undergo significant workshop maintenance, modifications making it possible to limit the possibility of opening the doors manually after an alarm signal has been activated to situations in which the train is travelling below the lowest detectable speed and devise a programme for implementing these modifications, and
- revising and clarifying the regulations that apply to route changes by strictly limiting the cancellation of regular stops, particularly after the departure of the train from its originating station.

Collision of an incoming train into a buffer

in Paris-Est train station

on 5 April 2007



At 8.23 am on Thursday 05 April 2007, suburban train 117120, comprised of a Z2N double motor unit and travelling from Château-Thierry to Paris, collided into the buffer of platform 21 in Paris-Est train station at a low speed. This train was in the latter stages of its journey Meaux-Paris and was exceptionally crowded (easily more than 2,200 passengers) due to disruptions to previous trains.

58 people with minor injuries were attended to by the emergency services.

The material damage was limited to the buffer of platform 21 and the front and intermediate systems of the train.

The rail infrastructure was not at fault. The driver was endeavouring to reduce the delay in leaving Meaux by gaining 16% over the journey time in accordance with driving regulations. Although he had correctly passed the last KVB beacon (speed control by beacons) at the rear of the arrival platform and was careful to avoid releasing the passenger doors (6 km/h threshold), the driver braked to bring the train to a complete stop at a late stage. Realising that there was a danger that the train would be unable to stop in time, he applied the brakes of his train in full instead of emergency braking (pressing the emergency push button), which could have reduced the stopping distance.

The identified causes or aggravating factors of the accident are the following:

- late braking,
- the failure to use the emergency brakes,
- the reduction in braking power by one inactive bogey amongst the sixteen, and
- the rigidity of the buffers at the rear of platforms in Paris-Est train station, which increased the impact felt by passengers.

Doubts remain over the quality of handling of the brake as to the correct re-filling of the braking equipment. Following confirmed cases in which the brake was partially worn by misuse, the feedback process introduced by the SNCF to make drivers aware of this risk was extended over a period that appeared excessively long, and had not been completed at the time of the accident.

Assessment of the conditions leading to this accident prompted the BEA-TT to make recommendations in the following areas:

- consideration of the particular features of the braking system (full application and emergency braking) in driving and training directives,*
- improvement in the ergonomics in the braking system for future engines,*
- quicker consideration of feedback in the continuous education of drivers,*
- the speed criteria blocking and unblocking the passenger doors, and*
- equipping the ends of platforms in Paris-Est train station with shock absorbers.*

Annex 2 : Road transport : global summary of the investigation report

- coach accident in Arles on 20 January 2006
- collision between a heavy goods vehicle and a light vehicle on the RN134 in Ogeu on 26 May 2006
- collision between three heavy goods vehicles and a camping-car on the RN10 in Reignac on 24 July 2006
- accident and fire involving a tanker on the A55 in Châteauneuf-les-Mar-tigues on 7 August 2006
- collision between a heavy goods vehicle and a coach on the A1 in Bras-seuse on 5 September 2006

**Coach accident
in Arles
on 20 January 2006**



At approximately 12.55 pm on 20 January 2006 on the RD 35 secondary road in Mas Thibert (Arles district in Bouches-du-Rhône), a coach of the company “Les Cars de Camargue” on the regular Arles - Port-Saint-Louis-du-Rhône route suddenly left the road, landed in a ditch and came to a stop against a tree.

This accident resulted in one fatality (the driver) and 35 casualties, four of which were serious.

The direct cause of this accident was the heart attack suffered by the driver, which led to his death.

Two other factors that also played a role should, however, be noted:

- *The medical follow-up of the driver,*
- *The majority of passengers were not wearing seatbelts.*

Consequently, the report put forward two recommendations aiming to better formalise relations between occupational health doctors and employers and to increase decision support for occupational health doctors vis-à-vis the risk of alcohol addiction.

**Collision between
a heavy goods vehicle
and a light vehicle

on the RN134 in Ogeu

on 26 May 2006**



At approximately 3.40 pm on 26 May 2006, an articulated lorry on the RN 134 trunk road in Ogeu-les-Bains (Pyrénées Atlantiques) in the direction of Oloron Sainte Marie – Pau overturned on the roadway and crushed a light vehicle travelling in the opposite direction.

This accident resulted in five fatalities and two casualties, one of which was serious, in the light vehicle.

It was caused by a lapse of concentration by the driver, who allowed his lorry to swerve to the right until it was travelling on the verge.

Given the particularities of this verge, which is soft and sloping, the lorry then found itself dragged towards the ditch and the driver lost all control over the vehicle.

It is likely that the number of occupants in the light vehicle, which unfortunately found itself under the tractor of the lorry at the instant that it toppled over, increased the death toll.

Three areas that were directly or indirectly linked to the causes or gravity of the accident were investigated in greater detail with a view to seeking means of prevention:

- *the infrastructure,*
- *the heavy goods vehicle and the driving thereof, and*
- *the number of occupants in the light vehicle.*

The report gave rise to a single recommendation concerning the continuation of the SURE measure, which was sent to the Direction Interdépartementale des Routes Atlantique [interdepartmental division for roadways in the Atlantique area of France].

Collision between three heavy goods vehicles and a camping-car

on the RN10 in Reignac

on 24 July 2006



At approximately 4.35 pm on Monday 24 July 2006, a collision involving three heavy goods vehicles and a camping-car occurred on the RN10 trunk road in Reignac (Charente), causing five fatalities and one serious casualty.

Following two initial accidents on a two-lane single carriageway section of the RN10 situated immediately to the north of the Barbezieux-Saint-Hilaire diversion, a tailback formed in both directions. To the south, this tailback stretched back approximately 6 km along the diversion, which was a dual carriageway with two lanes.

In the right-hand lane in the direction of Bordeaux – Angoulême, the last vehicle in the line was a Ford Transit van converted into a camping-car. It stopped behind an articulated lorry registered in Portugal, which was in turn behind an articulated lorry registered in Slovakia.

A French articulated lorry comprising a tractor and a trailer travelling in the right-hand lane in the direction of Bordeaux crashed into the rear of the tailback at 88 km/h.

Upon impact, the camping-car was projected against the trailer of the articulated lorry that had stopped before it. This was in turn pushed against the stationary heavy goods vehicle ahead.

The camping-car was crushed between the two heavy goods vehicles. Its five occupants died instantly, whilst the driver of the lorry that crashed into it was injured.

It is very likely that this accident was caused primarily by the driver of the heavy goods vehicle that crashed into the stationary camping-car at the rear of the tailback falling asleep at the wheel, as was suggested by the analysis of the tachograph recordings over the last ten kilometres. This showed repeated variations of speed in quick succession, which is generally a sign of phases of sleep lasting a few seconds.

Road users were not made aware of the tailback due to the lack of variable message signs (VMS) on the route and the late arrival of the truck signalling accidents, which remained at the site of the initial accident causing this tailback.

Finally, technical appraisal and analyses of tachograph disks from the heavy goods vehicle that crashed into the camping-car revealed several breaches of the legislation on working hours by the driver in the week prior to the accident.

The report therefore put forward five recommendations bearing on training and raising the awareness of professional drivers on the risks of drowsiness at the wheel, fitting the RN10 with VMS, and organising the involvement of the operating service in accidents.

**Accident and fire involving
a tanker**

**on the A55 in
Châteauneuf-les-Martigues**

on 7 August 2006



At approximately 6.30 am on 07 August 2006 on the A55 motorway in La Mède in the Bouches-du-Rhône area, an articulated lorry, a tractor and a trailer tanker loaded with 34,000 litres of hydrocarbon, including 15,000 litres of highly flammable petrol, overturned and struck the pier of a bridge. Its load then caught fire.

The heavy goods vehicle at fault had just overtaken one other heavy goods vehicle and was preparing to overtake a second when, being obstructed by a car, it pulled back to the right and struck the second heavy goods vehicle, which destabilised it. It then overturned onto its left side and slide to the pier of a bridge and struck it. The tank burst open upon impact and its contents caught fire.

The driver was trapped in the fire and died at the scene. The vehicle on fire was totally destroyed.

The fire, which spread to the scrubland running alongside the motorway, was soon brought under control by the fire brigade, which intervened fifteen minutes after the accident. Following repair to the road surface destroyed by the fire, the motorway was reopened in full to traffic at 8.00 pm.

The direct cause of the accident was linked to the careless and improper behaviour of the driver of the heavy goods vehicle. This resulted in excess speed and dangerous manoeuvres including an overtaking move just before the accident and the attempt to overtake that led to the accident.

The transport company's failure to detect and address regular breaking of the speed limit was an indirect causal factor.

The type of goods being transported constituted an aggravating factor to the consequences of the accident, which could have been even more serious had there been roadside activities that were vulnerable to fire.

The fact that the A55 motorway sees dense traffic of heavy goods vehicles transporting dangerous substances, particularly hydrocarbon, is an important aspect to be taken into consideration in the safety of this route.

For these various points, the BEA-TT made two recommendations bearing firstly on the vigilance that transport companies must have over the behaviour of drivers transporting goods and, secondly, on the study of a ban on heavy goods vehicles transporting dangerous substances overtaking across this route.

**Collision between a heavy
goods vehicle and a coach**

on the A1 in Brasseuse

on 5 September 2006



On Tuesday 5 September 2006, following an initial accident on the A1 motorway near Roissy-en-France, in the direction of Lille-Paris, the tollgate in the middle of the Chamant (Senlis) lane closed and a tailback formed. At around 3.35 pm, the driver of a Polish coach carrying 43 passengers violently struck an articulated lorry that was stationary in the tailback. This lorry was thrown forward and in turn crashed into the articulated lorry ahead of it.

The final death toll of this accident was four people (the driver and three other people sitting at the front of the coach) in addition to 39 casualties, eleven of whom were hospitalised.

The main cause of the accident was the late reaction of the driver of the coach, probably caused by drowsiness or distraction at the wheel.

The driver of the coach had not been made aware of the tailback as the display on variable message signs gave more importance to regulating traffic than alerting to the danger, and the truck signalling accidents had just left its parking place and had therefore not yet reached the rear of the tailback.

The death toll of the accident was aggravated by the fact that the passengers were not wearing seatbelts.

The report put forward two recommendations bearing on continuing to signal the rear of tailbacks and making professionals and users travelling in the European Union aware of the obligation to wear seatbelts in coaches.

Annex 3 : Waterways : global summary of the investigation reports

- striking a bridge pier by a passenger boat on the Rhone in La Voulte-sur-Rhône on 28 March 2006
- striking a rock by a passenger boat on the Rhone in Gervans on 8 August 2006

**Striking a bridge pier by
a passenger boat**

**on the Rhone at
La Voulte-sur-Rhône**

on 28 March 2006



At 02.28 am on 28 March 2006, the CAMARGUE passenger boat, with 138 passengers and 25 crew members aboard, struck a pier of the railway viaduct at La Voulte-sur-Rhône when passing underneath the bridge. The impact caused significant damage to the superstructures of the boat. Nine passengers were slightly wounded. The bridge sustained no notable damage and the accident had no impact on navigation.

The boat stayed afloat and was able to land nearby in a short space of time. All passengers were forced to evacuate, and the rescue was undertaken satisfactorily.

The direct cause of the accident was a poor approach to La Voulte Bridge.

When the water is high, the speed of the current and the presence of a cross current make navigation here difficult, and require an experienced pilot and vigilance. The particularly dangerous nature of the site is proven by the fact that several accidents have already occurred beneath La Voulte Bridge, including one which led to the death of a sailor on 18 January 2004 and prompted an investigation by the BEA-TT.

The tiredness of the pilot, who had just started his watch at the time of the accident, also appears to be a contributing factor to the accident.

The investigation also showed that regulations governing the issue of certificates of seaworthiness should be clarified.

It also appeared that the layout of La Voulte Bridge, which had been evaluated during the investigation conducted following the accident on 18 January 2004 as particularly destructive in the event of an impact from a boat and which justified a recommendation in the BEA-TT report, had not been corrected. This layout did not worsen the consequences of the accident, but it could have done so had the boat taken a slightly different approach, leading to more serious damage.

Following the technical investigation, seven recommendations were made in three areas identified for preventive action:

- *factors linked to piloting with four recommendations bearing on the organisation of the work, the skills required by pilots, and the implementation of teaching tools for particularly dangerous sites on the Rhone,*
- *factors linked to the characteristics of the boat, which led to the formula-*

tion of a recommendation on regulations governing certificates of seaworthiness, and

- *risk factors linked to the environment of the waterway, which justified two recommendations, echoing the recommendations made following the investigation conducted after the accident underneath this same La Voulte Bridge on 18 January 2004.*

**Striking a rock
by a passenger boat
on the Rhone at Gervans
on 8 August 2006**



At 4.45 am on 8 August 2006, the PROVENCE river passenger boat from the company SLIBAIL ENERGIE, operated by the company CONTINENTALE DE CROISI-ERES, travelling to Lyon from Tournon with 39 passengers and 15 crew members aboard, struck the so-called “Table of the King” rock on the Rhone, in the Gervans district (KP 89.5).

The PROVENCE left the navigable channel following a flawed crossing manoeuvre with another passenger boat, the PRINCESSE DE PROVENCE. In the course of this manoeuvre, during which the normal rules of crossing were disregarded by the captain of the PROVENCE and there was no communication between the pilots of the two boats, a collision between the two boats, which could have had dramatic consequences, was narrowly avoided.

The impact caused a leak in the starboard hull. This leak necessitated the evacuation of the passengers, which was undertaken satisfactorily. There were no injuries. Navigation was not interrupted.

The main cause of the accident was the insufficient knowledge of the boat and the river by the captain of the PROVENCE, who was both piloting and commanding alone. He had been recruited a few days prior to the accident and had sailed in tandem with one of the permanent captains of the boat for just a few hours, which had not made it possible to transmit essential information on the boat, river and traffic.

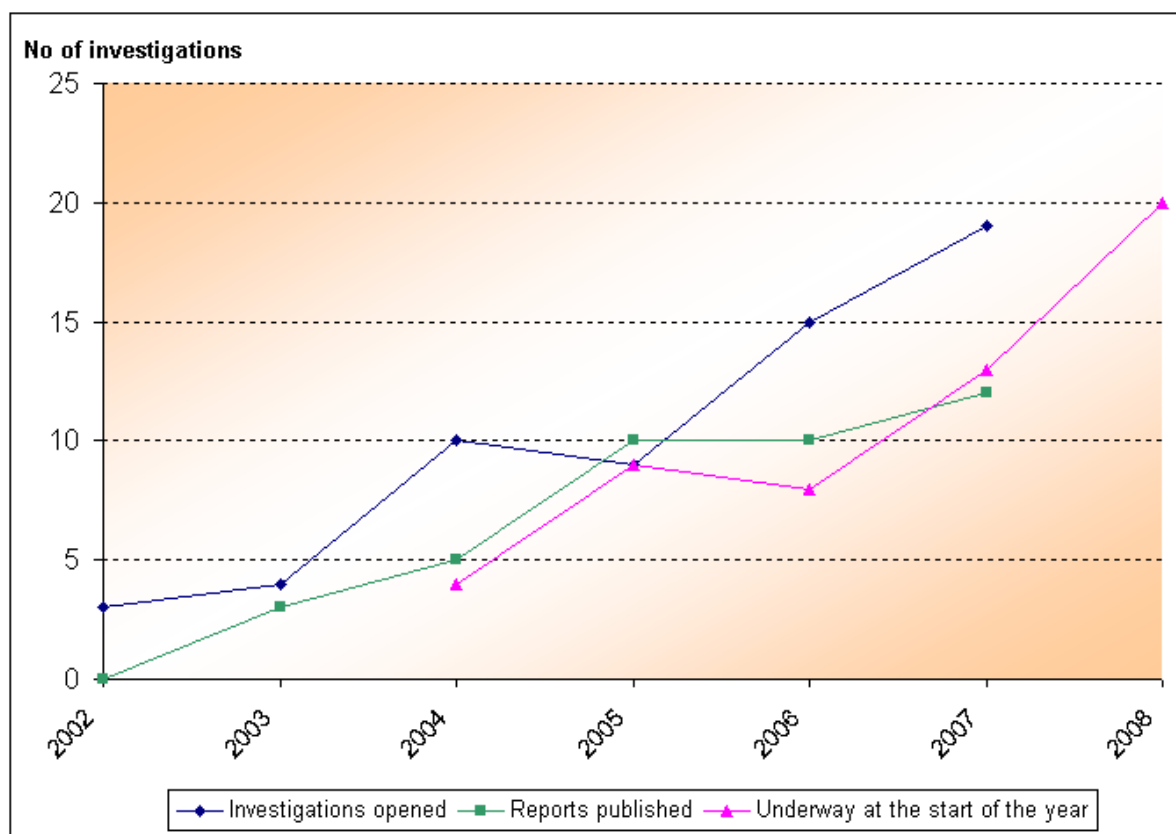
The investigation also revealed that construction defects and unsuitable draining equipment that was poorly handled by the crew were likely to worsen the consequences of an accident causing a leak. These defects show that the construction of the boat was not inspected satisfactorily, and that the boat was badly managed on a technical level.

Eight recommendations were made following the technical investigation concerning four groups of factors identified for preventive action:

- staff skills and the organisation of the work, with three recommendations,
- the quality of the construction of the boat and its means of draining, with two recommendations,
- regulations governing navigation, with two recommendations bearing on the application of rules of crossing and the use of radio contact, and
- the duty of the navigation police, with one recommendation.

Annex 4 : Investigations into accidents and incidents occurring from 2002 onwards

Prior to the creation of the BEA-TT (26 January 2004) the data shown hereinafter concerned investigations opened by the CGPC under the terms of the prefiguration of the investigating body, following the law of 3 January 2002 with particular relation to post-accident investigations



Year	Underway at the start of the year	Investigations opened	Reports published
2002		3	0
2003		4	3
2004	4	10	5
2005	9	9	10
2006	8	15	10
2007	13	19	12
2008	20		

List of the investigations opened since 2002

Date	Accident	Fatalities	Mode*
16/06/2002	Dam-lock on the Seine in Évry (91)	3	W
05/11/2002	Pile-up on the A10 in Coulombiers (86)	8	R
06/11/2002	Fire in a carriage of the Paris-Munich train in Nancy (54)	12	RY
2002	TVR Nancy and Caen	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	Intercity RER D train incident at Villeneuve Triage (92)	0	RY
18/11/2003	165 in Nivillac (56)	2	R

18/01/2004	Inland waterway convoy on the Rhone in La Voulte (07)	1	W
15/02/2004	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 by overhead cables in Saint Nazaire (44)	1	RY
22/06/2004	Coach accident on the RN10 in Ligugé (86)	11	R
28/07/2004	“Santina” boat at the Blénod lès Pont lock in Mousson (54)	0	W
26/08/2004	“Foehn” boat in Nogent sur Seine (10)	0	W
29/08/2004	Pile-up with coach on the A63 in Belin-Béliet (33)	8	R
30/08/2004	Collision between trams on the tramway in Rouen (76)	0	GT
24/11/2004	Collision between a Corail 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 TER regional express trains in Longueville (77)	0	RY
19/04/2005	Training HGV on the 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	Train collision in Francardo (02)	0	RY
04/06/2005	Fire in a HGV in the Fréjus tunnel (73)	2	R
09/06/2005	Accident at the level crossing in St-Laurent-Blangy (62)	0	LC
06/08/2005	Fire on underground trains at Simplon station (75)	0	GT
August 2005	Fires on NGV bus in Nancy and Montbéliard	0	R

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	Derailment of a train in Saint-Flour (15)	0	RY

*RY = railway , LC = level crossing ; GT = guided transport ; R = roadway ; W = waterway ; S = ski lift

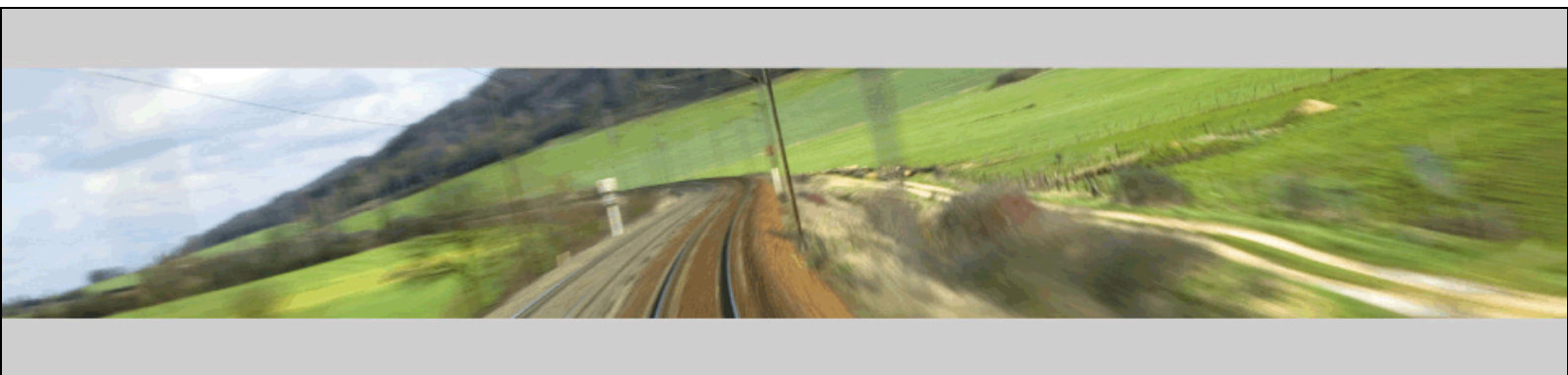
28/03/2006	Cruise boat “Camargue” at La Voulte bridge (07)	0	W
26/05/2006	Collision between a car and a HGV on the RN 134 in Ogeu-les-Bains (64)	5	R
13/06/2006	Derailment of a train in La Ferté-sur-Chiers (08)	0	RY
28/06/2006	Near-miss at Tencin-Theys station (38)	0	RY
24/07/2006	Derailment of a works train in Culoz (73)	0	RY
24/07/2006	Collision between two HGV and a camping-car on the RN10 in Reignac (16)	5	R
07/08/2006	Accident involving a tanker on the A55 in Chateauneuf-les-Martigues (13)	1	R
05/09/2006	Accident involving a coach on the A1 in Brasseuse (60)	4	R
08/08/2006	Inland waterway passenger boat “Provence” in Gervans (26)	0	W
11/10/2006	Collision between a freight train and a TER regional express	6	RY
18/10/2006	Collision between a TER regional express train and an excep-	0	R
10/11/2006	Passenger accident at Chaville station (92)	1	RY

27/02/2007	Derailment of a maintenance vehicle in Carcassonne train station (11)	0	RY
01/03/2007	Passenger accident at Villeneuve-Triage train station (94)	1	RY
13/03/2007	Crash involving a HGV and a school bus in Angliers (89)	1	R
04/04/2007	Entanglement with a high-tension cable by the crane of a boat on the Rhone at Pierre-Bénite (69)	0	W
05/04/2007	Impact of a train against a buffer in Paris-Est train station (75)	0	RY
22/04/2007	Loss of load by a self-propelled boat in the Seine at Porte-Joie (27)	0	W
26/05/2007	Sailing boat accident at the Rhinau lock (67)	0	W
04/06/2007	Collision between a tramway and a car in Saint-Herblain (44)	1	GT
14/06/2007	Crash involving a coach and a vehicle of the SANEF in Thillois (52)	2	R
11/07/2007	Beaching of the Natissa ship near Chasse-sur-Rhône (69)	0	W
22/07/2007	Coach accident in Notre-Dame-de-Mésage (38)	26	R
08/08/2007	Coach accident in Ghyvelde (59)	3	R
13/08/2007	Impact of a train against a buffer in Versailles train station (78)	0	RY
14/08/2007	Coach accident in Paris 19th district (75)	0	R
09/11/2007	Derailment of a train in Pertuis (84)	0	RY
21/11/2007	Head-on collision involving two trains in Barchetta (2B)	0	RY
26/11/2007	Train-HGV crash at the level crossing in St-Médard-sur-Ille (35)	0	LC
03/12/2007	Train-car crash at the level crossing in Cadaujac (33)	3	LC
19/12/2007	Collision between a train and an exceptionally large goods vehicle at the level crossing in Tossiat (01)	1	LC

Annex 5 : Follow-up to the implementation of BEA-TT recommendations in the railway sector

Monitoring Department

Database Division



Follow-up by the EPSF of the recommendations of the BEA-TT

Accidents since April 2004

	Author	Reviewer	Endorser
Name	S. QUEVA		
Date			
Signature			

List of changes

Version	Date	Subject of the change	Author
1	22/08/2008	Creation	S. Quéva

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1 Saint-Romain-en-Gier – 05/04/04

Railway accident occurring in Saint-Romain-en-Gier on 5 April 2004

At 5.26 am on Monday 5 April 2004, an empty TGV high-speed train struck a works train in Saint-Romain-en-Gier.

Two people were injured and there was significant damage to both engines.

Report from the BEA-TT dated 30/11/04

Recommendation R1:

Design and launch a mutual programme making the Infrastructure business lines aware of IPCS [permanent reverse signalling installations] issues (Operations and Equipment). This programme aims to give operations project managers a better understanding of “equipment” work. Similarly, this programme will develop the “operating” knowledge of “equipment” employees with onsite responsibilities: district heads of works (who will have organisation documents to design), support employees for works trains, and producers.

Initiatives undertaken

[SNCF letter of response to the BEA-TT report – 03/02/05]

Re-launch of Equipment/Operations training courses in “safety”

IPCS module in initial training at the Infra National Training Centre (CNFI) and in regional schools

Training initiatives will take better account of the human and socio-organisational factors, the diversity of the situations encountered, and the consideration and management of the main hazards

A project is underway to change the regulations governing works (STORP), which will take particular account of all the lessons drawn from this accident

[RFF letter of response to the BEA-TT report – 07/02/05]

RFF will, in its management role in the STORP project, ensure that this recommendation is taken into account in full.

Status of the initiatives

[SNCF letter of response to the BEA-TT report – 03/02/05]

The specifications of the safety training day in the first quarter of 2005 took up the themes of “Documents organising sites” and “TTx traffic”.

Recommendation R2:

Better incorporate the scenarios for the movement of works trains in the drafting of documents organising the work (programmes and instructions) and ensure that this drafting and verification involve all the affected establishments, in such a way as to give field operators a genuine, unambiguous “programme of work”; explore this subject during design audits.

Initiatives undertaken

[SNCF letter of response to the BEA-TT report – 03/02/05]

The preparation of scenarios will take better account of the human and socio-organisational factors, the diversity of the situations encountered, and the consideration and management of the main hazards

A project is underway to change the regulations governing works (STORP), which will take particular account of all the lessons drawn from this accident

[RFF letter of response to the BEA-TT report – 07/02/05]

RFF will, in its management role in the STORP project, ensure that this recommendation is taken into account in full.

Status of the initiatives

<p>Recommendation R 3:</p> <p>In the course of the next regional and national audits, systematically take note of the level of vigilance of safety operators when they are placed in particular working situations such as extended DIV, and check the correct application of rules in these situations.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 03/02/05]</p> <p>Work with the Safety Audits Department, multi-regional audit centres and operating establishments for:</p> <ul style="list-style-type: none"> – Consideration of the recommendations upon receipt; – Assessment in the last quarter of 2005.
<p>Status of the initiatives</p>

<p>Recommendation R 4:</p> <p>On the subject of the organisation of the work, make operating establishments (French acronym: EEX) aware of the need for safety operators to prepare workshops in great detail, particularly for staff returning to work from leave, and simultaneously to pay careful attention to ensure that the signing of operational texts is not merely routine.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 03/02/05]</p> <p>Recommendations to operating establishments:</p> <ul style="list-style-type: none"> – Necessity for safety operators to prepare workshops in great detail for staff returning to work from leave; – Vigilance over the signing of operational texts <p>These subjects will be taken up in monitoring plans</p>
<p>Status of the initiatives</p>

<p>Recommendation R 5:</p> <p>In the course of the next regional and national audits, note the quality of handovers between duty station controllers.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 03/02/05]</p> <p>Work with the Safety Audits Department, multi-regional audit centres and operating establishments for:</p> <ul style="list-style-type: none"> – Consideration of the recommendations upon receipt; – Assessment in the last quarter of 2005.
<p>Status of the initiatives</p>

<p>Recommendation R 6:</p> <p>In relation to the visibility within duty stations, recommend to the establishments that general lighting be put into service at the changeover by morning operators. The possible interest of maintaining normal lighting in the station, even during the nightshift, should also be studied.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 03/02/05]</p> <p>Recommendation to the establishments that general lighting be put into service at the changeover by morning operators</p>
<p>Status of the initiatives</p>

<p>Recommendation R 7:</p> <p>In order that “equipment” parties, drafters of programmes of work, verifiers of these programmes, producers, support employees and Equipment vehicle drivers (CREQ) are fully conversant with the change to CG S9B no. 1 of December 2003, include verification of the correct use of traffic current for works trains in zones fitted with IPCS in audit programmes.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 03/02/05]</p> <p>Work with the Safety Audits Department, multi-regional audit centres and operating establishments for:</p> <ul style="list-style-type: none"> – Consideration of the recommendations upon receipt; – Assessment in the last quarter of 2005.
<p>Status of the initiatives</p>

<p>Recommendation R 8:</p> <p>Improve the selection and training of employees called to hold the position of producer so that they are familiar with the installations (and their special features) on which they will work.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 03/02/05]</p> <p>Amendment no. 2 (ongoing) to IN 1474 (CG S0 no. 3) in relation to fitness for safety-related positions will specify that the authorisation is linked to knowledge of the installations (and their special features) where the producer discharges his duties.</p> <p>[RFF letter of response to the BEA-TT report – 07/02/05]</p> <p>RFF will, in its management role in the STORP project, ensure that this recommendation is taken into account in full.</p>
<p>Status of the initiatives</p>

<p>Recommendation R 9:</p> <p>During the various audits conducted within the SNCF, check that the producers are familiar with and apply the rules for delimiting sites.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 03/02/05]</p> <p>Work with the Safety Audits Department, multi-regional audit centres and operating establishments for:</p> <ul style="list-style-type: none"> – Consideration of the recommendations upon receipt; – Assessment in the last quarter of 2005.
<p>Status of the initiatives</p>

<p>Recommendation R 10:</p> <p>Study the interest of a new organisation in the driving of works vehicles whereby assistance to the company driver is provided by one single employee merging the positions of pilot and support worker.</p>
<p>Initiatives undertaken</p> <p>Acknowledgement of a divergence between the BEA-TT recommendation and the SNCF guidelines reiterated in the SNCF letter of response to the BEA-TT report dated 03/02/05.</p> <p>[RFF letter of response to the BEA-TT report – 07/02/05]</p> <p>RFF will, in its management role in the STORP project, ensure that this recommendation is taken into account in full.</p>

Status of the initiatives

Recommendation R 11: During regional and national audits, examine the question of signing “line knowledge” for employees authorised to drive vehicles to ensure that this signature concludes a training process. Checking that this line knowledge was gained at speeds that are similar to those of works trains should also be undertaken.
Initiatives undertaken [SNCF letter of response to the BEA-TT report – 03/02/05] Work with the Safety Audits Department, multi-regional audit centres and operating establishments for: <ul style="list-style-type: none"> – Consideration of the recommendations upon receipt; – Assessment in the last quarter of 2005.
Status of the initiatives

Recommendation R 12: Provide support employees with a signalling diagram adapted to the line section over which their assignment has them discharge their duties, so as to increase their vigilance over signalling, even under works conditions.
Initiatives undertaken [SNCF letter of response to the BEA-TT report – 03/02/05] This recommendation exists and will be reiterated
Status of the initiatives

2 Saint-Nazaire – 17/04/04

Electrocution of a teenager in Saint-Nazaire marshalling yard
At 11.42 am on Saturday 17 April 2004, a teenager aged 16 was electrocuted after climbing onto a wagon stabled in Saint-Nazaire marshalling yard under a 25,000-volt overhead power line.

Report of the BEA-TT dated 17/04/04

Recommendation R1:

Supplement the robustness of the outer railings, which has already been undertaken, with a barrier physically delimiting the area accessible to the public at the Penhoët stop, and separating it from the marshalling tracks.

Initiatives undertaken

[Annex 3 – 2007 SNCF Annual Report – Contracted Infrastructure Management Assignments – 28/05/08] In 2007, a SNCF–RFF security programme agreement made it possible, firstly, to begin securing substations and storage areas, and to address the separation of operated sites with the platforms of certain non-managed stopping points (PANG).

Status of the initiatives

Recommendation R2:

Increase the signs on the danger of electricity on wagons

Initiatives undertaken

Status of the initiatives

Recommendation R3:

Continue the prevention initiative undertaken in schools, and in particular attempt to reach out to older age groups who are more likely to be tempted to intrude.

Initiatives undertaken

Status of the initiatives

Recommendation R 4:

Reformulate and clarify the orders for responding to an incident immediately alongside an overhead power line.

It is worthwhile clarifying the orders for the emergency services when responding to such a highly unusual incident, particularly:

- The level of residual risk;
- The precautions to be taken, and the insulating material that could be deemed necessary and with which the emergency services should be equipped. For example, a current collector for the remote sensing of the voltage of an overhead power line could be considered.

Initiatives undertaken

Status of the initiatives

Recommendation R 5:
Make contact between the SDIS, CODIS and the regional divisions of the SNCF more regular on all the issues concerning involvement in this area
Initiatives undertaken
Status of the initiatives

3 Longueville – 16/02/05

Rail accident between two trains in Longueville

At 7.23 pm on 16 February 2005, train 117 710 from Provins hit train 117 578 sideways in Longueville train station.

Luckily, no casualties were reported. In terms of material damage, the front carriage of the train that was crashed into was torn apart, the locomotive of the train behind the accident suffered slight damage to the chassis, and both the track and adjoining platform were warped.

BEA-TT report dated 16/02/2005

Recommendation R1 (SNCF):

Modify the mechanical reversibility system of the “ZG isolation switch” type in BB 66400 locomotives (or replace it with an electrical control) to make a manoeuvre of this switch placing braking control in an intermediary state as compared to “leading” or “trailing” status impossible. Failing which, the “leading” or “trailing” locomotive position must be controlled and included in the safety checklist for driving the vehicle.

Research if other series of vehicles running on the national rail network are fitted with a reversibility system that is similar to the ZG of BB 66400 and may be subject to the same risks (involve the body for technical eligibility of rolling stock on the national rail network in the research). It would be necessary to undertake a similar modification.

Initiatives undertaken

[SNCF letter of response to the BEA-TT report – 21/02/05]

The maintenance rules were initially modified and strengthened by the publication of an amendment to the contents of inspections (systematic verification of locking in pre-inspection trials) on 7 March 2005.

The order to modify the reversibility system of BB 66400 has been circulated.

No other vehicle fitted with such a system is used by the SNCF. A memorandum has been sent to the transporting and infrastructure activities in order to study if the vehicles used by partner companies (as part of subcontracting) are equipped with this system.

Status of the initiatives

[SNCF letter of response to the BEA-TT report – 21/02/05]

In 2006, twenty BB 66400 will be transformed into BB 69400 and therefore fitted therewith. This work will be completed within eighteen months.

Recommendation R2 (CFTA):

Draft and implement specifications and teaching packs for initial and ongoing driver training courses. For conductors, put in place a comprehensive training scheme on safety aspects. Improve how completed training courses are recorded and update the documents on these courses. Ensure that members of the driving crew receive practical training on the use of brakes by mobilising the necessary resources, e.g. hiring rolling stock.

Initiatives undertaken

[CFTA letter of response to the BEA-TT report – 22/02/06]

Initial specifications are determined locally using national specifications (defined in an in-house text of the CFTA – DGP No. 1).

For continuous education, specifications will be determined, whenever necessary, to specify the content and purpose of the training course.

A partnership document (in the process of being signed) between the SNCF and the CFTA has been drawn up in order to define the conditions whereby CFTA support workers will be accepted on the national rail network. The presentation and use of this document in continuous education will be organised locally in 2006.

<p>The 2006 Safety Quality Action Plan from Provins makes provision for initiatives strengthening safety-related follow-up of members of the driving crew.</p> <p>The traceability of all training courses is ensured by an entry in the individual case file, as provided by a CFTA in-house text (General Safety Instruction 0 no. 2)</p>
Status of the initiatives

<p>Recommendation R3 (CFTA):</p> <p>Individually interview all the employees holding safety-related positions.</p>
<p>Initiatives undertaken</p> <p>[CFTA letter of response to the BEA-TT report – 22/02/06]</p> <p>The annual monitoring plan makes provision for monitoring safety operators and assessing their skills by exchanges between the operator and the head of the business line. A certificate of fitness is issued every year. All these details are recorded in the individual case file of the operator.</p>
Status of the initiatives

<p>Recommendation R4 (CFTA):</p> <p>Re-examine the content of the annual safety plan in the aim of addressing the follow-up to previous initiatives and determining the new initiatives to be implemented.</p>
<p>Initiatives undertaken</p> <p>[CFTA letter of response to the BEA-TT report – 22/02/06]</p> <p>Since 2006, the Safety Quality Action Plans (PAQS) produced by CFTA agencies have comprised, in the first part, the assessment of initiatives and training courses that have been undertaken in addition to feedback from the previous year. In the second part, the initiatives and undertakings for the current year are outlined.</p> <p>For 2006, the new initiatives were decided upon in response to recommendation R2.</p>
Status of the initiatives

<p>Recommendation R5 (CFTA, SNCF and DGMT):</p> <p>Examine how the effectiveness of feedback could be improved, e.g. by enabling the CFTA to take advantage of information generated by national feedback, which is likely to affect operations over the section of the Provins-Longueville line.</p>
<p>Initiatives undertaken</p> <p>[CFTA letter of response to the BEA-TT report – 22/02/06]</p> <p>The Greater Paris Department of the Paris East region has undertaken (joint safety meeting on 15/12/2005) to convey national feedback sheets from the network of passenger safety coordinators to the CFTA.</p> <p>[DGMT letter of response to the BEA-TT report – 10/03/06]</p> <p>The creation of the EPSF by the law of 5 January 2006 makes provision for the relevant sections of feedback within rail companies to be transmitted to the EPSF in order to supplement the national feedback to which they will have access</p> <p>[SNCF letter of response to the BEA-TT report – 21/02/05]</p> <p>The SNCF will inform its service providers of the results of the use of SNCF feedback when they appear likely to improve the safety of their production. The SNCF will ensure the quality of this transmission.</p>
<p>Status of the initiatives</p> <p>Since 17 October 2007, there have been quarterly meetings bringing together EF, GI, the GID, the EPSF, the BEA-TT and the DTFC over feedback</p>

<p>Recommendation R6 (SNCF and DGMT):</p> <p>Re-examine the conditions whereby, in terms of safety, the validity of using such a short line as a closed environment can be ensured, in view of the limits to the gaining of real experience in driving trains; these conditions may concern the continuous education of the driver, even professional mobility.</p>
<p>Initiatives undertaken</p> <p>[DGMT letter of response to the BEA-TT report – 10/03/06]</p> <p>It is necessary that initial and ongoing training can anticipate the breaches that can arise in the operation of a short line as a force of habit. When assessing the application for a safety certificate and then during the inspections, verifications and audits that the EPSF will be led to conduct, it should be verified that the rail company has taken the necessary measures to this end and is ensuring the maintenance of the skills of its staff members authorised for safety-related positions over the long term.</p> <p>[SNCF letter of response to the BEA-TT report – 21/02/05]</p> <p>The specific nature of such an operation must be taken into account in the overall scheme of the company in question: SMS (Safety Management System, business line documents, training, monitoring, etc.).</p>
<p>Status of the initiatives</p> <p>During the audits undertaken by the EPSF in 2006 and 2007 (particularly in training centres), the issue of maintaining the skills of staff members authorised for safety-related positions was examined.</p>

4 Saint-Flour – 25/02/06

Derailment of a Corail express train in Saint-Flour.

On Saturday 25 February 2006, express train 5941 travelling from Paris to Béziers derailed at KP 692.480 in the Saint-Flour district.

The locomotive and the first carriage were projected against the rock face.

Of the 52 passengers aboard the train, two suffered minor injuries.

BEA-TT report dated 02/11/06

Recommendation R1 (SNCF)

Devise a methodology making it possible to define, across lines fitted with DC rails, in accordance in particular with the configuration, track condition, route, topography, and the type of signalling, “special zones” in which the speed of trains would be limited to a level making it possible to avoid derailment in the event of rail rupture.

Initiatives undertaken

[Sheet Q – RFF Annual Safety Report]

Development of a tool for classifying UIC lines seven to nine

Status of the initiatives

[Sheet Q – RFF Annual Safety Report]

Assessment of lines seven to nine undertaken

Recommendation R2 (RFF, SNCF)

In the event that a defect is established in the DC rail which requires the replacement of the damaged part, insofar as possible welding must be avoided and instead the rail is to be replaced in full.

Initiatives undertaken

[Sheet Q – RFF Annual Safety Report]

Constitution of reserve stocks of the various types of DC rails

Status of the initiatives

[Sheet Q – RFF Annual Safety Report]

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

Recommendation R3 (RFF, SNCF)

On sections of lines fitted with DC rails, prioritise the widespread replacement of sleepers in combination with lifting of the ballast.

Initiatives undertaken

[Sheet Q – RFF Annual Safety Report]

Systematically combine lifting of the ballast with any widespread replacement of sleepers

Status of the initiatives

[Sheet Q – RFF Annual Safety Report]

In 2007, all operations (major maintenance and replacement) made provision for lifting. PAS sheet 2008-7

Recommendation R4 (RFF, SNCF)

Devise a programme to bring the lines open to passenger traffic and fitted with DC rails up to the required standard.

In the long term, organise the progressive replacement of DC rails by Vignole rails given the ageing of this stock, its growing maintenance cost, and the high risk of derailment in the event of rail rupture.

Initiatives undertaken [Sheet Q – RFF Annual Safety Report] In the long term, replacement of all DC rails by Vignole rails.
Status of the initiatives [Sheet Q – RFF Annual Safety Report] Programme for replacement: – 2007: €34M – 2008: €48M planned PAS sheet 2008-8

5 La Ferté-sur-Chiers – 13/06/06

<p>Derailment of a goods train in La Ferté-sur-Chiers</p> <p>On Tuesday 13 June 2006, the last carriage of an iron ore train, travelling from Dunkirk to Dieulouard, derailed in the La Ferté-sur-Chiers district. The accident caused only one minor injury (to a maintenance worker) but damaged 10 km of tracks.</p> <p>BEA-TT report dated 07/09/07</p>
<p>Recommendation R1 (SNCF)</p> <p>When a wagon undergoes accidental repairs and intervention is necessary on the Lenoir damping system (detection of an insufficient “A” rating), specify the number of the axle box concerned for the requirements of both the initial expertise and the repair.</p> <p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 17/12/07] SNCF guideline amended accordingly</p> <p>Status of the initiatives</p> <p>[Annex 3 – 2007 SNCF Annual Report – General aspects – 28/05/2008] Recommendation enforced</p>
<p>Recommendation R2 (SNCF, RFF)</p> <p>Across the national rail network, identify areas with similar track geometry to that of KP 190.200 of the northeast artery in June 2006 (close and regular succession of straightening and banking defects that are likely to lead to a dynamic resonance effect; simultaneous presence of a bending defect as an alert value adding to the bend inherent in the spiral at the end of turns).</p> <p>Devise rules for track intervention to correct these situations (correction of straightening problems according to the values quantified after detection of repetitive and periodic straightening defects at the end of bends).</p> <p>Initiatives undertaken</p> <p>[Sheet Q – RFF Annual Safety Report] Computerisation of the readings of geometry defects between 10 and 30 m. Opening of a project researching correlation of geometry defects with the behaviour of wagons.</p> <p>Status of the initiatives</p> <p>[Sheet Q – RFF Annual Safety Report] PAS sheet 2008-5 [SNCF letter of response to the BEA-TT report – 17/12/07] Definition of an alert threshold planned for 2009/2010</p>
<p>Recommendation R3 (SNCF, RFF)</p> <p>Remind the employees who are directly concerned by the running of trains of the usefulness of the ground-train radio for emergency situations, and the implementation of emergency procedures for those present on the tracks.</p> <p>Initiatives undertaken</p> <p>[Sheet Q – RFF Annual Safety Report] The deployment of GSM-R will change the means of communication available to GID and EF employees. In this framework, new procedures will be implemented. [SNCF letter of response to the BEA-TT report – 17/12/07] Feedback sheets reiterating the steps and measures making it possible to stop the trains in the event of an emergency</p>

Status of the initiatives

[Sheet Q – RFF Annual Safety Report]

PAS sheet 2008-17

6 Tencins-Theys – 28/06/06

<p>Near collision of two trains in Tencin-Theys train station</p> <p>In the morning of 28 June 2006, a material train arrived in Tencin-Theys train station. On the same track, the TER Chambéry–Grenoble regional express train was stationary pending permission to leave. The driver of the material train used the emergency brakes and managed to stop some twenty metres behind the TER, thereby preventing an accident.</p> <p>Although there were no casualties or material damage, the consequences could have been serious under slightly different circumstances.</p>
BEA-TT report dated 09/11/07

<p>Recommendation R1 (SNCF and RFF)</p> <p>Move the treadle for Pg2 as far upstream as possible from the V2/V4 switch and examine equivalent situations across the national rail network in order to apply measures of the same type following local analysis of the manoeuvres.</p>
<p>Initiatives undertaken</p> <p>[Sheet Q – RFF Annual Safety Report]</p> <p>Risk analysis of similar situations</p> <p>Movement of the treadle planned in works in early 2009</p> <p>[SNCF letter of response to the BEA-TT – 13/02/08]</p> <p>The installations will be modified with the agreement of RFF</p> <p>A letter has been sent to the regions drawing their attention to this type of situation. A study will lead these situations to be addressed on a case-by-case basis.</p>
Status of the initiatives

<p>Recommendation R2 (SNCF and RFF)</p> <p>Modify the control circuit of disk D2 by having it close automatically with the occupation of at least one of the two zones of track 2 of Tencin-Theys train station.</p>
Initiatives undertaken
<p>Status of the initiatives</p> <p>[Annex 3 – 2007 SNCF Annual Report – General aspects – 28/05/2008]</p> <p>Recommendation enforced</p> <p>[Sheet Q – RFF Annual Safety Report]</p> <p>Modification carried out</p>

<p>Recommendation R3 (SNCF)</p> <p>Remind traffic employees that, whilst they have not handed over their service, they must coordinate all interventions by making the tasks of all parties clear.</p>
<p>Initiatives undertaken</p> <p>Letter sent to the regions</p> <p>Fact sheet on the topic of service handovers is in the process of being finalised</p>
<p>Status of the initiatives</p> <p>[Annex 3 – 2007 SNCF Annual Report – General aspects – 28/05/2008]</p> <p>Recommendation enforced</p>

7 Chaville – 10/11/06

<p>Passenger accident in Chaville Rive Droite train station</p> <p>On Friday 10 November 2006, following traffic problems and on an exceptional basis, local train 113473 did not stop at Chaville Rive Droite train station.</p> <p>A passenger then activated the alarm signal, opened a door, and jumped from the moving train.</p> <p>When falling, he struck a concrete post on the station platform and was seriously injured. He died shortly afterwards.</p> <p>BEA-TT report dated 09/11/07</p>

<p>Recommendation R1 (SNCF)</p> <p>Study, for the rolling stock set to undergo significant workshop maintenance, modifications making it possible to limit the possibility of opening the doors manually after an alarm signal has been activated to situations in which the train is travelling below the lowest detectable speed and devise a programme for implementing these modifications.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 11/02/08]</p> <p>An inventory was undertaken. Several trains are already fitted therewith, and others are in the process of being modified or this has been scheduled.</p> <p>A feasibility study was requested from the Material Department for materials that have already been overhauled.</p> <p>No modification is envisaged for equipment that is set to be withdrawn shortly.</p>
<p>Status of the initiatives</p> <p>[2007 SNCF Annual Report – Rail Operation Assignments – Annex 3 – Investments made in 2007]. In 2007, continuation of the investments:</p> <ul style="list-style-type: none"> – lateralisation of the lights presuming the opening of the doors in Transilien suburban trains; – management of the lines of the doors of Z2 stock; and – blockage of the control for the emergency opening of the doors when the train is running. <p>During “comfort” operations of Z2N trains (Z20500) the function of the doors is amended to keep them locked in the event that the intercom alarm signal (SAI) is used whenever the speed reaches 10 km/h in acceleration and 6 km/h in deceleration.</p>

<p>Recommendation R2 (SNCF)</p> <p>Revise and clarify the regulations that apply to route changes by strictly limiting the cancellation of regular stops, particularly after the departure of the train from its originating station.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 11/02/08]</p> <p>A framework document is in the process of being written. Taking the risks of the various situations into account, it will clarify the methods of implementing measures to be taken when cancelling regular stop(s) on an exceptional basis.</p>
<p>Status of the initiatives</p>

8 Carcassonne – 27/02/07

<p>Derailment of a maintenance vehicle in Carcassonne train station</p> <p>At approximately 12.40 pm on Tuesday 27 February 2007, a maintenance vehicle of the Equipment of the SNCF derailed in Carcassonne train station involving track 2 at a point where trains run at 110 km/h.</p> <p>This incident did not result in casualties but minor materiel damage to the track installations was observed.</p>
BEA-TT report dated 09/04/08

<p>Recommendation R1 (SNCF)</p> <p>Remind duty station controllers of the importance of providing full information to employees participating in movements in train stations, particularly employees who are less familiar with the installations of the station.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 02/07/08]</p> <p>Feedback sheet at national level under production</p>
<p>Status of the initiatives</p> <p>[SNCF letter of response to the BEA-TT report – 02/07/08]</p> <p>This sheet will be distributed in the third quarter of 2008</p>

<p>Recommendation R2 (SNCF, RFF)</p> <p>Examine the implementation of a unified derailer on track 4 between the 120b and 118a switches.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 02/07/08]</p> <p>Feasibility study (SNCF) that shows the possibility of installing a unified derailer between the 120b and 118a switches. Need to take possible changes into account.</p> <p>[RFF letter of response to the BEA-TT report – 01/07/08]</p> <p>RFF studied the possibility of the emergence of an identical or higher risk to that of the accident on 27 February 2007 on the basis of two hypotheses of track modification.</p>
<p>Status of the initiatives</p> <p>[SNCF letter of response to the BEA-TT report – 02/07/08]</p> <p>Approval of RFF pending.</p> <p>[RFF letter of response to the BEA-TT report – 01/07/08]</p> <p>This dossier is still being considered by the services concerned</p>

9 Villeneuve-Triage – 01/03/07

Collision with a person in Villeneuve-Triage train station
At 6.54 am on 1 March 2007, a person who had climbed down onto one of the tracks of Villeneuve-Triage train station was struck by a train.
He died instantly.

BEA-TT report dated 13/03/08

Recommendation R1 (SNCF, RFF)

Ensure that a sufficient number of “Do not cross the tracks” signs, or any similar system, are installed and kept clean so as to be legible.

Initiatives undertaken

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

National study undertaken to assess the equipment of each establishment

The primary objective is to update the conditions whereby signage is installed and maintained

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

Directive IN 1724 is in the process of being updated. This will provide an opportunity to remind local heads of GID [contracted infrastructure management] of their tasks in terms of maintaining all the corresponding installations in good order.

Status of the initiatives

In 2007, 66 train stations were fitted with platform panels reminding users that they must not cross the tracks

Recommendation R2 (SNCF, RFF)

Install at least one sign indicating the presence of an underground passageway and the obligation to use it to go to other platforms on the paths naturally taken by passengers in Villeneuve-Triage train station.

Initiatives undertaken

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

Awareness campaign in 64 train stations in the Greater Paris region

Installation of visible signage from the two possible means of access to the central underground passageway in Villeneuve-Triage.

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

This recommendation will be implemented by the RFF following the installation study.

The installation is set to be completed by late 2008.

Status of the initiatives

[Annex 3 – 2007 SNCF Annual Report – General aspects – 28/05/2005]

Recommendation enforced

10 Paris-Est – 05/04/07

In the morning of Thursday 5 April 2007, the Transilien suburban train travelling from Château-Thierry to Paris struck the buffer on track 21 of Paris-Est train station at low speed. The material damage was limited but 58 people with minor injuries were attended to by the emergency services

BEA-TT report dated 10/12/07

Recommendation R1 (SNCF)

Increase the awareness of the drivers of rolling stock of the various special features of braking control, particularly “full application” and “emergency braking”. This initiative must be included in driving guidelines and continuous education.

Initiatives undertaken

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

Training initiative and rewriting of the guidelines for the material concerned by the TM 606 rail brake switch.

Status of the initiatives

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

Completion by PPOS (professional practice observable in real-life situations) undertaken by DPX (local leaders) for the drivers affected before the end of the authorisation phase (late 2007)

Computer-assisted teaching devoted to TM 606 is under development and will be available from 1 September 2008.

Recommendation R2 (SNCF)

For the “braking system” aspect of the design of future railcar materials, accept a configuration of the brake switch integrating emergency braking control, as for the equipping of modern railcars (MI2N, AGC, Z-TER).

Initiatives undertaken

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

This recommendation is taken up in all the specifications of materials that are under development or on the verge of being ordered

Status of the initiatives

Recommendation R3 (SNCF)

Improve the response to the lessons that can be drawn from feedback: shorten the timeframe for implementing amendments to driving manuals, particularly for a safety function such as braking, and shorten the timeframe for raising the awareness of drivers to subjects that are most keenly affected by the safety of running trains (themes addressed during line accompanied trips and ongoing training days).

Initiatives undertaken

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

Local and individual management initiatives were preferred to collective action as is shown by the response to recommendation R1

Guarantees of traceability are provided by SITAR (computerised monitoring and traceability of traction skills)

Status of the initiatives

<p>Recommendation R4 (SNCF)</p> <p>For the equipment in Z2N railcars, study the feasibility of reducing the speed threshold below which the passenger doors are unlocked prior to the stoppage of the train. If the feasibility of doing so is demonstrated, amend all Z2N railcars.</p>
<p>Initiatives undertaken</p> <p>[SNCF letter of response to the BEA-TT report – 25/03/08]</p> <p>A feasibility study has been underway since the investigation of the Paris-Est incident on 5 April 2007.</p>
<p>Status of the initiatives</p> <p>[Annexe 3 – 2007 SNCF Annual Report – Rail Operation Assignments – 28/05/2008]</p> <p>During “comfort” operations of Z2N trains (Z20500) the function of the doors is amended to keep them locked in the event that the intercom alarm signal (SAI) is used whenever the speed reaches 10 km/h in acceleration and 6 km/h in deceleration.</p>
<p>Recommendation R5 (RFF, SNCF)</p> <p>For tracks in Paris-Est train station receiving trains comprised of Z2N units, study the relevance and feasibility of implementing a system making it possible to absorb a significant proportion of the energy of a train arriving at a buffer at low speed.</p>
<p>Initiatives undertaken</p> <p>[Sheet Q – RFF Annual Safety Report]</p> <p>Technical and financial study requested by RFF from IG-T</p>
<p>Status of the initiatives</p> <p>[Sheet Q – RFF Annual Safety Report]</p> <p>Investment prioritised in accordance with incident rates (low priority)</p>

11 Versailles rive gauche – 13/08/07

At 10.27 am on Monday 13 August 2007, the Transilien suburban train travelling from Paris-Invalides to Versailles Rive Gauche struck the buffer on track 3 of Versailles Rive Gauche train station at a speed of 6 km/h.

No one was hurt amongst the passengers, the driver or other SNCF employees.

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

BEA-TT report dated 28/03/08

Recommendation R1 (SNCF)

For the equipment in Z2N railcars, study the feasibility of reducing the speed threshold below which the passenger doors are unlocked prior to the stoppage of the train. If the feasibility of doing so is demonstrated, amend all Z2N railcars.

Initiatives undertaken

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

A feasibility study has been underway since the investigation of the Paris-Est incident on 5 April 2007.

Status of the initiatives

[Annex 3 – 2007 SNCF Annual Report – Rail Operation Assignments – 28/05/2008]

During “comfort” operations of Z2N trains (Z20500) the function of the doors is amended to keep them locked in the event that the intercom alarm signal (SAI) is used whenever the speed reaches 10 km/h in acceleration and 6 km/h in deceleration.

Recommendation R2 (SNCF, RFF)

For tracks in terminus train stations receiving trains comprised of Z2N trains, study the relevance and feasibility of technical provisions making it possible to either prevent a buffer impact or to minimise the consequences thereof for the people aboard the train or on the platform.

It would be worthwhile evaluating and comparing the beneficial effects of implementing:

- a shock absorber designed to slow down a train when there is a danger that it will make contact with the buffer,
- and/or a final speed control beacon (at an agreed distance from the buffer and controlling to approximately 4 km/h) to slow the train further, if not bring it to a halt.

Initiatives undertaken

Shock absorber

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

Technical proposals for the implementation of a shock absorber further to the recommendation made following the Paris-Est incident will be sent to RFF by the SNCF. A proposal in principle is expected from RFF and will condition the on-site study of Versailles Rive-Gauche.

Control beacon

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

With the response to recommendation R1, the SNCF will give further study to the installation of the track beacon and the consequences thereof on driving ergonomics. Subject to the positive outcome of this study and financing of the investment by RFF.

Status of the initiatives

Investment prioritised in accordance with incident rates (low priority)

12 Pertuis – 09/11/07

Derailment of a train in Pertuis
At 8.11 pm on Friday 9 November 2007, the train on the Briançon–Manosque route derailed in the Pertuis district.
The consequences were purely material: damage to the rolling stock and 300 metres of track.
BEA-TT report dated 26/06/08

Recommendation R1 (SNCF, RFF)
Assess the condition of aluminothermic welds on the high rail at bends, for LRS zones between Aix-en-Provence and Manosque, limited to the sections identified (from KP 361.850 to KP 345.495 and from KP 345.495 to KP 347.266). The method of inspection will be clarified: visual assessment of the underside of the foot by an appropriate system or examination of the rail foot by ultrasound probing.
Initiatives undertaken
Status of the initiatives

Recommendation R2 (SNCF, RFF)
From the annual feedback on rail ruptures, determine relevant indicators (e.g. rate of ruptures per km) on line sections of the national rail network which may present similar risks (same context as in Pertuis) making it possible to reveal the sections requiring the conduct of an assessment of the condition of rail welds in accordance with the procedure determined by recommendation R1 (or equivalent procedure).
Initiatives undertaken
Status of the initiatives

Recommendation R3 (RFF)
Conduct a feasibility study of a catalogue of sounds that are representative of an “abnormal shock” in order to train the ear and senses of drivers from various rail companies who are faced with such a situation (perception of the sound produced in accordance with the gap in the rail, axle load of the motor vehicle and the type of motor vehicle, and the travelling speed).
Initiatives undertaken
Status of the initiatives

Annex 6 : Study of spontaneous fires in heavy goods vehicle in 2007

The data collected in 2007 on spontaneous fires in heavy goods vehicles did not vary greatly from those collected in 2006. Whilst there was a slight increase in recorded cases (122 in 2007 for 111 in 2006), the breakdown per item remains close to that observed previously. Finally, it has not been possible to assess the listed cases in greater depth due to the lack of sufficiently detailed feedback. None of the cases examined had physical consequences, including those occurring in tunnels, largely due to the reactivity of the safety systems in place.

Incidence

The 119 listed spontaneous fires, calculated according to annual traffic (2005 data in 10^8 km/vehicle), lead to an average coefficient of 0.31 fires per 10^8 km/vehicle. This rate remains low despite a small increase as compared to 2006 (0.28). The difference observed in previous years between vehicles registered in France and those registered abroad is confirmed with a rate of 0.24 for vehicles registered in France and 0.58 for those registered abroad.

Breakdown in accordance with roadway and location

For 119 analysed cases, 70 were on a motorway, 37 on a trunk road (French acronym: RN), 9 on a secondary road (French acronym: RD) and 3 on a local road. Four of them occurred in a tunnel. The analysis of the information collected in 2007 does not make it possible to confirm or deny the hypothesis made in 2006 on the correlation between the type and length of the route and the outbreak of spontaneous fires.

As the lack of data makes it impossible to calculate the number of accidents according to the number of km travelled per region or type of route, we are unable to establish the relative proportion of events per region or type of route. Although the concentration of blazes in certain areas, particularly motorways in Rhône-Alpes, suggests a correlation with the type of route, it also depends on the traffic and the absolute value data collected do not suffice to confirm this correlation. This angle therefore remains to be explored.

Breakdown between heavy goods vehicles and public transport vehicles

Of the 119 cases, 12 concerned public transport (PT), 9 the transport of dangerous substances (RH with TDS) and 98 the transportation of goods (RH excluding TDS). For vehicles registered in France, the breakdown of the number of events for 10^8 km/vehicle is in the region of 0.4 both for PT and RH (with DS or without), which indicates an equivalent risk.

Vehicle and system that was at the origin of the fire excluding PT vehicles

To take into account the high number of articulated lorries involved, it appeared useful to identify the vehicle that was the source of the fire, which could be the trailer or the tractor. The second part concerned the system implicated in the outbreak of the fire. The results in figures, regrouped in the annex, indicate that of the 119 vehicles, 12 were single-piece vehicles (trucks or coaches), 79 articulated vehicles, and 28 undefined. Concerning the system that was the source of the fire, when known, the load was cited 4 times, the axle 54 times and

the engine 30 times.

In the category of heavy goods vehicles, amongst cases in which the outbreak of the fire was identified clearly, the “axle” origin has 1.8 more occurrences than the “engine”. The other origins (passenger compartment, equipment or load) are absent or few in number. Information has not been provided on this point in 31 cases.

Fires of “axle” origin (solely heavy goods vehicles) result from blocked rotations, heated brakes or a burst tyre. These axle fires, which are in the majority (54 cases cited, of which 31 non-documented cases), stem from overheating due to long and/or uneven routes over which the lack of experience of the driver and incorrect use of the brakes play a major role in the outbreak of spontaneous fires. However, the information that is at our disposal is too fragmented or imprecise to analyse this point in greater detail.

For both the axles and the engine, it was impossible for us to assess the real level of maintenance and upkeep of the main systems of the vehicle. However, the incidence of axle fires amongst trailers (47 cases out of the 54 identified) suggests that the towed part is insufficiently maintained although it is the first to be triggered by breaking.

No significant information was collected in 2007 on the system behind a fire of “engine” origin (turbo, oil or fuel leak, electric circuit). For coaches and buses, when information on the origin of the fire reached us, the engine was cited with the exception of any other system.

The absence of axle fires amongst coaches and buses leads us to reiterate, as in 2006, that this type of vehicle must under normal circumstances be fitted with a retarder and that perhaps this obligation is not unconnected to the absence of this problem. Although information on fitting heavy goods vehicles with retarders is poorly or rarely conveyed to us, it appears that heavy goods vehicles are seldom fitted with such a system and frequently this is an exhaust retarder. In the cases of axle fires which were examined, none of the HGVs involved was presented as having been fitted with a retarder.

Annex 7 : Road accidents listed in the BEA-TT database

Analysis according to type of accident

Type of accident	Number	Type of transport						Total
		PT	RH	DG	ST	PC	Other	
Head-on collision	Accident	11	11		5	97		124
	Fatal accidents	5	8		1	50		64
	Deaths	8	21		2	78		109
Other type of collision	Accident	296	720	28	24	1 406	47	2 521
	Fatal accidents	112	280	8	7	607	3	1 017
	Deaths	116	312	9	11	691	5	1 144
Living the road	Accident	34	586	77	15	885	23	1 620
	Fatal accidents	4	31	1	1	505	5	547
	Deaths	31	32	1	1	560	6	631
Spontaneous fire	Accident	12	101	9		46		168
	Fatal accidents					4		4
	Deaths					4		4
Other	Accident	5	46	17	1	14	3	86
	Fatal accidents	1	1			4	2	8
	Deaths	1	1			4	2	8
ND	Accident	1				2		3
	Fatal accidents					1		1
	Deaths					1		1
Total	Accident	359	1 464	131	45	2 450	73	4 522
	Fatal accidents	122	320	9	9	1 171	10	1 641
	Deaths	156	366	10	14	1 338	13	1 897

PT : Public transport ; RH : Road haulage ; DG : Dangerous Goods ; ST : School Transport ; PC : Private Car

NB : classified according to transport type using this hierarchy : PT, RH, RH (DG), PC and other

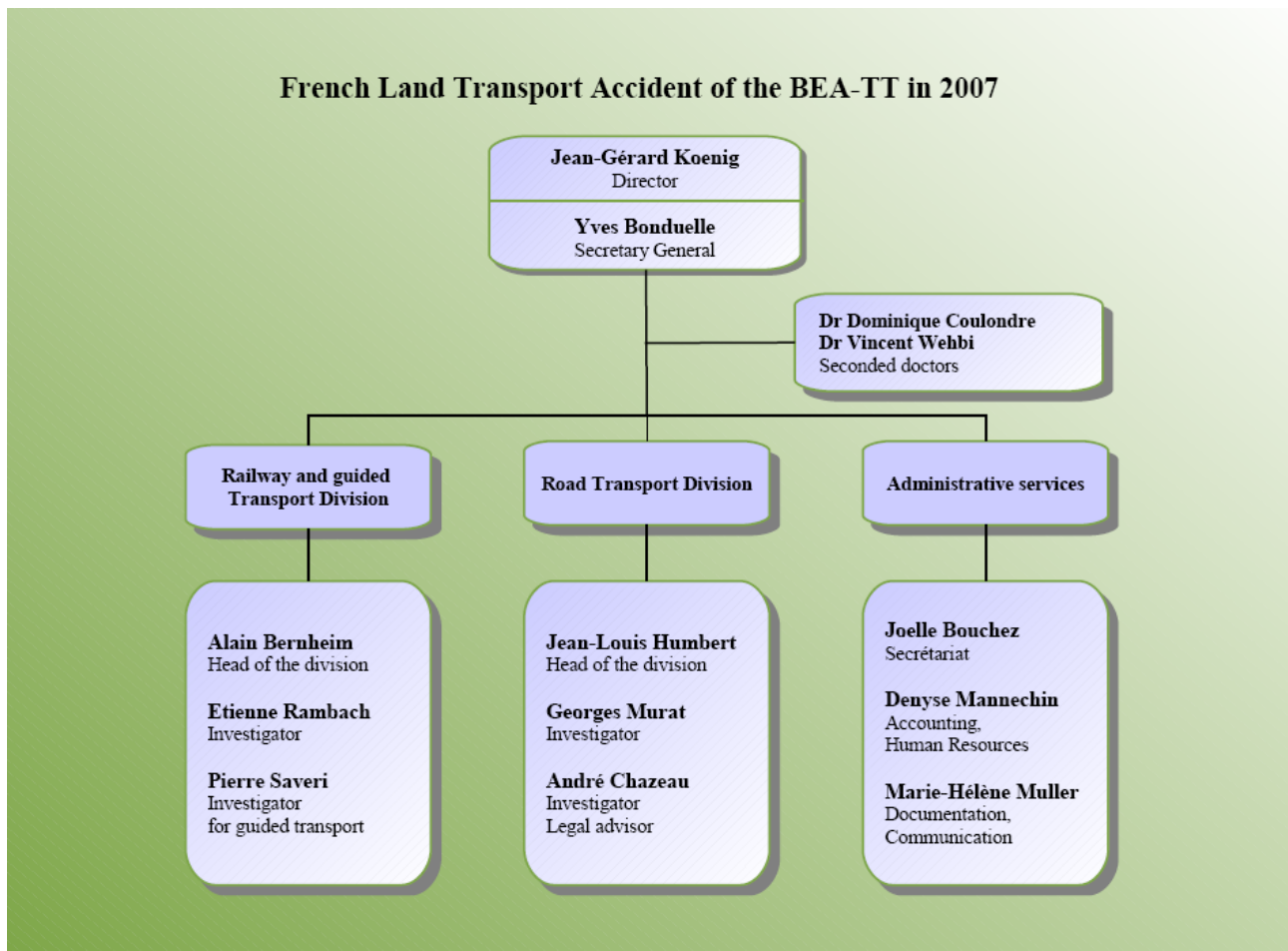
Special factors identified

Four factors in particular were sought in the reported accidents (driving against the traffic, crossing the central reservation, level crossing and fire).

Type of accident	Number	Type of transport				Total
		PT	RH	MD	PC	
Driving against the traffic	Accident	1	2		19	22
	Fatal accidents	1	1		15	17
	Deaths	3	2		20	25
Crossing of central reservation	Accident		11		1	12
	Fatal accidents		2			2
	Deaths		3			3
Level crossing	Accident	1	19		137	157
	Fatal accidents		1		88	89
	Deaths		1		92	93
Fires of all kinds	Accident	11	109	9	45	174
	Fatal accidents				4	4
	Deaths				4	4
Total	Accident	13	141	9	202	365
	Fatal accidents	1	4	0	107	112
	Deaths	3	6	0	116	125

PT : Public transport ; RH : Road haulage ; DG : Dangerous Goods ; PC : Private Car

Annex 8 : Organisation chart of the BEA-TT in 2007



Annex 9 : Legislation covering the BEA-TT

- Law 2002-3 of 3 January 2002 relating to the safety of transport infrastructure and systems, technical investigations and the underground storage of natural gases, hydrocarbons and chemicals².

Law amended by Law 2006-10 of 5 January 2006 and Law 2006-686 of 13 June 2006.

Technical investigations come under Title III of Law 2002-3.

- Decree 2004-85 of 26 January 2004 relating to technical investigations following maritime incidents and land transport accidents or incidents³.

Decree amended by Decree 2006-1276 of 19 October 2006.

² published in the Official Journal of 4 January 2002, page 215.

³ published in the Official Journal of 28 January 2004, page 1996.

LAW No 2002-3 of 3 January 2002 amended, relating to the safety of transport infrastructure and systems, to technical investigations and to the underground storage of natural gases, hydrocarbons and chemicals

NOR : EQUX0000153L
consolidated version at 14 June 2006
as modified by law n° 2006-10 of 5 January 2006
and law 2006-686 of 13 June 2006

Heading I : Safety of transport infrastructure and systems

Heading II : Safety relating to the underground storage of natural gases, hydrocarbons and chemicals

Heading III : Technical investigations

Article 14

I. – Following an event at sea, a road transport accident or incident, or an accident or incident affecting nuclear activities, as specified in Article L. 1333-1 of the Public Health Code, a technical investigation may be set up for the sole purpose of preventing future events, accidents and incidents. Without prejudice to the judicial investigation, if indeed one is conducted, the technical investigation entails collecting and analysing relevant information in order to determine the circumstances and real or possible causes of the event, accident or incident and to issue safety recommendations where applicable.

II. – Technical investigations into maritime events may involve civilian vessels flying another flag when the maritime event has occurred in domestic waters or in waters forming part of French territory. An investigation may also be conducted when the maritime event, wherever it occurred, has cost lives or inflicted serious injury on French nationals, or caused or threatened to cause serious harm to French territory, to the environment, to facilities or to structures falling under French jurisdiction. These investigations are conducted in accordance with the rules of international maritime law.

Technical investigations into land transport accidents or incidents may involve rail transport systems or other guided transport systems, as well as road transport or river transport, provided that the accident or incident has occurred on national territory.

The technical investigation of accidents or incidents relating to nuclear activities may concern all the activities mentioned in article L. 1333-1 of the public health code.

III. – Technical investigations are conducted by a specialised permanent body which may call on members of inspection or monitoring agencies or, if necessary, request that the Minister of Transport set up an investigation committee.

Within the scope of the investigation, the body or persons in charge of the investigation are totally independent and do not receive or seek instructions from any authority or body whose interests may conflict with their assignment.

A Council of State decree stipulates the conditions for commissioning persons in charge of investigations and for appointing investigation committee members.

This decree also specifies in which instances and according to which procedures foreign technical investigators may be authorised to take part in investigations on national territory or on board French vessels, when their presence is required for the proper conduct of the investigation.

The technical investigation of accidents or incidents relating to nuclear activities must be conducted by agents of the

Nuclear Safety Authority, which is a permanent body in the sense of this law. The authority may call upon members of inspection and control bodies, agents of the Institute of Radioprotection and Nuclear Safety, or French or foreign technical investigators.

Article 15

Technical investigators can immediately access the location of the event at sea, the road transport accident or incident, or the accident or incident affecting nuclear activities in order to carry out any inspections that may be useful. In the case of maritime events or accident, the public prosecutor as well as, if necessary, the administrator of maritime affairs in charge of the investigation mentioned in article 86 of the merchant navy disciplinary and penal code, are informed in advance of the details of their participation.

If necessary, technical investigators shall take all measures required to preserve evidence.

Article 16

Technical investigators are granted immediate access to the content of technical devices used to record data that may be useful for understanding the causes and circumstances surrounding the maritime event or accident or incident, and may utilise these devices subject to the following conditions :

1) When a judicial investigation or investigation is initiated, recording devices, previously seized by the judicial authorities in accordance with provisions stated in articles 97 and 63 of the penal procedure code are, at their request, placed at the disposal of the technical investigators who take a copy, under the supervision of a police officer, of the data contained in them.

2) If a legal investigation or investigation is not initiated, recording devices and their content may be removed by technical investigators in the presence of a police officer. In the case of maritime events or accident, the police officer's assistance is sought via the intermediary of the public prosecutor.

Article 17

If a judicial investigation or investigation has not been initiated, technical investigators may remove, for purposes of examination or analysis, any debris, fluids, parts, components, units or mechanisms that they think will help to determine the circumstances and causes of a maritime event or accident or incident, in the presence of a police officer. The police officer's assistance is sought via the intermediary of the public prosecutor.

Objects or documents held by technical investigators are returned as soon as it is no longer considered necessary to keep them for purposes of determining the circumstances and causes of the maritime event or accident or incident. The withholding and if necessary, the alteration or destruction, for purposes of the investigation, of objects or documents submitted for examination or analysis are not subject to any compensation.

Article 18

When a judicial investigation or investigation has been opened, technical investigators may, for purposes of examination or analysis and subject to the approval of the public

prosecutor or investigating magistrate, remove debris, fluids, parts, components, units or mechanisms that they think will help to determine the circumstances and causes of a maritime event or accident or incident.

Technical investigators may only submit seized debris, fluids, parts, components, units or mechanism for examination or analysis that might modify, impair or destroy them subject to the approval of the judicial authorities.

They are informed of expert analyses carried out by the competent judicial authorities. They are entitled to be present at these occasions and to use observations made during these operations for purposes of the technical investigation.

Article 19

Technical investigators may meet with any persons concerned and may obtain, irrespective of professional secrecy claims, any information or any documents relating to the circumstances, organisations and equipment associated with the maritime event or accident or incident, particularly with regard to the construction, certification, maintenance, use of equipment, transport preparations, operation and checking of the vehicle(s) involved.

Under the same terms, the technical investigators may also request any personal information or documents relating to the training or qualification of the individuals involved and, in the case of events at sea or road transport accidents or incidents, their aptitude to drive or control the vehicles involved. However, information of a medical nature may only be conveyed to doctors attached to the permanent body or designated to assist these investigators, subject to the conditions laid out by the Council of State decree.

Confidential information or documents forming part of the investigation or investigation may be conveyed to technical investigators with the approval of the public prosecutor. If such documents are placed under seal by the judicial authorities, a copy is then made for them.

Article 20

Doctors working for the permanent body or designated to assist the technical investigators may, upon request, be provided with the results of analyses performed or samples taken from the individuals driving and, if applicable, controlling the vehicles involved in the event at sea or the road transport accident or incident, or from the individuals involved in the nuclear activities in question, together with medico-legal reports on any casualties.

Article 21

When legal proceedings are initiated, a copy of the technical investigation report is sent to the public prosecutor.

Article 22

I. - Persons in charge of the investigation and experts whom they might consult are bound to professional secrecy subject to the conditions and penalties mentioned in article 226-13 of the penal code.

II. - By special dispensation from the clauses of article I, the person in charge of the permanent body is authorised to convey information resulting from technical investigations to the administrative authorities responsible for safety, to managers of companies responsible for the construction or maintenance of infrastructures, transportation facilities or their fittings, to the individuals or companies in charge of operating infrastructures or transport equipment, conducting nuclear activities, designing, producing or maintaining equipment used within the scope of nuclear activities, or training personnel, if the above-mentioned person con-

siders that such information could help to prevent a maritime event or accident or incident.

For the same purpose, the person in charge of the permanent body and, if applicable, persons chairing investigation committees, are authorised within the scope of their assignment, to publish technical information on observations made by investigators, proceedings of the technical investigation and if necessary, its provisional conclusions.

Article 23

In the course of an investigation, the permanent body may issue safety recommendations if it considers that immediate implementation of these recommendations could help to prevent a maritime event or accident or incident.

Upon completion of the technical investigation, the permanent body publishes a report in a form that is commensurate with the severity of the event. This report does not name specific individuals. It only includes information resulting from the investigation and which is required for determining the circumstances and causes of the accident or incident, and for understanding safety recommendations.

Prior to submitting the report, technical investigators may gather observations from the relevant authorities, companies and staff members, who are bound to keep the content of these exchanges confidential.

Article 24

I. - A penalty of EUR 15 000 will be imposed for any act that hinders the work carried out by technical investigators :

1) Either by objecting to them carrying out their assigned duties ;

2) Or by refusing to provide them with relevant materials, information and documents by concealing, impairing or disposing of these items.

II. - Under the conditions stipulated in article 121-2 of the penal code, natural persons may be declared criminally responsible for the offences defined under heading I.

Penalties imposed on natural persons are as follows :

1) Fines, in accordance with the provisions stipulated under article 131-38 of the penal code ;

2) Penalties mentioned in article 131-39 of the same code.

The ban mentioned under no. 2 of article 131-39 of the same code pertains to operations due to which or during which the offence was committed.

Article 25

Clauses coming under heading III of this statute apply, provided they concern maritime events in Mayotte, in overseas territories and in New Caledonia, without prejudice to the powers devolved to these communities.

Article 26

Article L. 412-2 has been inserted after article L. 412-1 of the Highway Code and reads as follows :

"Art. L. 412-2. - A six-month period of incarceration and a fine amounting to EUR 3 750 will be imposed on any driver of a motor vehicle who when in a tunnel, does not keep a sufficiently safe distance between two vehicles or a distance of 50 metres for vehicles weighing more than 3.5 tons, and who commits the same offence within a year of the date on which this sentence became final."

"Any driver found guilty of this offence also incurs the additional penalty of suspension of his/her driver's licence for a

period of three years or more. This suspension may be limited to driving outside the scope of professional activity.
 "Clamping and impounding of vehicles may be imposed by the conditions stipulated in articles L. 325-1 to L. 325-3.
 "This offence rightfully results in the withdrawal of half of the initial number of points on the driver's licence."

Article 27

Subject to the approval of the public prosecutor or investigating magistrate depending on the case, the following may be conveyed to authorities or bodies declared competent by the Minister of Justice after consulting with the relevant Minister(s) if necessary : information from ongoing legal proceedings that could be used to conduct research or scientific or technical investigations intended to notify the committee of accidents or to facilitate compensation of victims. Persons acting on behalf of these authorities or bodies are subsequently bound to professional secrecy with regard to this information, under the conditions and subject to the penalties stipulated in articles 226-13 and 226-14 of the penal code.

Article 28

Article L. 721-6 of the civil aviation code reads as follows :
 "Art. L. 721-6. - Doctors attached to the permanent body or designated to assist technical investigators are informed, upon request, of the results of examinations or tests performed on persons responsible for operating, communicating with and checking the aircraft(s) involved in the accident or incident, as well as the results of forensic expert reports pertaining to the victims."

Article 29

The last paragraph of article L. 711-3 of the civil aviation code is followed by a sentence which reads :
 "This decree also specifies in which instances and according to which procedures foreign technical investigators may be authorised to take part in investigations on national territory when their participation is required for the proper conduct of the investigation."
 The present statute shall be enforced as a law of the state.

Paris, 3 January 2002.

Jacques Chirac

By the President of the Republic :
 The Prime Minister,

Lionel Jospin

The Minister of Economic Affairs,

Finance and Industry,

Laurent Fabius

The Minister of Justice,

Marylise Lebranchu

The Minister of Internal Affairs,

Daniel Vaillant

The Minister of Foreign Affairs,

Hubert Védrine

The Minister of Infrastructure,

Transport and Housing,

Jean-Claude Gayssot

The Minister of Regional Development

and the Environment,

Yves Cochet

The Secretary of State for Overseas Territory,

Christian Paul

The Secretary of State for the Budget,

Florence Parly

The Secretary of State for Industry,

Christian Pierret

- Community Directives :

Council Directive 96/82 of 9 December 1996 on the control of major-accident hazards involving dangerous substances.

- Preparatory work :

National Assembly :

Bill No 2940

Report by Ms Odile Saugues on behalf of the Production Committee, No 3296, amended ;

Discussion and adoption, after declaration of urgency, on 10 October 2001.

Senate :

Bill adopted by the National Assembly, No 15 (2001-2002) ;

Report by Mr Jean-François Le Grand on behalf of the Economic Affairs Committee, No 29 (2001-2002) ;

Discussion and adoption on 24 October 2001.

National Assembly :

Bill, amended by the Senate, No 3357 ;

Report by Ms Odile Saugues, on behalf of the Joint Committee, No 3418 ;

Discussion and adoption on 29 November 2001.

Senate :

Report by Mr Jean-François Le Grand, on behalf of the Joint Committee, No 83 (2001-2002) ;

Discussion and adoption on 19 December 2001.

**Decree No 2004-85 of 26 January 2004, amended,
concerning technical investigations following maritime
incidents and land accidents or incidents.**

NOR :EQU0301770D
consolidated version at 20 October 2006

The Prime Minister,
On the basis of the report by the Minister for Public Works, Transport, Housing, Tourism and Maritime Matters,
Having regard to the 1973 international agreement on the prevention of pollution by ships, made in London on 2 November 1973, as modified by the 1978 protocol, published by decree number 83-874 of 27 September 1983, in particular article 12 ;
Having regard to the 1974 international agreement for the preservation of human life at sea, made in London on 1 November 1974, and published by decree number 80-369 of 14 May 1980 ;
Having regard to the 1978 international agreement on standards for seafaring personnel training, awarding certificates and technical watch, made in London on 7 July 1978, published by decree number 84-387 of 11 May 1984 ;
Having regard to the United Nations agreement on maritime law, signed at Montego Bay on 10 December 1982, published by decree number 96-774 of 30 August 1996, in particular article 94 ;
Having regard to Council Directive 1999/35/CE of 29 April 1999 concerning a system of compulsory inspections for the safe operation of scheduled Ro-Ro's and high speed passenger vessel services, in particular article 12 ;
Having regard to the European Parliament and Council Directive 2002/59/CE of 27 June 2002 concerning the introduction of a community shipping traffic monitoring and information system, abrogating Council Directive 93/75/CEE, in particular article 11 ;
Having regard to the code of penal procedure, in particular article 776 ;
Having regard to amended domestic transport orientation Act number 82-1153 of 30 December 1982, in particular article 9 ;
Having regard to Act number 2002-3 of 3 January 2002 concerning infrastructure safety and transport systems, technical investigations after maritime events, land or air transport accidents or incidents and underground storage of natural gas, hydrocarbons and chemicals, particularly part III ;
Having regard to the amended decree of 8 November 1926 reorganising the maritime registration general inspectorate ;
Having regard to amended decree number 84-810 of 30 August 1984 concerning the preservation of human life at sea, habitability on board vessels and pollution prevention ;
Having regard to amended decree number 85-659 of 2 July 1985 setting out the organisation of the central department of the Ministry for Town Planning, Housing and Transport ;
Having regard to decree number 86-1175 of 31 October 1986 concerning the structural engineering general council and the general inspectorate of public works and the environment ;
Having regard to decree number 97-464 of 9 May 1997 concerning the creation and organisation of departments with national jurisdiction ;
Having regard to the opinion of the central joint technical committee of the Ministry for Public Works, Transport, Housing and the Maritime Matters dated 10 July 2003 ;
Having regard to the opinion of the standing inter-ministerial road safety group of 22 July 2003 ;
Having consulted the Council of State (public works section),

Chapter 1 : Common provisions.

Article 1

The specialised standing bodies in charge of carrying out technical investigations concerning maritime events and land transport accidents or incidents, pursuant to article 14 of the above-mentioned Act of 3 January 2002, have national jurisdiction and are hereinafter referred to as "maritime event investigation bureau" (BEAmer) and "land transport accident investigation bureau" (BEA-TT).

Article 2

The authorities of the State and its public establishments, as well as those of local government, for the transport services and infrastructure they are responsible for, shall immediately inform the relevant investigation bureau of events, accidents or incidents seriously jeopardizing personal safety, particularly when they involve professional carriers.

To fulfil their missions, the investigation bureaux can call upon all the State services competent in their respective domains.

Article 3

The organisation of the investigation bureaux is stipulated by order of the minister in charge of maritime matters or by order of the minister in charge of transport, as the case may be.

Article 4

The director of each investigation bureau is appointed for a term of five years. He is assisted by a general secretary. Their appointment commissions them as technical investigators.

Article 5

The director of each investigation bureau directs its action. He has authority over the staff.

He is the delegated certifying officer of the bureau's receipts and expenditure.

He can delegate the civil servants and staff under his/her authority to sign any legal documents, decisions, contracts, agreements and riders, as well as any order forms and accounting vouchers.

Article 6

The director of the investigation bureau sets the scope of investigation and the methods of technical investigations. He designates the technical investigators in charge of organising and carrying them out.

Article 7

The director of each investigation bureau organises French participation in technical investigations carried out by a foreign state under the conditions set out in international agreements and European Union regulations and directives.

Article 8

Doctors assigned to investigation bureaux and doctors designated by directors to assist them, as well as doctors who are members of investigation commissions, are provided with any medical information or documents concerning the people mentioned in article 20 of the above-mentioned Act of 3 January 2002, on request. Based on this information,

they select such elements as will clarify the circumstances and causes of the event, accident or incident under investigation.

Article 9

Recipients of safety recommendations made as a result of a technical investigation shall, within ninety days of reception, unless another period is expressly stipulated in the recommendations, inform the investigation bureau director of the measures they intend to take and, where applicable, the time necessary to implement them. The director may make these recommendations public, with, where applicable, answers received from recipients. The same provisions are applicable to safety recommendations which might be made after examination of experience feedback and accidentology.

Article 10

Investigation reports drawn up under the terms of article 23 of the above-mentioned Act of 3 January 2002, as well as studies and statistics, shall be made available to the public by any suitable means.

Article 11

The director of each investigation bureau shall draw up an annual report on his/her activities which is made public.

Chapter 2 : Provisions concerning the maritime event investigation bureau and maritime event technical investigations

Article 12

The BEAmer reports to the maritime affairs general inspector. Its mission is to carry out technical investigations on maritime events. It also collects, analyses and disseminates information on practices and lessons of maritime event experience feedback. It carries out experience feedback and accidentology studies and research.

Article 13

The BEAmer director is appointed by order of the Minister in charge of Maritime Matters, on the proposal of the maritime affairs general inspector, from Category A State officers with at least twenty years' professional experience in the area of maritime activities and safety.

Article 14

The decision to open an investigation is taken by the Minister in charge of Maritime Matters, on his own initiative or on the proposal of the BEAmer director.

The director shall propose regulations to the Minister in charge of Maritime Matters on the preservation of evidence from the technical investigation as well as the use of on-board recorders.

Article 15

In addition to the director and general secretary, the BEAmer is made up of technical investigators, designated from among category A or equivalent State officers. Their appointment commissions them as technical investigators. The BEAmer also includes technical or administrative staff. These investigators and staff, depending on whether they

are employed permanently or on a contract basis, are assigned or hired on the proposal of the BEAmer director. For each investigation, the BEAmer director shall propose to the Minister either the use of the bureau's own resources or the formation of an investigation commission. In the latter case, at the director's proposal, the Minister shall designate the chairman of the commission chosen from among the BEAmer investigators, as well as the other members of the commission chosen according to their competencies, with the requisite guarantees of independence and impartiality. The members of the commission have the function of technical investigators. The BEAmer may call upon experts, including foreigners, who are subject to professional secrecy under the same terms as BEAmer officers.

The remuneration of technical investigators and experts who are not assigned to the BEAmer or who are not made available to it, is set by a joint order of the Minister in charge of the budget and the Minister in charge of maritime matters.

Article 16

Technical investigators other than those mentioned in the first paragraph of article 15, are commissioned by the Minister in charge of Maritime Matters at the BEAmer director's proposal, provided that they have no convictions or decisions recorded in the national criminal record form number 2. Their commission can be withdrawn from them in the interest of the bureau, by the same procedure.

Article 17

On the proposal of the BEAmer director or at the request of a foreign authority made through diplomatic channels, the Minister in charge of Maritime Matters may authorise technical investigators from equivalent foreign agencies to participate in investigations on the national territory or on board French vessels. They may, under the same terms, be associated with the investigation if the maritime event involves a foreign vessel or a foreign national.

The BEAmer director sets out how these technical investigators participate in or are associated with investigations or investigations.

Chapter 3 : Provisions concerning the land transport accident investigation bureau and technical investigations after land transport accidents or incidents.

Article 18

The BEA-TT reports to the vice-chairman of the civil engineering general council. Its mission is to carry out technical investigations on land transport accidents or incidents, which may involve rail transport systems or guided transport systems, road transport or river transport, whenever the accident or incident has occurred on the national territory. It also collects, analyses and disseminates information on practices and lessons from feedback on accidents or incidents for these methods of transport. It carries out experience feedback and accidentology studies and research.

Article 19

The BEA-TT director is appointed by order of the Minister in charge of Transport, on the proposal of the vice-chairman of the civil engineering general council, from Category

A State officials with at least twenty years' professional experience in areas related to transport and its infrastructure.

Article 20

Amended by Decree No 2006-1279 of 19 October 2006
Art.65 III (JORF 20 October 2006).

The Director of the BEA-TT may take the decision to carry out an investigation upon request or with the approval of the transport minister.

However, the Director of the BEA-TT must conduct an investigation whenever a serious rail accident occurs. Furthermore, the Director of the BEA-TT may decide to conduct an investigation after a serious incident has occurred which under different circumstances could have led to a serious rail accident.

The Director shall propose to the Minister for Transport the regulation concerning the preservation of the elements used in the technical investigation and the use of on-board recording devices for the purposes of technical investigations.

Article 21

In addition to the director and general secretary, the BEA-TT is made up of technical investigators, designated from among category A or equivalent State officers. Their appointment commissions them as technical investigators. The BEA-TT also includes technical or administrative staff. These investigators and staff, depending on whether they are employed permanently or on a contract basis, are assigned or hired on the proposal of the BEA-TT director.

For each investigation, the BEA-TT director shall propose to the Minister either the use of the bureau's own resources and, where necessary non-permanent technical investigators recruited under the terms set out in article 22 of this decree, or the formation of an investigation commission. In the latter case, at the director's proposal, the Minister shall designate the chairman of the commission chosen from among the BEA-TT investigators, as well as the other members of the commission chosen according to their competencies, with the requisite guarantees of independence and impartiality. The members of the commission have the function of technical investigators.

The BEA-TT may call upon experts, including foreigners, who are subject to professional secrecy under the same terms as BEA-TT officers.

The remuneration of technical investigators and experts who are not assigned to the BEA-TT or who are not made available to it, is set by a joint order of the Minister in charge of the budget and the Minister in charge of transport.

Article 22

The BEA-TT director may also call upon technical investigators made available or temporarily recruited. They are chosen from among the members of inspection and verification bodies, working or retired, as well as from among the working or retired staff of transport or infrastructure management firms.

Article 23

Amended by Decree No 2006-1279 of 19 October 2006
Art.65 III (JORF 20 October 2006).

Technical investigators other than those mentioned in the first paragraph of article 21, are commissioned by the Director of BEA-TT, provided that they have no convictions or decisions recorded in the national criminal record form number 2.

Their commission can be withdrawn from them in the interest of the bureau, by the same procedure.

Article 24

On the proposal of the BEA-TT director, the Minister in charge of transport may authorise technical investigators from equivalent foreign agencies to participate in investigations on an accident or incident which has occurred on the national territory either when a vehicle registered in their country of origin is involved, or when the operator or manufacturer of the means or system of transport in question is established in their country of origin.

Chapter 4 : final provisions.

Article 25

The provisions of articles 1 to 17 of this decree are applicable, insofar as they concern maritime events, in Mayotte, the Wallis and Futuna islands, French Polynesia, New Caledonia and French Austral and Antarctic territories, without prejudice to the jurisdiction devolved to these authorities.

Article 26

Decree number 81-63 of 20 January 1981 concerning commissions for technical and administrative investigation of ship accidents and incidents is abrogated.

Article 27

The Minister of the interior, homeland security and local liberties, the justice Minister, the foreign affairs Minister, the Minister for defence, the Minister for the economy, finance and industry, the Minister for public works, transport, housing, tourism and maritime matters, the Minister for agriculture, food, fishing and rural affairs, the Minister for public services, State reform and national planning and development, the overseas Minister, the Minister delegated to the budget and budgetary reform, the secretary of state for transport and maritime matters and the secretary of state for State reform are, each in the area concerning them, in charge of executing this decree, which will be published in the Official Bulletin of the French Republic.

By the Prime Minister :

Jean-Pierre Raffarin

The Minister of Infrastructure, Transport,

Housing, Tourism and Maritime Affairs,

Gilles de Robien

The Minister of Internal Affairs,

National Security and Local Liberties,

Nicolas Sarkozy

The Minister of Justice,

Dominique Perben

The Minister of Foreign Affairs,

Dominique de Villepin

The Minister of Defence,

Michèle Alliot-Marie

The Minister of Economic Affairs,

Finance and Industry,

Francis Mer

The Minister of Agriculture, Food,
Fisheries and Rural Affairs,
Hervé Gaymard
The Minister of the Civil Service,
Reform of the State
and Regional Development,
Jean-Paul Delevoye
The Minister of the Overseas Territories,
Brigitte Girardin

The Minister responsible for the budget
and budget reform,
Alain Lambert
The Secretary of State for Transport
and Maritime Affairs,
Dominique Bussereau
The Secretary of State for the Reform of the State,
Henri Plagnol

BEA-TT

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