

BEA-TT

Land Transport Accident Investigation Bureau

ACTIVITY REPORT

2008

Ressources, territoires, habitats et logement
Énergie et climat Développement durable
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**French Departmental Council for the
Environment and Sustainable Development**

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**French Land Transport Accident
Investigation Bureau**

ACTIVITY REPORT 2008

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Glossary

- **CMVOA:** French Ministerial Unit for Operational Monitoring and Alerts
- **CGEDD:** French Departmental Council for the Environment and Sustainable Development
- **CNO:** French National Operations Center
- **COGIC:** French Operational Center 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
- **SDIS:** French Departmental Fire and Rescue Services
- **TDS:** Transport of Dangerous Substances
- **RH:** Road Haulage
- **LV:** Light Vehicle

A review of 2008

2008 was marked by another rise in the BEA-TT's activities, namely conducting technical investigations into accidents and incidents.

Therefore, 15 investigation reports were published in 2008; this result has been on the rise continuously since the creation of the BEA-TT in 2004. These reports are the conclusion of 3 particularly complex investigations illustrating the variety of the forms of transport and types of accident concerned :

- the fire in the Frejus tunnel in June 2005 for which the complementary report of 2008, following the main report published in 2006, sets out the results of aeraulic simulations carried out using digital models;
- the derailment of a works train at Culoz in July 2006, which made a bridge on the Rhone permanently unusable;
- the collision of a tram with a car at Saint-Herblain in June 2007, on a complex roundabout.

The reports produced were published on the BEA-TT website, on which 55 reports (including 5 study reports) were available for consultation by the end of 2008. In 2008, the site was visited by 22,507 Internet users as opposed to 13,508 in 2007; 20% of the connections are from abroad, from a hundred different countries.

In 2008, 18 new investigations were started on accidents, including some which impacted public opinion, such as a skier falling out of a ski lift at Chamonix in March 2008, the collision between a TER (regional train) and a car on the level crossing of Allinges in Haute-Savoie where 7 young people lost their lives in June 2008, or the accident involving boats on the Seine in Paris in September 2008.

The number of investigations undertaken in 2008 was up slightly in relation to 2007.

2008 also saw the development of the international aspects of the BEA-TT's activities. Indeed, it was found that of the most serious accidents investigated, more than half concern operators outside France.

In such cases the BEA-TT tries to work in cooperation with its foreign counterparts where they exist, which is only the case in the rail sector where European directive 2004/49 on railway safety made such an investigation body mandatory.

Therefore in 2008, cooperation continued with the AET (Administration of Technical Investigations) of Luxembourg for the investigation into the railway collision of Zoufftgen in October 2006 and with the British RAIB (Rail Accident Investigation Branch) for the investigation into the fire on a freight shuttle in the Channel Tunnel in September 2008, according to a cooperation protocol prepared in 2006.

Furthermore, the BEA-TT takes part regularly in meetings of the network of the railway investigation bodies led by the European Railway Agency (ERA).

It was also called in to intervene in Bulgaria, at the request of the Bulgarian Minister of Transport, in a consultancy role on the organisation of the technical investigation into the fire on the Sofia – Kardam train which killed 9 people in February 2008. It has also worked in Egypt, as part of the Franco-Egyptian railway joint venture.

The institutional and regulatory framework of the BEA-TT did not change significantly in 2008. In 2009 in particular, monitoring the implementation of the BEA-TT recommendations still remains to be completed. Monitoring is now in place in the rail sector, where the EPSF has assumed responsibility without waiting for the regulation transposing European directive 2004/49 to railway safety, which still has to be enacted.

For other forms of land transport, monitoring should be assumed by the central departments concerned of the Ministry (mainly the DGITM) that play the role of safety authority.

Finally, we must mention the men and women who ensure that the BEA-TT fulfils its missions.

In a context of continued growth in its activities, in 2008 the authorised workforce of the BEA-TT remained stable with 12 employees. At the start of 2009, all these posts had been filled and the BEA-TT now has 2 senior managers, 7 permanent investigators and 3 clerks.

An additional investigator was authorised in 2009; the reinforcement of the workforce should continue, given the high work load (24 investigations underway at the beginning of 2009), if we are to meet the target of a normal investigation period of one year without having to excessively slow down the rate of starting new investigations.

2008 also marked the start of the replacement of the first generation of investigators of the BEA-TT, who are approaching retirement age. In particular, our general secretary Yves Bonduelle was replaced by René Barlet after contributing his vast experience in the field of transport to the creation and development of the BEA-TT for 6 years.

Apart from its permanent investigators, in 2008 the BEA-TT also called in a dozen investigators commissioned for the requirements of an investigation, most were recruited from within the CGEDD, other investigation bodies (BEAmer) or specialised technical departments.

We must also underline that the BEA-TT relies heavily on the contributions of large numbers of outside partners, who provide information essential to investigations, watch and experience feedback: namely, investigators and legal authorities, central or decentralised state services, local authorities, managers of infrastructures and transport companies.

Once again, I would like to offer all those who work for the prevention of accidents and transport safety my sincerest and warmest thanks.

A handwritten signature in black ink, appearing to be 'JG KOENIG', written in a cursive style.

Jean-Gérard KOENIG

Director of the 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 learned 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 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 with 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, in which 39 people lost their lives on 24 March 1999, 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 (as of 2009 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 goods 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 <http://www.bea-tt.developpement-durable.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.

On the third point, the transposition is still in progress. Nevertheless, the EPSF assumed responsibility for these activities 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,
- 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.

On the 1st January 2009, the authorised workforce of the BEA-TT was 13 employees: 2 senior managers, 7 permanent investigators, three clerks and 1 vacancy for an investigator. Two doctors from the General Transport Labour Inspectorate were also seconded to it to deal with medical aspects.

In addition, 12 commissioned non-permanent investigators also contributed to the work of the BEA-TT in 2008.

Its operating budget totalled approximately €374,000 in 2008.

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 provincial urban transport systems.

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 Ecology, Energy, Sustainable Development and the Sea (report of the CMVOA and press review).

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 en 2008 : overview

2.1 - Investigations conducted in 2008

Fifteen investigations were completed in 2008 with the publication of the report and of the recommendations of the BEA-TT, namely three more than in 2007. These accidents led to 16 fatalities, the majority of which occurred as the result of railway accidents.

Ten of these investigations concerned rail or guided transports, including three collisions on level crossings. Five others centred on road accidents. They are outlined in the chapters below.

2.2 - Causal factors identified

The human factor was the immediate cause of accident in twelve cases (lack of vigilance from inattention to drowsiness, excess speed, failure to respect the regulations). It played an aggravating role in five cases, with seatbelts not worn when the vehicle had been fitted with them, poor understanding of road signs, lack of control, failure to provide information or incorrect occupation of the vehicle.

Infrastructure was only decisive in one case (state of the road). It was, however, an aggravating factor in at least three cases (inappropriate or perfectible equipment, obstacles).

Vehicle-related factors were the main cause of one accident (dynamic behaviour was inappropriate) and were aggravating factors in four cases: ergonomics of the cab, lack of track to train radio and lack of safety belts.

Organisational or regulatory factors were also highlighted, particularly in three cases in which they contributed to the accident (organisation of work, traceability of operations carried out and organisation of emergency services).

2.3 - Recommendations made

Following these 15 investigations, 42 recommendations (32 for railways, 10 for roads) were made. As some of them were sent with the same wording to several recipients, this corresponds to 57 recommendations (45 for railways, 12 for road transport).

The recipients

- The 57 recommendations put forward can be broken down as follows:
- 13 to infrastructure managers or road operating companies,
- 10 to regulatory or supervisory authorities (central government departments),
- 5 to the organising authorities of road transport or main road contracting authorities,

- 25 to transport companies,
- 4 to other recipients (emergency services, associations of transporters or users).

2.4 - Action 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.

Of the 57 recommendations put forward to the recipients:

- in 47 cases, the recommendation was accepted and its implementation confirmed, occasionally subject to a deadline or financing,
- in 5 cases, the recommendation was not accepted or met with strong reservations, and
- in 5 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, the directive 2004/49 on railway safety assigned this role to the national safety authority (EPSF in France) which informs the BEA-TT.

For other forms of land transport, the BEA-TT examines, together with the central government departments, how such follow-up could be undertaken.

2.5 - Investigations undertaken in 2008

Eighteen investigations were opened in 2008, as listed in appendix 3, as compared to fifteen in 2007. The number of cases taken on remains stable despite the difficulties due to the departure and replacement of part of the members of the BEA-TT.

These eighteen investigations concerned:

- for the **railway sector**, 7 events including 1 brake failure, 2 fires, 3 collisions on level crossings and one passenger accident
- for **roads**, 6 accidents, 4 of which involved coaches or buses (3 left the road, 1 fire and 1 collision), 1 pileup and 1 collision after crossing the central reservation
- for **waterways**, 4 accidents including 2 involving a passenger boat, 1 beaching, 1 collision with a railway bridge.
- for **ski lifts**: 1 accident: a person fell out of a ski lift.

Since 2002 (start of the creation process of the BEA-TT) 89 investigations were undertaken (see appendix 3). They can be categorised into the various modes of land transport as follows :

Rail transport : 32 (including six accidents on level crossings)

Guided transport : 4

Ski lifts : 2

Road transport : 27 (excluding accidents on level crossings)

Waterways : 14

It may be noted that the two main areas are rail and road accidents, waterways are concerned with a not insignificant part of passenger boats. 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 2008

Ten investigation reports were circulated in 2008 in the rail and guided transport sector: six reports for railway accidents, three reports for accidents on level crossing (responsibility of the road division) and one report concerning an accident involving a tram. These investigations concerned the following accidents:

| Date | Accident | Fatalities | Mode ¹ |
|------------|---|------------|-------------------|
| 24.07.2006 | Derailment of a works train at Culoz | 0 | RY |
| 27.02.2007 | Derailment of a works vehicle in the station of Carcassonne | 0 | RY |
| 01.03.2007 | Collision with a female passenger in the station of Villeneuve-Triage | 1 | RY |
| 04.06.2007 | Collision between a tram and a car at Saint-Herblain | 1 | GT |
| 13.08.2007 | Violent buffing of a train in the Versailles Rive Gauche station | 0 | RY |
| 09.11.2007 | Derailment of a passenger train at Pertuis | 0 | RY |
| 21.11.2007 | Railway collision (Bastia-Ajaccio line) near Barchetta | 0 | RY |
| 03.12.2007 | Collision between a TER and a car on a LC at Cadaujac | 3 | LC |
| 25.01.2008 | Collision between a train and a car on a LC at Neufchâteau | 4 | LC |
| 26.02.2008 | Works employee hit by a train on a LC at Bayard | 1 | LC |

* presence of 4 seriously injured people

Seven of these investigations concern serious accidents as defined by directive 2004/49/CE on railway safety:

- the derailment at Culoz and the railway collision at Barchetta (cost in excess of € 1M)
- the three accidents on the level crossings of Cadaujac, Neufchâteau and Bayard (respectively: 3, 4 and 1 fatalities);
- the collision with a female passenger in the station of Villeneuve-Triage and the collision of Saint-Herblain between a tram and a car (1 fatality in each accident).

3.2 - Recommendations made

Following these five investigations, 32 recommendations were made. Some of them were sent with the same wording to several recipients, corresponding to 45 recommendations sent.

1 RY = Railways; LC = Level Crossing; GT = Guided Transport

Type of measures recommended

The 32 separate recommendations can be broken down by type of measure as follows (account should be taken of their importance, which varies greatly):

- 7 concern the outfitting of vehicles,
- 3 concern regulations governing rail operations,
- 7 concern the development of rail infrastructures,
- 2 concern the development of road infrastructures
- 2 concern experience feedback,
- 9 concern staff training and the organisation of the work,
- 1 concerns the organisation of inspections,
- 1 concerns information for the public.

The recipients

The 45 recommendations put forward can be broken down as follows:

- 11 to the rail infrastructure manager,
- 24 to rail companies and operators of transport networks,
- 8 to the regulatory or supervisory authorities (central and decentralised government departments), and
- 2 to a transport authority.

3.3 - Action taken or planned by the recipients

The table below shows the action taken or planned by the recipients of the recommendations following the eight investigations for which recommendations were made.

| Investigation | Recommendation | | | |
|------------------------|----------------|----------|--------------|------------|
| | Number | Accepted | Not accepted | Unanswered |
| Culoz | 6 | 6 | | |
| Carcassonne | 3 | 3 | | |
| Villeneuve-Triage | 4 | 4 | | |
| Saint-Herblain | 13 | 12 | 1 | |
| Versailles Rive Gauche | 3 | 2 | 1 | |
| Pertuis | 5 | 4 | 1 | |
| Barchetta | 8 | 8 | | |
| Bayard | 3 | 1 | 2 | |
| Total | 45 | 40 | 5 | |

Five recommendations were not accepted or were subject to serious reserves by their recipients in their responses to the BEA-TT (these responses are published with the report on the BEA-TT website).

In these five cases, the recipients mention the inefficiency or high cost of the measures proposed and, in four cases, refer a future decision to additional inspections or studies.

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 should be supplemented by the monitoring of the effective implementation of the BEA-TT recommendations by the EPSF, which began in 2008. Appendix 4 contains the report on the monitoring of incidents investigated since 2004 (first toll given in the 2008 activity report).

3.4 - Global summary of the investigations reports

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

4 - The investigations conducted : road transport

4.1 - Investigations conducted in 2008

Five investigation reports were circulated in 2008 in the road transport sector. These investigations concerned the following accidents :

| Date | Accident | Fatalities |
|------------|---|------------|
| 04.06.2005 | HGV fire in the Frejus tunnel | 2 |
| 12.03.2007 | Accident involving a school bus on the RD52 at Angliers | 1 |
| 08.08.2007 | Accident involving a coach on the A16 at Ghyvelde | 3 |
| 14.08.2007 | Accident involving a bus on RATP line PC2 in Paris 19 | 0 |
| 09.01.2008 | Accident involving a coach on the RD765 at Esquibien | 0 |

4.2 - Recommendations made

Following these five investigations, 10 separate recommendations were made. Some of them were sent with the same wording to several recipients, corresponding to 12 recommendations sent.

Type of measures recommended

The 10 separate recommendations can be broken down by type of measure as follows:

- 3 concern the control of school transport contracts by the Transport Organising Authorities
- 2 concern the awareness of children and their parents of the rules to be respected in the school transport (wearing safety belts in particular)
- 1 concerns the organisation of infrastructure operations,
- 2 concern the training of professional drivers,
- 1 concerns the cross border coordination of emergency services
- 1 concerns the recording of "on-board" data in the public transport sector

The recipients

The 12 recommendations put forward can be broken down by category of recipient as follows:

- 2 to infrastructure managers or operators,
- 3 to the transport organising authorities,

- 2 to the regulatory authorities (central government departments),
- 1 to a public transport company,
- 4 to other recipients (associations of transporters or users, services responsible for the organisation of the emergency services).

4.3 - Action 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 |
| Fréjus | 3 | 2 | | 1 |
| Angliers | 4 | 2 | | 2 |
| Ghyvelde | 2 | 1 | | 1 |
| PC2 Paris | 2 | 1 | | 1 |
| Esquibien | 1 | 1 | | |
| Total | 12 | 7 | | 5 |

No recommendations were rejected by the recipients; however, for five of them, no response was received.

The monitoring of the implementation of these recommendations, which should be set up, will tell us whether these unanswered recommendations are accepted or not.

4.4 - Global summary of the investigations reports

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

APPENDICES

- Appendix 1** : Rail and guided transport : global summary of the investigations reports
- Appendix 2** : Road transport : global summary of the investigations reports
- Appendix 3** : Investigations into accidents and incidents since 2002
- Appendix 4** : Follow-up to the implementation of the BEA-TT recommendations in the railway sector
- Appendix 5** : BEA-TT organisation chart as at 1st January 2009
- Appendix 6** : Legislation governing the BEA-TT

Appendix 1: Rail and guided transport: global summary of the investigation reports

- derailment of a works train, on the 24 June 2006 at Culoz
- derailment of a works vehicle, on the 27 February 2007 at Carcassonne
- collision with a female passenger, on the 1st March 2007 at Villeneuve-Triage
- collision between a tram and a car, on the 4 June 2007 at Saint-Herblain
- violent buffing of a train, on the 13 August 2007 at Versailles Rive Gauche
- derailment of a passenger train, on the 9 November 2007 at Pertuis
- collision of two trains, on the 21 November 2007 at Barchetta
- collision between a TER and a car, on the 3 December 2007 on a level crossing at Cadaujac
- collision between a train and a car, on the 25 January 2008 on a level crossing at Neufchâteau
- works employee hit, on the 26 February 2008 on a level crossing at Bayard

**Derailment of a works train,
on the 24 July 2006
at Culoz**



On Monday 24 July 2006, at about 6:30 p.m., the works train 818 729 was running from the station at Culoz (its base) towards the track replacement worksite of Moirans-Grenoble. During the acceleration of the train, as it was passing through the passenger station at Culoz, the "working group" was derailed. This "working group" is the unit that removes old sleepers, lays new sleepers and levels the ballast, which is supported on the track by a deballasting axle.

The deballasting axle, after the first derailment at pk 101.747 of the Culoz - Aix-les-Bains line, jumped several times on either side of the track 1, whilst the working group broke up, after having lost the locking pin on the right hand side of the support arm of the deballasting axle. Although the derailment was observed by railway employees, the driver of the train could not be alerted, since this train was not equipped with a track to train radio. The working group collided with the lower and side clearances. At pk 103.222, at the origin of the bridge over the Rhone, whilst the front of the works train was well engaged, the out of clearance mass of the working group hit the deck of the first span of the bridge; this span left its supports and collapsed. A certain number of parts of train P21/95 fell into the Rhone, including the deballasting axle.

One person was slightly injured, belonging to a contractor working close to the construction site of a new bridge to replace the present one.

The consequences were serious: the deck of the bridge of the track 1 was destroyed, the active part of specialised train P21/95 was destroyed. Traffic was disrupted for two days on both lines 1 and 2 between Culoz and Aix-les-Bains. Traffic was then restored on line 2, while that on line 1 was only restored one year and 24 days later when the new bridge was commissioned.

Neither the traction conditions nor the railway infrastructure, which did not require immediate corrective measures, were the cause.

The immediate direct cause of the derailment was the weight transfer from the left wheel of the deballasting axle in presence of a left transition curve leaving a bend, which was probably the result of the combination of three factors:

- a probable asymmetry of the distribution of weights of the working group of the train;*
- greater torsional stiffness of the unit (working group and suspension of the deballasting axle) than originally;*
- alternating weight transfers between the left and right hand wheels of the deballasting axle due to transversal shake of link supporting the working group.*

A fourth factor was discarded (influence of an abnormal configuration of the lifting system of the working group) since we were not able to perform all the tests involving it.

The conditions for the certification of train P21/95, which included a complex suspended element, were insufficient to provide sufficient details as to the dynamic behaviour of the train.

The consequences of the derailment were aggravated by the absence of a track to train radio link.

A insufficient security as to the preparation of the routing of the train was revealed by the loss of the locking pin of the right arm working group (probably due to the insufficient engagement of the pin, absence of secure locking of the pin by split pin); furthermore, it would appear that it is necessary to reinforce the traceability of exchanges between the operators responsible for the movement of the works train.

The review of the conditions of this accident resulted in recommendations concerning the inspection of works trains before line running (coherence of the checks and role of operators).

In so far as track-to-train communications are concerned, a recommendation was made in favour of equipping such works trains with a track to train radio link.

Finally, we recommended, for future complex track maintenance vehicles, checking their ability to negotiate curve transitions and apply the complete protocol for dynamic testing on line for vehicles using new technologies.

**Derailment of an EMW
(track maintenance machine)**

on 27 February 2007

in the station of Carcassonne



On Tuesday 27 February 2007, at approx. 12:40 p.m., an SNCF track maintenance machine (track maintenance machine type EMV 97) was derailed on a derailing stop in the station of Carcassonne (Aude) during shunting on a service track. Once it derailed, it fouled track 2.

When informed by the driver of the EMV, the Traffic controller at Carcassonne closed the signals protecting the track 2. No accident occurred.

The immediate cause of this incident was the driver of the EMV running past an absolute stop signal.

Two other causes played a part in the incident:

- *the protection gear (derailing stop) is not appropriate for this type of train (fitted with a guard-iron), which resulted in the fouling of the adjoining track,*
- *the Traffic controller did not remind the driver of the EMV of the presence of an intermediate stop signal (Cv No. 120) between the origin of the movement and its destination, which could have contributed to accidentally running past the signal.*

The recommendations made following the technical investigation concern the organisation of shunting and the derailing stops used by the infrastructure manager:

- *remind traffic controllers of the importance of fully informing employees involved in movements in the station and, especially, employees less familiar with the installations of the station,*
- *examining the installation of a standard derailing stop on track 4 between points 120b and 118a.*

**Collision with a female passenger
on the 1st Marc 2007
in the station of Villeneuve-Triage**



On 1 March 2007, at 6:45 a.m. in the station of Villeneuve-Triage, on SNCF RER line D, a female passenger climbed down on to track 2bis alongside platform 1 for reasons unknown at the same time as train 126520 travelling towards Paris at 108 kph entered the station. She was hit by the train despite emergency braking by the driver and died immediately.

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

- *remind users that if it is necessary to cross the tracks, they must not climb down on to the tracks but take the underground passages or bridges intended for this purpose;*
- *review the layout of signs, the maintenance and cleanliness of signs and warning devices.*

Collision between a tram and a car

on 4 June 2007

at Saint-Herblain



On 4 June 2007, on the Nantes tramline No. 1 at Saint-Herblain, a collision between a tram and a private car caused the death of the female passenger of the car.

The accident occurred at about 12:15 p.m.

A tram, which had just left the "Schoelcher" station, in Saint-Herblain, near Nantes, collided with a car, drove on to the Vasco de Gama roundabout. The motorist, who was looking for his way, drove on to the roundabout without noticing the tram or the signals protecting its passage.

The tram collided with the right hand (passenger) side of the car and pushed it for some forty metres, before violently colliding with an overhead contact line mast against which the car was crushed.

The direct cause of the accident lies in the driver of the car's poor observation and failure to respect road signs.

The delay in applying the emergency brakes of the tram was a factor that aggravated the accident and was decisive in the violence of the second impact against the mast.

The layout of the roundabout, in order to integrate the tram platform, does not guarantee optimum safety:

- *the presence of a fixed obstacle (the mast, supporting the overhead contact line) a few dozen centimetres of the "obstacle limit clearance" and in the immediate vicinity of the edge of the roundabout was an aggravating factor;*
- *the absence of pre-signalling on entering the roundabout could have affected the driver's perception of the urban environment and its constraints.*

Other factors, associated with the design of the rolling stock (old, non-optimised design of the front of the tram in the event of an impact, absence of a powerful audible warning) or the understanding of the signals (ambiguity of the flashing red light which was clearly not interpreted correctly), may also have contributed to the accident.

Finally, it would have been easier to analyse the accident had a more advanced video and recording system been on board the tram.

During this investigation, it appeared that the safety of the roundabouts crossed by trams raises complex, specific issues which must be handled with care. In particular,

their legibility is an important safety factor, particularly for visiting road users or those not used to the location.

The recommendations therefore call for the following:

- *the implementation, on the Nantes tramway, of a programme to modify the location of overhead contact line support masts on the roundabouts giving the most cause for concern;*
- *the completion of the programme to improve the safety of roundabouts in Nantes as part of the long term development plan adopted by "Nantes Métropole";*
- *better informing users as to the mandatory nature of a flashing red light;*
- *pursuing the experimentation and optimisation of blocking signals and those at the entrance of roundabouts to promote those with the best guarantees for safety and the optimisation of traffic;*
- *studying developments to Nantes rolling stock, likely to improve safety (audible warning in particular);*
- *improving recording systems by fitting trams with video cameras directed towards the front, covering the space to be crossed, and by increasing the parametric content of recorders, in accordance with the list recommended by the STRMTG.*

**Violent buffing of a train,
on 13 August 2007
in the Versailles Rive Gauche
station**



On Monday 13 August 2007 at 10:27 a.m., Transilien train No. 141 280 running between Paris-Invalides and Versailles Rive Gauche collided with the buffers of track 3 in the Versailles Rive Gauche station at a speed of 6 kph.

There were no injuries, whether among the passengers, the driver or other SNCF employees.

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

Whilst the driver was decelerating his train to enter the Versailles Rive Gauche station, his vigilance was affected by drowsiness which caused him to lose control of the train. He could not prevent the train from hitting the buffers at the end of the line.

The direct cause of this accident would appear to be the driver's irrepressible drowsiness during the buffing of the train, which suggests lack of sleep the night before the day of the accident. The cause of this lack of sleep has not been established with certainty.

The analysis of this event led to reiterating two recommendations already made in a previous report from the BEA-TT, concerning rolling stock (speed of release threshold of the doors of Z2N train sets) and the infrastructure (study of a damping system for trains which collide with buffers at the end of the track).

**Derailment of a passenger train,
on 9 November 2007
at Pertuis**



On Friday 9 November 2007, on the single-track line between Grenoble and Marseille, the train TER 17 417 made up of a diesel locomotive and four coaches was travelling from Briançon to Aix-en-Provence. At 8:11 p.m. at mileage point 365,848, in bend with a radius of 490 metres at a speed of 105 kph, between the stations of Manosque and Meyrargues, all four axles of the locomotive were derailed over a break in the outer rail. The front bogies of the first two coaches were also derailed, the other axles remained on the rails.

The vehicles remained in the vertical position and did not tip over below the railway line. There were no injuries amongst the passengers (approximately 150), the driver or the guard.

The track was damaged over a distance of 300 metres by the destruction of 500 twin block concrete sleepers; the running gear and under-body equipment of the rolling stock were also damaged. The amount of the damage to the railway infrastructure was more than € 300,000 and the operation of the line was interrupted for three days.

The immediate direct cause was the undetected failure of a thermit rail weld in an area of continuous welded rails (CWR).

The following causal factors explain why this failure was not detected:

- *this line is not fitted with track circuits.*
- *cracks under the rail flange are virtually impossible to detect by the ultrasonic rail testing vehicles.*
- *the detection of a rail failure by drivers is difficult.*

In this case, several drivers had driven over this break without noticing anything. The track environment in this area, due to the frequent alternation of sections of CWR track and normal rails, does not give drivers a stable aural reference.

Three recommendations were made in the report:

Since several failures of thermit welds over a limited period of time (3.5 years and 4.5 years), in limited area (5.4 km and 1.7 km) in two areas of continuous welded rails on the Aix-en-Provence/Manosque line, additional investigations should be conducted to map

the stability of other welds on these sections of CWR, in the top stretch of tracks in bends.

Other lines of the national rail network with the same characteristics shall be inspected on the basis of experience feedback on the failures of rails and a weld health report shall be drawn up (lines without track circuit, areas of continuous welded rails on concrete sleepers, section in curves and the top stretch of rails).

Drivers' failure to detect the break which appeared after the failure of the weld is worrisome, since it is probable that more than one driver drove over this important failure. To improve drivers' ability to detect such failures it would be useful to test a catalogue of sounds representing various track faults for various types of traction units, with drivers being trained on driving simulators.

**Collision of two trains,
on 21 November 2007
near Barchetta**



On Wednesday 21 November 2007, at about 9:50 a.m., two trains from Bastia (Haute-Corse) and Corte (Haute-Corse) were involved in a head-on collision between the stations of Ponte-Nuovo and Casamozza.

Following this accident, there were 30 injuries, 4 of which were serious.

The investigation revealed that the direct and immediate cause of the accident was the failure by one of the drivers of the two trains, to respect the compulsory stop in the open track station at Barchetta.

This was not compensated for by the guard.

Two factors may have contributed to the failure to respect the stop signal at Barchetta:

- *The conversation between the driver and the guard on arrival at Barchetta,*
- *the relatively invisible position on the driver's desk of the red stopping order.*

Two organisational factors were also involved in this accident:

- *the absence of monitoring of the stopping order issued, which makes it impossible to check whether the driver respected them, in retrospect,*
- *the absence of a document laying down the conditions for keeping a train log, requiring guards to keep one properly.*

Furthermore, the internal layout of the vehicles may have caused or aggravated injuries to passengers.

Eight recommendations were made by the BEA-TT following this accident.

They were intended to:

- *eliminate or reduce the number of crossings in the Open track stations (OTS),*
- *better ensure respect for stop orders in OTS,*
- *reduce the risks of injuries to passengers in the event of impact,*
- *improve the traceability of safety measures.*

Collision between a TER and a car

on 3 December 2007

at Cadaujac



On 3 December 2007, at 9:10 a.m., a private car with three people on board entered the right of way of level crossing No. 10 at Cadaujac (Gironde) and fouled the clearance of the on-coming train. The train collided with the vehicle causing the death of the three occupants.

The main cause of this accident was the car driving on to the level crossing with the half-barriers closed.

The analysis of the circumstances could not establish with certainty the reasons for the movement of the vehicle nor the behaviour of the driver.

This accident highlights, in particular, the risk involved in crossing level crossings and therefore the need for drivers to approach them with great care and in perfect control of their vehicles.

Since this accident involved general aspects of road safety, the BEA-TT made no special recommendations but underlined the utility, as part of communications on road safety, of reminding drivers that level crossings are critical points on their journeys and that they must be crossed without any driving errors or mechanical incidents.

**Collision between a train
and a car**

on 21 January 2008

**on a level-crossing
at Neufchâteau**



On Friday 25 January 2008, a driver at the wheel of a stolen car was being chased by three gendarmes also in a car, on the RD164 near Neufchâteau. The driver arrived at level crossing No. 82 which was closed. He drove round the half-barrier of the level crossing which was lowered and entered the right of way whilst a freight train was passing on track 1, thus blocking road traffic. The stolen vehicle stopped on track 2 waiting for the train to clear the way. The gendarmes arrived on the level crossing, got out of their vehicle and entered the right of way of track 2 to arrest the driver of the stolen car. Train 49250 then arrived on track 2 and hit the stolen car and the gendarmes.

The three gendarmes and the driver of the stolen car were killed outright or after being sent to the hospital.

The fact that the vehicle entered the level crossing appears deliberate and the level crossing operation was normal.

The BEA-TT, whose investigation was limited to the railway aspects, had no recommendations to make.

**Work employee hit,
on 26 February 2008
on a level-crossing at Bayard**



On 26 February 2008, two employees were working on the decking of level crossing No. 37 (LC 37) at Bayard, on the Blesmes Haussignemont section at Chaumont. This LC is very close to a canal bridge and the barriers of the two installations work together.

At about 10:20 a.m., the barriers of the LC were lowered at the same time as those of the canal bridge to allow a boat to pass through. Although the barriers of the LC were still not raised, the Safety man authorised the resumption of work. At about 10:25 a.m., the two employees working on the track were surprised by the arrival of a train on track 2. One of the men was hit by the train and was killed.

The investigation revealed that the main direct cause of the accident is the failure to comply with instructions concerning conditions for the resumption of work.

The absence of any warning as to the arrival of the train was a secondary cause of the accident.

The use of installations to inform the flagman of approaching trains, with information beyond that required for safety, may have contributed to a mental model encouraging interpretation and failure to comply with instructions, and the resumption of work under dangerous conditions.

Two recommendations were made by the BEA-TT following this accident. They concern the following aspects:

- *the training of the employees and respect for instructions,*
- *procedures for informing the flagman of the approach of a train.*

Appendix 2: Road transport: overall summary of investigation reports

- fire of a HGV, on 4 June 2005 in the Fréjus road tunnel
- accident involving a school bus, on 12 March 2007 on the RD52 at Angliers
- accident involving a coach, on 8 August 2007 at Ghyvelde
- accident involving an RATP bus, on 14 August 2007 in the 19th arrondissement of Paris
- accident involving a coach on 9 January 2008 on the RD765 at Esquibien

Fire of a HGV

ON 4 JUNE 2005

in the Fréjus road tunnel



The report completes the provisional technical investigation report on the HGV fire in the Frejus tunnel on 4 June 2005, published in March 2006.

The provisional and complementary reports make up the final report.

The additional report is based mainly on a study carried out by the CETU and which concerned:

- *The digital reconstitution of the fire;*
- *the study of alternative smoke control scenarios;*
- *the study of scenarios illustrating the influence of the seat of the fire and atmospheric conditions.*

This study enabled us to consider that a power of 60 MW would appear to be the most realistic hypothesis, albeit rather low, amongst the 3 simulated fire power hypotheses (30 MW, 60 MW, 90 MW). It revealed the importance of the rapid activation of the smoke control system which should normally be performed by the Automatic Fire Detection System which was installed in the tunnel following the accident.

This study also revealed the persistence of potentially dangerous situations in the event of fire, when the velocity of the initial draught is high. This is the case close to the ends of the tunnel, especially where there is a significant difference in atmospheric pressure between the two ends of the tunnel.

The tunnel operating instructions provide for the gradual reinforcement of preventive measures depending on this difference in atmospheric pressure; nevertheless, the specific problem posed by the possible presence of coaches in the event of a fire under such circumstances requires special attention.

Accordingly, an additional recommendation was made to the concessionaires, the Intergovernmental Commission and the Prefect of Savoie, to improve the protection of the transit of coaches through the tunnel and check the efficiency of the arrangements made to protect coach passengers by asking the concessionaires to test them beforehand during exercises.

Accident involving a school bus

on 12 march 2007

on the RD52 at Angliers



On 12 March 2007, at 5:55 p.m., a school bus travelling on a town road, rue du Clos de la Chasse at Angliers (Vienne) with 8 school children plus the driver on board, collided with an empty dump truck on the crossing with the RD 52. This accident caused the death of a child, two serious injuries (the driver and a school pupil) and 6 slight injuries.

The main cause of this accident was the coach's failure to respect the right of way on the junction, as shown by the "Give way" sign.

This failure to respect the right of way was due to the fact that the driver of the coach had not seen the HGV arriving in the opposite direction, owing to a combination of several environmental factors at this time: blinding sun, blind spot on the right hand side of the coach and the position of the victim against the dashboard masking part of the road.

Furthermore, the behaviour of the school children in the coach (fights, movement) was unfavourable for control of the vehicle; the absence of seatbelts may also have affected the seriousness of the consequences of the accident.

The four recommendations made consist in setting up a form of control of school transport contracts to plan for the gradual disappearance of coaches not fitted with seatbelts and to manage those still in service by optimising their safety. They also recommend the implementation by the Transport Organising Authorities of the management of these services aimed at involving parents more in monitoring the behaviour of their children in such vehicles.

Accident involving a coach

on 8 August 2007

on the A16 at Ghyvelde



On Wednesday 8 August 2007, at about 05:00 p.m. at night and in heavy rain, a coach registered in Poland, travelling on the A16 motorway from Belgium to France and carrying forty nine people (two drivers and forty seven passengers) entered the slip road to the "Les Moères" rest area (in the commune of Ghyvelde, Nord) and turned over on to a safety barrier on entering the car park.

The final toll of the accident was three fatalities and 30 injured, including eight in hospital.

This accident led us to examine three factors likely to result in preventive measures: the behaviour of the driver, informing the emergency services and wearing safety belts.

The immediate direct cause of the accident was the excessive speed of the coach in very heavy rain.

Three other factors are likely to have influenced the seriousness of the accident:

- *the failure to wear safety belts which resulted in the ejection of the three people killed in the accident,*
- *the lack of initiative by the driver in informing the emergency services,*
- *the random nature of informing the emergency services on the border which delayed the arrival and deployment of the emergency services.*

Two recommendations were made:

- *one for the attention of the "Association Française du Transport Routier International," aimed at reminding road passenger transport companies of the essential part drivers play in the event of accident in alerting and informing the emergency services, and*
- *the other for the attention of the Nord Prefecture intended to improve the coordination of the Belgian and French emergency services on the border.*

Furthermore, this report was an opportunity to recall the need to reduce speed according to weather conditions and that of wearing safety belts and the interest in the implementation of the eCall programme for the localisation of accidents.

Accident involving an RATP bus

on 14 August 2007

in the 19th arrondissement
of Paris



On Tuesday 14 August 2007 at 9:45 a.m., an accident involving an RATP articulated bus on line PC2, the only vehicle involved, occurred on the boulevard Macdonald in the 19th arrondissement of Paris, in the direction Porte de Pantin - Porte de la Villette. In a left hand bend, the bus carried straight on and climbed the island of the junction with the rue de la Clôture, hit a lamppost and then a tree.

In the impact, the front right hand part of the passenger compartment was totally destroyed.

The accident resulted in 14 injuries in the coach, including the driver; 6 passengers suffered from disability of 10 days or more. It should be noted that the toll could have been much worse if the front right hand side of the bus had been occupied, fortunately it was not.

The cause of the accident was the drowsiness of the driver, due possibly to "lack of sleep". The influence of an antihistamine cannot be ignored, although it is unlikely.

The BEA-TT made two recommendations: one for the RATP, aimed at organising awareness campaigns on the importance of sleep and vigilance for drivers, at regular intervals and, the other, for the DGITM to examine the setting up a legal obligation for a minimum basis for the recording of data on all public transport vehicles.

Accident involving a coach

on 9 January 2008

on the RD765 at Esquibien



On Wednesday 9 January 2008 at about 12:20 a.m., a coach carrying 22 school children in addition to the driver left the road on a bend on the RD 765 between Audierne and Douarnenez, in the commune of Esquibien in Finistère. The coach turned over on its right hand side, on the embankment below the road.

The toll was limited to 3 slight injuries among the passengers.

The cause of the accident was the coach driver's lack of vigilance who drove too close to the side of the road until the right hand wheels of the vehicle ran over the verge and then skidded on the wet grass and sank into the loose soil, thus preventing the driver from recovering.

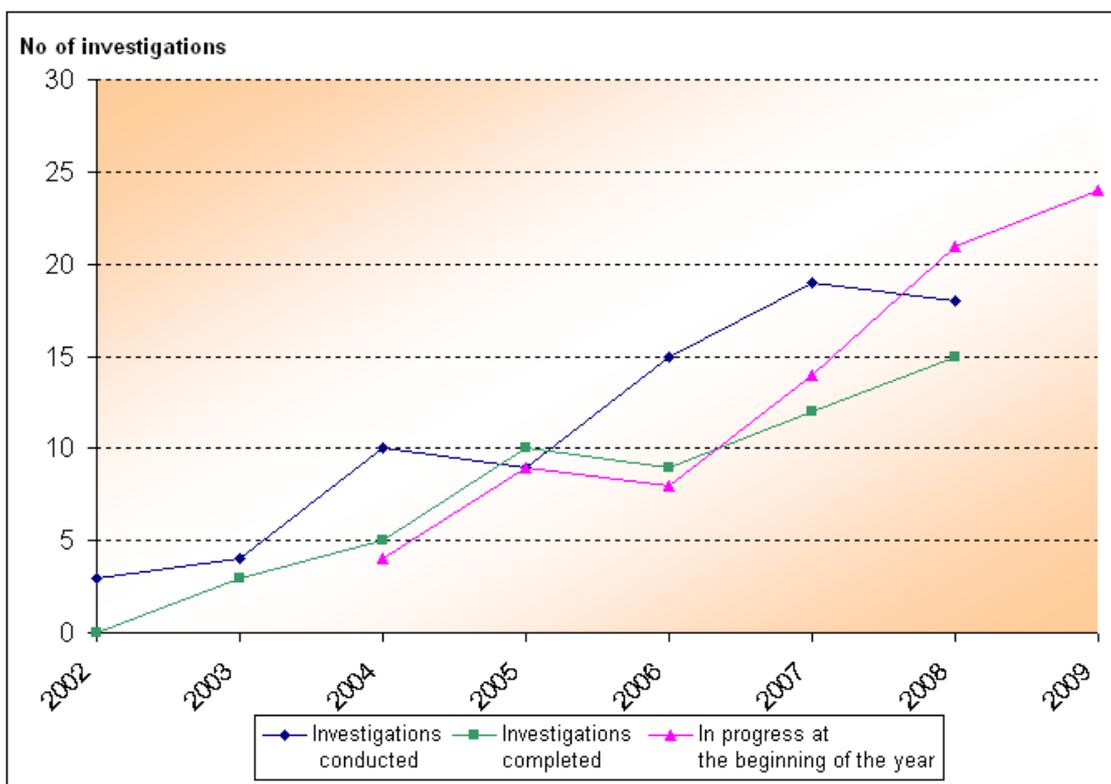
Furthermore, the 3 slightly injured passengers were not wearing their safety belts, undoubtedly like most of the passengers of the coach.

This accident occurred following a moment of inattention, on a well-known road and with no particular problems.

Once again, we should recall the need to wear safety belts, even for this type of trip. Accordingly, a recommendation in this sense was sent to the Conseil Général of Finistère.

Appendix 3: Investigations into accidents and incidents since 2002

Before the creation of the BEA-TT (26 January 2004), the data set out below concerns investigations undertaken by the CGPC prior to the creation of the investigation body, following the law of the 3 January 2002, concerning, in particular, post-accident investigations.



* or prior to its creation from 2002 to January 2004

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

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

List of the investigations undertaken since 2002

| Date | Accident | Fatalities | Mode* |
|------------|---|------------|-------|
| 16.06.2002 | Barrage-lock at Évry sur Seine (91) | 3 | VN |
| 05.11.2002 | Pile up on the A10 at Coulombiers (86) | 8 | R |
| 06.11.2002 | Fire in a coach of the Paris-Munich train at Nancy (54) | 12 | RY |
| 2002 | TVR Nancy and Caen | 0 | GT |

| | | | |
|------------|---|----|----|
| 27.01.2003 | Collision of train at La Biogna (06) | 2 | RY |
| 17.05.2003 | Accident involving a coach on the A6 at Dardilly (69) | 28 | R |
| 20.09.2003 | Incident on the RER D at Villeneuve Triage (92) | 0 | RY |
| 18.11.2003 | Collision of a HGV involving a TMD, RN 165 at Nivillac (56) | 2 | R |

| | | | |
|------------|---|----|----|
| 18.01.2004 | Train of barges at La Voulte sur Rhone (07) | 1 | W |
| 15.02.2004 | Moving snow pavement at Val Cenis (73) | 1 | RM |
| 05.04.2004 | Railway collision at Saint-Romain-en-Gier (69) | 0 | RY |
| 17.04.2004 | Electrocution on a catenary at Saint Nazaire (44) | 1 | RY |
| 22.06.2004 | Coach on the RN10 at Ligué (86) | 11 | R |
| 28.07.2004 | The "Santina" boat in the lock at Blénod les Pont à Mousson (54) | 0 | W |
| 26.08.2004 | The "Foehn" boat at Nogent sur Seine (10) | 0 | W |
| 29.08.2004 | Pile up with coach on the A63 à Belin-Béliet (33) | 8 | R |
| 30.08.2004 | Overtaking of trams in Rouen (76) | 0 | GT |
| 24.11.2004 | Collision between a train corail and a articulated truck at Millau (12) | 0 | LC |

| | | | |
|------------|--|---|----|
| 15.01.2005 | Coach on the RN 7 at Saint Martin d'Estréaux (42) | 0 | R |
| 16.02.2005 | Collision of two TER at Longueville (77) | 0 | RY |
| 19.04.2005 | HGV on RD 8 at Saint Nicolas du Tertre (56) | 2 | R |
| 25.04.2005 | Coach on the A13 at Bouafle (78) | 3 | R |
| 27.05.2005 | Railway collision of Francardo (02) | 0 | RY |
| 04.06.2005 | Fire of a HGV to the Frejus tunnel (73) | 2 | R |
| 09.06.2005 | Accident on the LC at St-Laurent-Blangy (62) | 0 | LC |
| 06.08.2005 | Fire on metro rakes in the Simplon station (75) | 0 | GT |
| Août 2005 | Fires on buses on the GNV at Nancy and Montbéliard | 0 | R |

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

| | | | |
|------------|--|---|----|
| 20.01.2006 | Accident involving a coach RD35 at Arles (13) | 1 | R |
| 01.02.2006 | Pile up on the A25 at Météren (59) | 2 | R |
| 25.02.2006 | Derailment of a train at Saint-Flour (15) | 0 | RY |
| 28.03.2006 | The cruiser "Camargue" at Le Pont de la Voulte (07) | 0 | W |
| 26.05.2006 | RN 134 at Ogeu-les-Bains (64) | 5 | R |
| 13.06.2006 | Derailment of a train at the Ferté-sur-Chiers (08) | 0 | RY |
| 28.06.2006 | Virtual collision in the station of Tencin-Theys (38) | 0 | RY |
| 24.07.2006 | Derailment of a works train at Culoz (73) | 0 | RY |
| 24.07.2006 | Collision involving 2 HGV and a camper van on the RN10 at Reignac (16) | 5 | R |
| 07.08.2006 | he A55 at Châteauneuf-les-Martigues (13) | 1 | R |
| 05.09.2006 | Accident involving a coach on the A1 at Brasseuse (60) | 4 | R |
| 08.08.2006 | The river boat "Provence" at Gervans (26) | 0 | W |
| 11.10.2006 | Collision involving a freight train and a TER at Zoufftgen (57) | 6 | RY |
| 18.10.2006 | Collision involving a TER and an exceptional load at Domène (38) | 0 | R |
| 10.11.2006 | Accident involving a passenger in the station of Chaville (92) | 1 | RY |

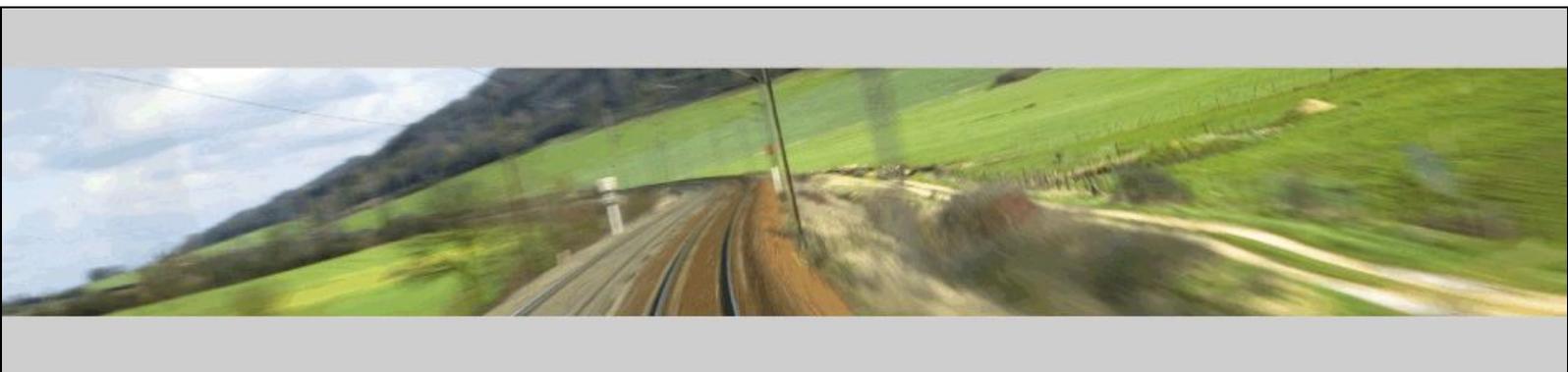
| | | | |
|------------|--|----|----|
| 27.02.2007 | Derailment of a maintenance vehicle in the station of Carcassonne (11) | 0 | RY |
| 01.03.2007 | Accident involving passenger in the station of Villeneuve-Triage (94) | 1 | RY |
| 13.03.2007 | Collision between an HGV and a school bus at Angliers (89) | 1 | R |
| 04.04.2007 | Pierre-Bénite (69) | 0 | W |
| 05.04.2007 | Train hitting a buffer in Paris-Est station (75) | 0 | RY |
| 22.04.2007 | A self-propelled barge lost its load on the Seine at Porte-Joie (27) | 0 | W |
| 26.05.2007 | Accident involving a cruiser in the lock at Rhinau (67) | 0 | W |
| 04.06.2007 | Collision involving a tram and a car at Saint-Herblain (44) | 1 | GT |
| 14.06.2007 | Collision involving a SANEF vehicle at Thillois (52) | 2 | R |
| 11.07.2007 | The vessel "Natissa" ran aground near Chasse-on-Rhone (69) | 0 | W |
| 22.07.2007 | Accident involving a coach at Notre-Dame-de-Mésage (38) | 26 | R |
| 08.08.2007 | Accident involving a coach at Ghyvelde (59) | 3 | R |
| 13.08.2007 | A train hit a buffer in the station of Versailles (78) | 0 | RY |
| 14.08.2007 | Accident of a bus in Paris 19 th (75) | 0 | R |
| 09.11.2007 | Derailment of a train at Pertuis (84) | 0 | RY |
| 21.11.2007 | Head on collision between 2 trains at Barchetta (2B) | 0 | RY |
| 26.11.2007 | Collision between a train and a HGV on the LC at St-Médard-sur-Ille (35) | 0 | LC |
| 03.12.2007 | Collision between a train and a car on the LC at Cadaujac (33) | 3 | LC |
| 19.12.2007 | Tossiat (01) | 1 | LC |

| | | | |
|------------|---|---|----|
| 09.01.2008 | Accident involving a school bus on the RD765 at Esquibien (29) | 0 | R |
| 25.01.2008 | Accident between a train and a car on the LC at Neufchâteau (88) | 4 | LC |
| 19.01.2008 | The vessel CARINA ran aground on the Saône at Trévoux (01) | 0 | W |
| 23.02.2008 | Fire of a coach on the A43 at Les Marches (73) | 0 | R |
| 26.02.2008 | SNCF employee hit on the LC at Bayard (52) | 1 | LC |
| 01.03.2008 | A passenger fell out of a ski lift at Chamonix (74) | 1 | S |
| 24.03.2008 | Collision between a minibus and cars on the A9 at Gigean (34) | 7 | R |
| 26.04.2008 | Brake failure of a freight train at Montauban (82) | 0 | RY |
| 23.05.2008 | Accident involving a coach on the A10 at Suèvres (41) | 7 | R |
| 23.05.2008 | Collision involving two passenger boats on the Rhone at Avignon (84) | 0 | W |
| 02.06.2008 | Accident between a train and a school bus on the LC at Allinges (74) | 7 | LC |
| 24.06.2008 | Fire on a train from Pignes to Mézel (04) | 0 | RY |
| 07.07.2008 | Accident between a train and a HGV on the LC at Roche-en-Brénil (21) | 0 | LC |
| 12.07.2008 | Ambreuil (71) | 1 | R |
| 11.09.2008 | Fire on a Eurotunnel freight shuttle in the Channel Tunnel | 0 | RY |
| 13.09.2008 | A tourist launch overturned after a collision with a "bateau-mouche" tourist boat on the Seine in Paris | 1 | W |
| 19.10.2008 | Pile up on the A4 at Courcelles-Chaussy (57) | 1 | R |

Appendix 4: 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 |
| 2 | 19/08/2009 | Update: 4-Saint Flour 5-Ferté sur Chiers 6-Tencin-Theys 8-Carcassonne 9-Villeneuve Triage 12-Pertuis Addition: 13-Montauban 14-Zoufftgem | S. Quéva |
| 2.1 | 18/09/2009 | Update: 1-Saint-Romain-en-Gier 2-Saint-Nazaire 3-Longueville 4-Saint-Flour | S. Quéva |

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| 1 SAINT-ROMAIN-EN-GIER – 05/04/04 | 62 |
| 2 SAINT-NAZAIRE – 17/04/04 | 66 |
| 3 LONGUEVILLE – 16/02/05 | 68 |
| 4 SAINT-FLOUR – 25/02/06 | 71 |
| 5 LA FERTE-SUR-CHIERS – 13/06/06 | 73 |
| 6 TENCINS-THEYS – 28/06/06 | 75 |
| 7 CHAVILLE – 10/11/06 | 76 |
| 8 CARCASSONNE – 27/02/07 | 77 |
| 9 VILLENEUVE-TRIAGE – 01/03/07 | 78 |
| 10 PARIS-EST – 05/04/07 | 79 |
| 11 VERSAILLES RIVE GAUCHE – 13/08/07 | 81 |
| 12 PERTUIS – 09/11/07 | 82 |

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 locomotives.

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 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”.

[Mail - Progress of the “Saint-Romain-En-Giers” action plan - IOS/JPB/06-4]

All regions have launched training on IPCS (principles of operation, work organisation with the presence of work trains) and developed work programmes. This training was done at different levels and intended for several groups of people.

Recommendation enforced.

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

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| <p>consideration and management of the main hazards</p> <p>A project is underway to change the regulations governing works (STORP), which will take particular account of all the lessons drawn from this accident</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 initiatives</p> <p>[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]</p> <p>All regions have taken action to make drawing a geographical situation of the work site/train, appended to the organisation document systematic. Some regions have reviewed the presentation and content of SGA instructions No. 2 and Works Instructions, by inserting clearance and fouling points for works trains, the procedure for the use of the "Direction/Emergency" device on IPCS, the creation of groups of ZEP to limit the number of work instructions (PSL, AMIENS, DIJON, RENNES, PARIS-EST).</p> <p>Recommendation enforced</p> |

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| <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 initiatives</p> <p>[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]</p> <p>All regions have passed on this recommendation on by reinforcing on the spot checks (levels 1 and 2)</p> <p>One region has set up a minimum lead-time for the provision of works documentation to encourage operators to familiarise themselves with their content (AMIENS).</p> |

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| <p>Recommendation R 4:</p> <p>On the subject of the organisation of the work, make operating establishments 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> |

Status of initiatives

[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]

The Regions have asked the Depots to reinforce the existing watch on this subject, at both management levels.

Several regions have set up accompaniment procedures by line managers, employees restarting work after a long absence: familiarising themselves with modifications made to the organisation, installations, etc.)

The RENNES region has asked line managers to inform operators of documents concerning complex work and has undertaken to take specific action as to the accompaniment of operators resuming work after a prolonged absence, in 2006.

Recommendation R 5:

In the course of the next regional and national audits, note the quality of handovers between duty station controllers.

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:

- Consideration of the recommendations upon receipt;
- Assessment in the last quarter of 2005.

Status of initiatives

[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]

All regions have reinforced the monitoring of this subject. The AMIENS region has developed a help sheet for specific checks on points to be reviewed when returning to work.

Recommendation R 6:

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.

Initiatives undertaken

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

Recommendation to the establishments that general lighting be put into service at the changeover by morning operators

Status of initiatives

[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]

All regions have passed this point on to depots.

Nevertheless, the relevance of this recommendation has been called into question by some regions (PSE, REIMS).

Recommendation R 7:

In order that "equipment" parties, drafters of work programmes, 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

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| IPCS in audit programmes. |
| <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 initiatives</p> <p>[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]</p> <p>The CREQ and accompanying staff have, in several regions (BD, MR, MN, RN, PE, CF), had the benefit of awareness campaigns on specific aspects of the operation of IPCS:</p> <ul style="list-style-type: none"> • review of the provisions of CGS9B No. 1; • operation of IPCS; • use of "Direction/Emergency" in the event of turning back. |

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| <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 initiatives</p> <p>[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]</p> <p>The new version of IN 1474, approved at the beginning of 2006, took into account the problem arising out of certified operators' ignorance of locations.</p> <p>From now on, all changes to the scope of a safety-related function depend on getting to know locations and installations, duly certified by a certificate approving the new scope (Clause 18).</p> <p>A certificate of local knowledge has been created.</p> <p>Finally, the principles of the management of the permits of employees on secondment or made available, are specified.</p> |

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| <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. |

Status of initiatives

[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4]

All regions have asked depots to reinforce their monitoring of these points.

Recommendation R 10:

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.

Initiatives undertaken

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.

[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 initiatives

[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4].

The position of pilot and support worker is generally occupied by a single employee.

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:

- Consideration of the recommendations upon receipt;
- Assessment in the last quarter of 2005.

Status of initiatives

[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4].

These points were reviewed and taken into account by the Regions.

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 initiatives

[Letter – Progress of the "Accident at Romain-En-Giers" plan of action – IOS/JPB/06-4].

This recommendation has been passed on by all regions, some of which have included it in a Regional Reference Base.

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 16-year old 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

[Appendix 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 initiatives

The Nantes region has erected the boundary fences requested. It has even extended this action to several other stations with the same characteristics.

At the end of 2004, IEM-SQ identified non-managed stopping points or similar sites at Saint-Nazaire (PENHOET stop) and submitted financing requests to RFF.

As from 2008, with the Infrastructure safety programme agreement, sponsored by IMT-SQ, investment files for fences and signposting for five sites have been processed and as many are still to come.

In 2009, the Infrastructure Division shall try to pursue this approach to try to limit locations at risk for young people with, in particular, the definition of Infrastructure signposting against electrical hazards and the risk of collision.

Recommendation enforced.

Recommendation R2:

Increase the signs on the danger of electricity on wagons

Initiatives undertaken

For freight wagons and estates, a review of the wagons concerned was carried out. A letter was sent to all SNCF depots and Private Industries on 16 December 2008, asking them to use a new acronym (setting up of monitoring for counting the wagons inspected). As at 07/09/09, 24,698 wagons were concerned and 6,074 had been inspected and modified, if necessary.

For the wagons of private companies, an e-mail was sent to holders of engineering contracts with the SNCF on the 26th February 2009, reminding them of the signing to be installed according to the characteristics of the wagon, whilst referring them to the provisions of the CUU in this field.

Status of 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

The SNCF will be activating its regional network of safety correspondents and school

liaison officers, concentrating on higher age groups in schools and neighbouring residents. "Innovative" solutions shall be sought to inform the same age groups of non school pupils.

Neighbouring residents shall also be informed.

Status of initiatives

The Safety Division took part in the "Passengers and Citizen" programme developed by the sustained development division. For the school year 2004/2005: 3965 visits were made and 98 598 school children were informed. In 2007/2008: 6404 visits were made and 159 081 school pupils were informed, namely an increase of 60% in visits and the number of pupils informed.

Reinforcing contacts between CODIS – SDIS – SNCF.

7 regional meetings were held between 7 January 2007 and 20 May 2008 in the prefectures of defence zones (for the provinces) and with the BSPP for the Ile-de-France region, to present the "Railway Environment Intervention Guide".

Furthermore, this guide was drawn up in partnership with the DDSC, the MEEDDAT and the Chancellery.

Recommendation enforced.

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

Initiative already undertaken.

Concerning texts for the use of SNCF employees, at the end of June 2004, an analysis identified points likely to be explained. For these texts used both by the emergency services and SNCF employees, an approach concurrent with the previous one was undertaken. Contacts were established between the "Direction de la Défense et de la Sécurité Civile" (DDSC) and the SNCF.

In so far as the assessment of residual risk after an emergency power cut and the associated SNOP are concerned, studies were carried out in the form of mathematical modelling.

Concerning texts for the use of SNCF employees, the continued analysis will enable us to:

- propose a new version of those parts of the texts identified above, at the start of the third quarter 2004,
- at the end of 2004, validate corrections to the SNCF texts concerned and submit texts at this level to the DTT.

For texts used both by the emergency services and SNCF employees, the modified texts shall be applicable as from the publication of corrections to texts for the use of SNCF employees mentioned above.

The contacts established between the "Direction de la Défense et de la Sécurité Civile" (DDSC) and the SNCF provided for the joint drafting of a document concerning the intervention conditions of the emergency services.

This operational document shall be circulated to each departmental fire and

emergency service (SDTS) by the DDSC and by the SNCF to each of its regions. The SNCF regions and the SDIS shall meet to review, together, the conditions for application of the aforementioned document in the field.

In so far as the assessment of residual risk after an emergency power cut and the associated SNOP are concerned, finalisation of the studies started which should be completed:

- by measurements of induced voltage carried out on representative sites to compare the results of these studies;
- and by checking regional SNCF instructions and, in particular, emergency cut off panels.

Status of initiatives

The reference IN 2611 (conditions for the intervention of emergency services on the railway network", is co-signed by the SNCF and the Ministry of the Interior ("Department of Civil Security").

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

Contacts are regular between the emergency services and the SNCF, particularly during exercises but also during real operations, which are unfortunately too frequent. Furthermore, training courses for the emergency services are being planned for the application of IN 2611.

Status of 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 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 locomotives 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 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.

All locomotives had been modified by the 25th April 2006.

Modification order OM-31-S3-012 has been closed.

Recommendation enforced.

For recommendations R2 to R6, it should be noted that since 01/01/08, the SNCF has taken over operation of the Longueville to Villiers St. Georges line.

Recommendation R2 (CFTA):

Draft and implement specifications and training packs for initial and ongoing driver

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| <p>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.</p> |
| <p>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 in-service training, 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 in-service training will be organised locally in 2006. The 2006 Safety Quality Action Plan from Provins makes provision for initiatives strengthening safety-related follow-up of members of the driving crew. 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> |
| <p>Status of initiatives</p> |

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| <p>Recommendation R3 (CFTA): Individually interview all the employees holding safety-related positions.</p> |
| <p>Initiatives undertaken [CFTA letter of response to the BEA-TT report – 22/02/06] 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> |
| <p>Status of initiatives</p> |

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| <p>Recommendation R4 (CFTA): 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 [CFTA letter of response to the BEA-TT report – 22/02/06] 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. For 2006, the new initiatives were decided upon in response to recommendation R2.</p> |
| <p>Status of initiatives</p> |

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| <p>Recommendation R5 (CFTA, SNCF and DGMT): 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</p> |
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| likely to affect operations over the section of the Provins-Longueville line. |
| <p>Initiatives undertaken</p> <p>[CFTA letter of response to the BEA-TT report – 22/02/06] The Ile de France 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] 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] 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 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> |

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| <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 in-service training of the driver, even professional mobility.</p> |
| <p>Initiatives undertaken</p> <p>[DGMT letter of response to the BEA-TT report – 10/03/06] It is necessary that initial and in-service 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] 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 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 a break in the rail.

Initiatives undertaken

[Sheet Q – RFF Annual Safety Report]

Development of a tool for classifying UIC lines seven to nine

Status of initiatives

[Sheet Q – RFF Annual Safety Report]

Assessment of lines seven to nine undertaken

A new assessment tool for all lines of groups 7 to 9 AV was created and is now in use; its assessment criteria include in particular, the presence of DC rails. It shall be updated every year.

Recommendation enforced.

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

[RFF Annual Report – 29/05/2009]

wherever possible, replace DC rails without thermit welding.

Status of 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

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| <p>[RFF annual report - 29/05/2009 Action identical to Form Q of the RFF 2008 annual report</p> |
| <p>Status of initiatives [Sheet Q – RFF Annual Safety Report] In 2007, all operations (major maintenance and replacement) made provision for lifting. PAS sheet 2008-7</p> |

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| <p>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 a break in the rail.</p> |
| <p>Initiatives undertaken [Sheet Q – RFF Annual Safety Report] In the long term, replacement of all DC rails by Vignole rails. [RFF Annual Report – 29/05/2009] Backfitting programme for AV lines fitted with DC rails.</p> |
| <p>Status of initiatives [Sheet Q – RFF Annual Safety Report] Programme for replacement: – 2007: €34M – 2008: €48M planned PAS sheet 2008-8</p> |

5 La Ferté-sur-Chiers – 13/06/06

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

On Tuesday 13 June 2006, the last wagon 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.

BEA-TT report dated 07/09/07

Recommendation R1 (SNCF)

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.

Initiatives undertaken

[SNCF letter of response to the BEA-TT report – 17/12/07]

SNCF guideline amended accordingly

Status of initiatives

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

Recommendation enforced

Recommendation R2 (SNCF, RFF)

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).

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).

Initiatives undertaken

[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.

[RFF annual report – 29/05/2009].

Avoid derailments due to a succession of facing faults.

Status of initiatives

[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

Recommendation R3 (SNCF, RFF)

Remind 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.

Initiatives undertaken

[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

Status of initiatives

[Sheet Q – RFF Annual Safety Report]

PAS sheet 2008-17

[Annual RFF report – 29/05/2009]

Sheet PAS 2008-17 gives three stages, the first of which is completed:

- get feedback on La Ferté and decide whether the procedures have to be modified or recalled;
- obtain the appointment of a GSM-R maintenance pilot within the GID;
- define and have validated the means of communications and their functions made available to employees along lines as part of GSM-R

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

Feedback sheet issued in January 2008 – Recommendations enforced by SNCF.

6 Tencins-Theys – 28/06/06

Near collision involving two trains in Tencin-Theys station

In the morning of 28 June 2006, a material train arrived in Tencin-Theys 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.

Although there were no casualties or material damage, the consequences could have been serious under slightly different circumstances.

BEA-TT report dated 09/11/07

Recommendation R1 (SNCF and RFF)

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.

Initiatives undertaken

[Sheet Q – RFF Annual Safety Report]

Risk analysis of similar situations

Movement of the treadle planned in works in early 2009

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

The installations will be modified with the agreement of RFF

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.

[Annual RFF report – 29/05/2009]

When planning work, include the movement of the pedal at Tencin

Status of initiatives

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

Recommendation enforced by the SNCF

Recommendation R2 (SNCF and RFF)

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 station.

Initiatives undertaken

Status of initiatives

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

Recommendation enforced

[Sheet Q – RFF Annual Safety Report]

Modification carried out

Recommendation R3 (SNCF)

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.

Initiatives undertaken

Letter sent to the regions

Fact sheet on the topic of service handovers is in the process of being finalised

Status of initiatives

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

Recommendation enforced

7 Zoufftgen – 11/10/06

On Wednesday 11 October 2006, extensive work on the tracks of the French network required the neutralisation of one of the two tracks of the international section of the Thionville – Bettembourg line from 08.50 to 16.30. Accordingly, trains in both directions ran on the other track operated under Installations Permanentes de Contresens (IPCS) conditions. As an SNCF freight train was running along this line from Thionville to Bettembourg, a regional passenger train (TER) ran on to the same line in the opposite direction in Bettembourg station. These two trains were involved in the head-on collision at about 11.44 in France, a few hundred metres from the border towards PK 203.700 (commune of Zoufftgen).

BEA-TT report dated 28/02/09

Recommendation R8 (CFL, SNCF, RFF)

Examining the feasibility of extending SAAT to Bettembourg, by displaying the first train announced on the TCO.

Action taken

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

The possibility of extending the SAAT to Bettembourg was analysed without being conclusive. It led to considering another solution considered to be more effective and which corresponds to setting up an interconnection between the SAAT RFF and ZNL CFL systems. The SNCF is studying its feasibility and, testing is in progress, in particular.

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

Since the compatibility of the functionalities and interconnection of the systems requires an interface which is being developed by the contractor selected for similar projects with the DB (German Railways), since the German and Luxembourg systems are similar (Strasbourg – Khel or Forbach – Saarbrücken). Furthermore, this system is in operation as an equipment test between the French station of Mont St Martin and the Luxembourg station of Rodange.

Once the interface has been developed and is in operation under satisfactory conditions, it shall be installed at Bettembourg.

To be fully efficient, its implementation shall be accompanied by appropriate training for operators.

Status of initiatives

Recommendation R11 (CFL, SNCF, RFF)

Modifying the track to train radio installations so that radio alerting and radio-telephone communications from Bettembourg or Thionville are received by the installations of the block sections on the other side of the border.

Action taken

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

Commissioning of the GSM-R system on the section on the border with Luxembourg, Thionville (Fr) – French border planned for 05/07/09.

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

On 05/07/09, the date of commissioning the GSM-R on the French part of the border section, a new SNCF GSM-R unit was put into service in the master signal box at Bettembourg and PRCI at Thionville. These 2 signal boxes have an alert button used to trigger an RST GSM-R alert on the section on the French border. The border set

point shall be reissued at this time and take such modifications into account.

Status of initiatives

Recommendation R12 (SNCF, RFF, EPSF)
Considering more rigorous regulations, in the event of radio failure, requiring faults to be repaired (change of locomotive, provision of portable radio sets, etc.), according to more rigorous criteria.

Action taken
[RFF letter of response to the BEA-TT report – 10/06/09]
After review, RFF together with the EPSF and the SNCF, was not in favour of tightening the rules in the event of a failure of the track to train radio
[SNCF Letter of response to the BEA-TT report – 08/06/09]
Given the information set out in the SNCF Letter of response to the BEA-TT report of the 08/06/09, the SNCF is not in favour of tightening the rules beyond that which has already been done.
[Letter of response EPSF to the BEA-TT report – 12/06/09]
The EPSF recommends that a study be conducted, under the responsibility of RFF, to review the possibility employees have, depending on the situation, to stop two trains heading towards each other. This study should determine, on an individual basis, whether each situation should be considered to be different to protection against obstacles and, if so, define the measures which should be taken, particularly in the absence of a radio or the failure of the radio. This study should also provide:

- the reliability rate of the RST and GSM-R;
- the frequency of initiating events (i.e.: installation of VUT) and the probability of the occurrence of the use of the overtaking loop;
- a map of the RST and GSM-R equipment of the network in and the development programme.

Status of initiatives

Recommendation R14 (CFL, SNCF, RFF)
Setting up telephone links to ease tension quickly in the event of an emergency on the Thionville section of the line on the French border, at the request of the master signal box of Bettembourg.

Action taken
[RFF letter of response to the BEA-TT report – 10/06/09]
At the date of the letter, telephone links are operational.
Therefore, the master signal box of Bettembourg has a direct telephone link with the CSS East-France, which is responsible for the catenary power supply on the French – Thionville section of the line.
Similarly, the PRCI of Thionville can communicate directly with the CSS Luxembourg, which is responsible for the catenary power supply on the Luxembourg – Luxembourg border section of the line.
[SNCF Letter of response to the BEA-TT report – 08/06/09]
The telephone links between the Master Signal Box of Bettembourg and the "Central Sous Station" (CSS) Eastern France, on the one hand and, on the other, between the PRCI of Thionville and the CSS Luxembourg are in service and their use is defined by an agreement between the SNCF and CFL. The republication of the border instructions planned for 05/07/09 shall take these specificities into account.

Status of initiatives

Recommendation R18 (CFL, SNCF, RFF)

For employees responsible for safety, provide preparation for the emergency situations most likely to occur and, in particular:

- identifying the risks to be handled;
- the formalisation of reaction scenarios;
- training and carrying out exercises.

Action taken

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

In so far as employees responsible for safety are concerned, such as those concerned by this recommendation, RFF is not directly involved, with the exception of the finance of the training of SNCF GID employees who have safety responsibility under the terms of this order.

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

Controllers, traffic employees and checkers:

- reinforcement of training in the different language of operators on cross border sections;
- setting up a common safety management reference base;
- special or rare procedures (emergency measures and operation of the IPCS, issuing crossing permits, operations associated with electrical traction) require training to maintain the skills of operators. Operators are monitored individually as part of the safety watch.

Drivers:

- in addition to initial training, emergency and degraded situations are reviewed during in-service training (scenarios defined in the specifications) in a three year cycle;
- simulation tools are used for practical exercises;
- accompaniment by both the DPX Traction SNCF and their counterparts on foreign networks should be carried out every year on cross border routes.

Status of initiatives

8 Chaville – 10/11/06

Passenger accident in Chaville Rive Droite station

On Friday 10 November 2006, following traffic problems and on an exceptional basis, local train 113473 did not stop at Chaville Rive Droite station.

A passenger then activated the alarm signal, opened a door, and jumped from the moving train.

When falling, he struck a concrete post on the station platform and was seriously injured. He died shortly afterwards.

BEA-TT report dated 09/11/07

Recommendation R1 (SNCF)

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.

Initiatives undertaken

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

An inventory was undertaken. Several trains are already fitted therewith, and others are in the process of being modified or this has been scheduled.

A feasibility study was requested from the Material Department for materials that have already been overhauled.

No modification is envisaged for equipment that is set to be withdrawn shortly.

Status of initiatives

[2007 SNCF Annual Report – Rail Operation Assignments – Appendix 3 – Investments made in 2007]. In 2007, continuation of the investments:

- 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.

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

[Appendix 3 – Annual SNCF report for 2007 – General aspects – 28/05/2008]

Following an inventory on the rolling stock concerned: for the Z20500, a modification order was drafted; 27% completion rate as at 01/12/08. For the Z5600 and 8800, a modification order is being drawn up and shall be applied as from the 1st quarter of 2010. For the Z6400 and VB2N, no modifications are planned.

Recommendation R2 (SNCF)

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.

Initiatives undertaken

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

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.

Status of initiatives

[Appendix 3 – Annual SNCF report for 2007 – General aspects – 28/05/2008]

A new directive has been drafted and included in the contractor information system: VO0352 "Modifying the commercial stopping pattern of a "Transilien" train: principles of the elimination of regular stops" of 25/07/08. Recommendation enforced.

9 Carcassonne – 27/02/07

Derailment of a maintenance vehicle in Carcassonne station

At approximately 12.40 pm on Tuesday 27 February 2007, a maintenance vehicle of the Equipment of the SNCF derailed in Carcassonne station involving track 2 at a point where trains run at 110 kph.

This incident did not result in casualties but minor materiel damage to the track installations was observed.

BEA-TT report dated 09/04/08

Recommendation R1 (SNCF)

Remind duty station controllers of the importance of providing full information to employees participating in movements in stations, particularly employees who are less familiar with the installations of the station.

Initiatives undertaken

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

Feedback sheet at national level under production

Status of initiatives

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

This sheet will be distributed in the third quarter of 2008.

[Annual SNCF report – 27/05/2009]

The experience feedback sheet was drafted on 16 July 2008 and circulated to traffic employees.

Recommendation enforced.

Recommendation R2 (SNCF, RFF)

Examine the implementation of a unified derailer on track 4 between switches 120b and 118a.

Initiatives undertaken

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

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.

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

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.

Status of initiatives

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

Approval of RFF pending.

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

This dossier is still being considered by the services concerned

[RFF annual report – 29/05/2009]

This depends on one of 2 following hypotheses: "principalisation" of track 4 or use of Carcassonne station and track 4 as a works base in 2012. We are awaiting a response on one of the scenarios.

10 Villeneuve-Triage – 01/03/07

Collision with a person in Villeneuve-Triage station
At 6.54 am on 1 March 2007, a person who had climbed down onto one of the tracks of Villeneuve-Triage 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 condition.

[RFF annual report – 29/05/09] Use the reissue of IN 1724 to remind local managers (GID action).

Status of initiatives

[SNCF letter of response to the BEA-TT report – 11/06/08]. In 2007, 66 stations were fitted with platform panels reminding users that they must not cross the tracks.

[Annual SNCF report – General aspects – 27/05/09].

The corresponding text was rewritten and is being validated by RFF. The diagnostics of the equipment of each depot is being carried out.

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 station.

Initiatives undertaken

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

Awareness campaign in 64 stations in the Ile de France 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 initiatives

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

Recommendation enforced

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

The sign that is visible from the access to the platforms was installed on the 18th June 2008.

[RFF annual report – 29/05/09]

Recommendation enforced

11 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 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 in-service training.

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 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 training devoted to TM 606 is under development and will be available from 1 September 2008.

[Appendix 3 – Annual SNCF report for 2007 – General aspects – 28/05/2008]

Action taken – Recommendation enforced

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 initiatives

[Appendix 3 – Annual SNCF report for 2007 – General aspects – 28/05/2008]

Action taken – Recommendation enforced

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 in-service 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

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| <p>shown by the response to recommendation R1 Guarantees of traceability are provided by SITAR (computerised monitoring and traceability of traction skills)</p> |
| <p>Status of initiatives [Appendix 3 – Annual SNCF report for 2007 – General aspects – 28/05/2008] Action taken – Recommendation enforced</p> |

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| <p>Recommendation R4 (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 train stopping. If the feasibility of doing so is demonstrated, amend all Z2N railcars.</p> |
| <p>Initiatives undertaken [SNCF letter of response to the BEA-TT report – 25/03/08] A feasibility study has been underway since the investigation of the Paris-Est incident on 5 April 2007.</p> |
| <p>Status of initiatives [Annexe 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 kph in acceleration and 6 kph in deceleration. Appendix 3 – Annual SNCF report for 2007 – General aspects – 28/05/2008] Action taken – Recommendation enforced</p> |

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| <p>Recommendation R5 (RFF, SNCF) For tracks in Paris-Est 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 [Sheet Q – RFF Annual Safety Report] Technical and financial study requested by RFF from IG-T</p> |
| <p>Status of initiatives [Sheet Q – RFF Annual Safety Report] Investment prioritised in accordance with incident rates (low priority) [Appendix 3 - 2007 SNCF Annual Report – General aspects – 28/05/2008] An investment programme was presented.</p> |

12 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 station at a speed of 6 kph.

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 train stopping. 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 initiatives

[Appendix 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 kph in acceleration and 6 kph in deceleration.

[Annual SNCF report for 2008 – General aspects – 27/05/09].

The feasibility study was carried out and decided to lower the door release threshold on all Z2N from 6 to 3 kph. The modified board hardware on trains is planned for 2009 and 2010.

Recommendation R2 (SNCF, RFF)

For tracks in terminus stations receiving trains comprised of Z2N, 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 kph) 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 continue to study 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.

[SNCF 2008 annual report - General elements - 27/05/09]

For both items, the Engineering Department of the SNCF has conducted a feasibility study that will be available during the first half of 2009.

Status of initiatives

Investment prioritised in accordance with incident rates (low priority)

13 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 commune of Pertuis.

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 thermit 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

[Annual RFF report – 29/05/2009]

Defining and implementing a method for the inspection of the 2 LRS zones between Aix-en-Provence and Manosque.

[Annual SNCF report – 27/05/2009]

A check procedure has been developed for incipient cracking on changes of direction (angle flange/weld bead) under the rail.

Following inspection of the Pertuis area, two rails, the welds of which caused a slight echo were sampled and are now being analysed.

Status of initiatives

[Annual SNCF report – 27/05/2009]

The lab report and the final conclusions for R1 should be finalised during February 2009.

Recommendation R2 (SNCF, RFF)

From the annual feedback on a break in the rails, 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 an assessment of the condition of rail welds to be done in accordance with the procedure determined by recommendation R1 (or equivalent procedure).

Initiatives undertaken

[Annual SNCF report – 27/05/2009]

Inspection of zones identified in progress by SNCF rail and welding experts.

Status of initiatives

[Annual SNCF report – 27/05/2009]

The "density of thermit weld failures" indicator was finalised in September 2008. The inspection report will be published in April 2009.

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 travelling speed).

Initiatives undertaken

[Annual RFF report – 29/05/2009]

Investigation with European Infrastructure Managers to establish whether they make specific resources available to railway companies for the training of drivers in the detection of broken rails and, more generally, in recognising abnormal movements.

Status of initiatives

14 Montauban – 26/04/08

On Saturday 26 April 2008, at 6:36 a.m., freight train 467 473 belong to Veolia Cargo France, travelling from Bordeaux-Bassens to Boussens, made an emergency stop in Montauban station without respecting the signals protecting the merge points on the Brive - Toulouse and Agen – Toulouse lines, despite applying the brakes. Between the acknowledgement of the emergency braking after the warning announcing the stop signal and the actual stopping point of the train, the distance travelled by the train was approximately 3,300 metres.

There were no human injuries nor material damage, thanks to the quick reaction of the points man at Montauban and the absence of traffic on the merge point and on the track occupied by train 467 473.

This incident could have become a serious accident under slightly different circumstances.

BEA-TT report dated 16/01/09

Recommendation R1 (Veolia)

When drafting "vehicle" rosters, specify the time for the routine preparation of locomotives prior to shunting and the formation of freight trains

Action taken

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

Publication of a "preparation of a train" Experience feed back sheet, on 15/07/08, stating that routine preparation should be carried out before the locomotive is coupled.

Publication of a general management note on 25/07/08, concerning routine preparation on traction units, laying down three requirements:

- preparing locomotives before coupling;
- making the registration of the routine preparation of each locomotive systematic in the vehicle roster and service graph, so that the locomotive is not coupled to its sets of wagons ;
- involving depot managers to pass this information on to those in the field.

Status of initiatives

Recommendation R2 (Veolia)

Have a trainer check the accuracy of the train composition abstract (given in the consignment note).

Action taken

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

Publication of Safety Note No. 39, on 27/05/08: "Traceability of reconnaissance, training and brake test operations": setting up a track to train communications sheet. Meeting between VCF and SOCORAIL on 02/07/08, which decides to take the following action: "improving and formalising the track to train relation by setting up a "Control" communications sheet on the 01/09/08 and setting up the communications sheet within the VCF South West branch.

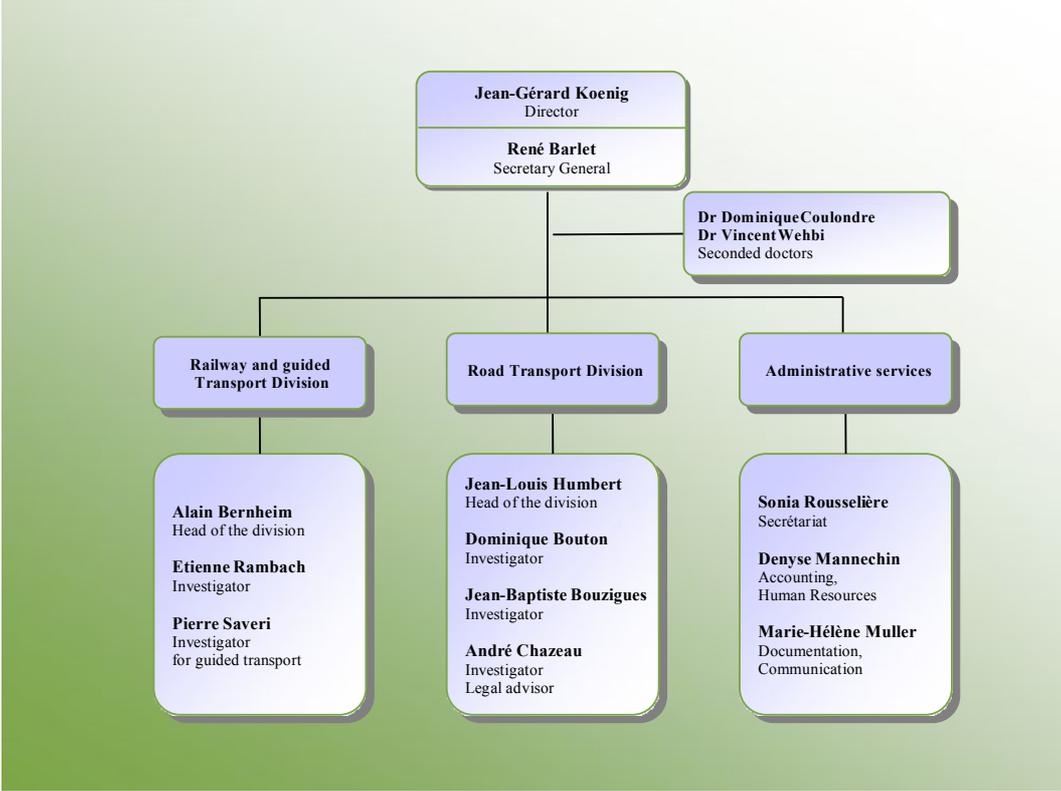
Status of initiatives

Recommendation R3 (Veolia)

| |
|--|
| Reinforcing and improving the efficiency of management control (and within contractual relations) of the railway company and training and train operators. |
| <p>[VEOLIA letter of response to the BEA-TT report – 03/03/09] drafting a VCF-SOCORAIL plan of action on 02/07/09 :</p> <ul style="list-style-type: none"> • Improving the KN1 for SOCORAIL operators by assigning a permanent track manager to the VCF South West branch. • Describing the measures set up by SOCORAIL to improve the organisation work on the Bassens site and ensuring the effective implementation of such measures by the manager. <p>As at 23/10/08, all sub-contractor employees had been checked in KN1. On 05/12/08, the plan of action drafted by SOCORAIL was completed. During the 2nd half of 2008, a mission for accompanying those in the field was entrusted to a VCF business expert on the following subjects:</p> <ul style="list-style-type: none"> • Analysis of watch methods used in the field by VCF business managers (frequency, mode of triggering, preparation and organisation, tools and methods used). • VCF business managers' means of finding weaknesses in the operators (observation, questioning, use of surveillance) • Proposals for improving methods of monitoring in the field for each branch. • Methods of accompanying trainees during practical courses: (analysis of current practices, conditions for reception, efficiency of the tutor system, logbook, proposals for improvement) |
| Status of initiatives |

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|---|
| <p>Recommendation R4 (Veolia) For each train leaving for operation, conduct a routine "Braking efficiency test" as close as possible to its place of departure.</p> |
| <p>Action taken [VEOLIA letter of response to the BEA-TT report – 03/03/09] Publication of Safety Note No. 37, on 05/05/08 concerning "Braking efficiency tests" making a line braking efficiency test mandatory on each train as close as possible to its place of departure. Continuous monitoring of dynamic braking tests by the analysis of ATESS cassettes.</p> |
| Status of initiatives |

Appendix 5 : BEA-TT organisation chart as at 1st January 2009



Appendix 6 : : Legislation governing 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

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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 considers 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.

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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 onboard 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

Ressources, territoires, habitats et logement
Énergie et climat Développement durable
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