

BEA-TT

Land Transport Accident
Investigation Bureau



ACTIVITY REPORT 2010

Ressources, territoires, habitats et logement
Énergie et climat Développement durable
Prévention des risques Infrastructures, transports et mer

Présent
pour
l'avenir



Ministère
de l'Écologie,
du Développement
durable,
des Transports
et du Logement

Ministère
de l'Écologie, de l'Énergie,
du Développement
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et du Développement Durable [General Council of the Environment and
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**Bureau d'Enquêtes sur les Accidents
de Transport Terrestre [Land Transport Accident Investigation Bureau]**

ACTIVITY REPORT

2010

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Glossary

- > **CMVOA**: Cellule Ministérielle de Veille Opérationnelle et d'Alerte du ministère de l'écologie, du développement durable, des transports et du logement [French Ministerial Unit for Operational Monitoring and Alerts]
- > **CGEDD**: Conseil Général de l'Environnement et du Développement Durable [French Departmental Council for the Environment and Sustainable Development]
- > **CNO**: Centre National des Opérations de la société nationale des chemins de fer français [French Railways National Operations Centre]
- > **COGIC**: Centre Opérationnel de Gestion Interministérielle des Crises du ministère de l'intérieur, de l'outre-mer, des collectivités territoriales et de l'immigration [Interministerial crisis management operational centre of the Ministry of the Interior, overseas, territorial communities and immigration]
- > **DGITM**: Direction générale des infrastructures, des transports et de la mer [French Directorate-General for Infrastructure, Transport and the Sea]
- > **DSCR**: Délégation à la Sécurité et à la Circulation Routières [French Road Safety and Traffic Directorate]
- > **RU**: Railway undertaking
- > **EPSF**: Établissement Public de Sécurité Ferroviaire [French Railway Public Safety Organisation]
- > **IM** Infrastructure Manager
- > **HGV**: Heavy goods vehicle
- > **LC**: Level crossing
- > **STRMTG**: Service Technique des Remontées Mécaniques et des Transports Guidés [Cableways and Guided Transport Technical Service]
- > **TMD**: Carriage of dangerous goods
- > **VL**: Light vehicle

Look back on the year 2010

For the BEA-TT 2010 was a particularly active year. Three figures give the picture: 16 investigations have been concluded and their reports published; 88 recommendations have been made and the majority have been accepted by their addressees; 18 new investigations have been opened, six more than in 2009.

Among these, three accidents, of which the severity stirred public opinion have concentrated the minds of the BEA-TT investigators through 2010:

- > the collision in June 2008, between an express regional train and a coach carrying college students that occurred on the level crossing at Allinges in Haute-Savoie, in which seven passengers in the coach lost their lives;
- > the fire in September 2008, on a shuttle freight train in the Channel Tunnel which resulted in the north tunnel being out of service for about five months;
- > The fall of a skier from a cable car at Chamonix in March 2008. The investigation of this accident led BEA-TT to send to *la direction générale des infrastructures, des transports et de la mer* [French Directorate-General for Infrastructure, Transport and the Sea] an immediate safety recommendation that aimed to secure the windows of certain types of cabin against the potential risks of pulling out the material. This action was taken without delay by the operators concerned.

2010 also enabled BEA-TT to consolidate the cooperation with its opposite numbers in other European investigation organisations, in particular by active participation in the work of the network that the European Railway Agency organises. Two investigations also contributed to this consolidation; that on the fire which occurred in 2008 in the Channel Tunnel which was carried out in conjunction with the British '*Rail Accident Investigation Branch*' and that on the collision in May 2009 between two trains in the tunnel of Livernant en Charente which required cooperation with the German *Eisenbahn-Unfalluntersuchungsstelle des Bundes* [Federal Railway Accident Investigation Office].

Finally, in spite of the budgetary constraints, it was possible to maintain the staff numbers and the means of operation of the BEA-TT thanks to the support of the *direction générale des infrastructures, des transports et de la mer* [Department of infrastructure, transport and the sea]. It has also used freelance investigators commissioned for the purposes of a given investigation, mainly arising from the *conseil général de l'environnement et du développement durable, du bureau d'enquête sur les évènements de mer ou de services techniques spécialisés* [General Council of the Environment and of Sustainable Development, of the Investigation Office on the events at sea or the specialised technical services].

The contribution of BEA-TT to the safety of transport is due to its capacity for high level expertise, the meticulous way it does its work, the independence of its analysis, the clearness of its conclusions and in relevance of its recommendations.

Efforts will be made to respond ever better to these requirements by developing the capacities and the techniques of investigation used, by diversifying the field of accidents analysed, by making the reports published better known to the transport professionals and their safety and consolidating the follow up of the introduction of the recommendations made.

Beyond these few comments, I invite you to study this activity report which sets out an account of the investigations carried out in 2010 and the lessons which have been learnt.

While it falls to me to present it to you, it is to Jean-Gérard Koenig, who presided over the creation of BEA-TT and who managed it until March 2011, as well as to all the staff to whom the credit for the results obtained is due.

In their name and in mine, I thank all the people who support the work of the BEA-TT: the management teams and the CGEDD, DGITM, DSCR experts, of the Safety of Land Transport and Technical Services Authorities, the legal authorities, the Infrastructure Managers and the operators of railway undertakings.

Claude AZAM, Director

1 - The tasks and the organisation of the BEA-TT

1.1 - Why carry out technical investigations on accidents?

Transport accidents with their human cost and their character, which is sometimes spectacular or dramatic, remind us that men, materials and organisations remain fallible in spite of the progress made in safety.

Thus, serious or complex accidents or incidents call for a technical investigation that is thorough and transparent aimed at determining the circumstances and the causes and then for the preparation, as soon as possible, of preventative recommendations likely to avoid a re-occurrence.

This technical investigation must remain distinct from the legal investigation, the objectives of which are focussed on the search for the people responsible, and for which the constraints, notably of the time required, are not the same.

In order to carry out their work effectively the technical investigators must have access to all the data and statements and relevant information, even that covered by management confidentiality, professional confidentiality or medical confidentiality. These prerogatives are proscribed by law.

Finally the need to rapidly mobilise highly qualified and independent investigators, to take records and assess the information obtained has led these investigations to be entrusted to a specialist permanent organisation.

1.2 - The principle steps in the setting up of the BEA-TT

In France, the first organisations for technical investigations were set up in the field of civil aviation in 1946 and in the maritime field in 1997.

As far as land transport was concerned no equivalent structure was set up until 2004. In the case of a serious accident such as that which occurred in Gare de Lyon in 1988 (56 dead) or that in the Mont Blanc tunnel in 1999 (39 dead), the Ministry responsible for transport set up an 'ad hoc' committee of enquiry responsible to the *Conseil Général des Ponts et Chaussées* (CGPC) [General Council for Bridges and Roads].

In the light of the experience acquired in this field it appeared necessary to set up an organisation for land transport similar to that for the air and maritime modes with adapted legislative status.

It was the law of 3 January 2002¹ following the dramatic fire in the Mont Blanc tunnel where 39 people died on 24 March 1999, which provided the legislative base for the technical investigations in the field of land transport. This provides for these investigations to be carried out by a permanent organisation that has a right of access to all information useful to the investigation even confidential information from the judicial enquiry, and confidential medical or professional information.

This law also establishes the principles of independence of the investigators and publication of the investigation reports.

It has been classified in Articles L 1621-1 to 1622-2 of the Transport Code.

¹ Law No 2002-3 of 3 January 2002 on the safety of transport infrastructure and systems and investigations after transport accidents.

Decree No 2004-85 of 26 January 2004, published in application of this law officially created the Land Transport Accident Investigation Bureau and defined its tasks as well as its method of operation.

1.3 - The tasks and the method of operation

The BEA-TT is a national service which reports to the Vice-President of the General Council of the Environment and Sustainable Development. This position does not involve any hierarchical supervision likely to prejudice the independence of the investigations carried out.

The principle task of BEA-TT is to carry out technical investigations into serious land transport accidents as well as any other significant accident or incident. It also has the job of promoting the diffusion of knowledge and lessons issued as a result of the feedback on the accidents and it can carry out studies or research into the feedback and accident analysis.

Its field of activity covers both rail transport, modes of guided urban transport (metros and tramways), ski lifts, road transport (in particular freight transport and public passenger transport) as well as navigation on internal waterways. Each of these sectors has its own regulations and its own economic, technical, professional and indeed cultural arrangements.

The decision to start a technical investigation is taken by the Director of BEA-TT. In the field of railways, investigations must necessarily be diligent on serious accidents designated by the European Directive 2004/49/CE on railway safety. For the other modes of land transport, the decision to start an investigation must be matched with a request or an agreement from the minister responsible for transport.

Each investigation must examine all the aspects of the event to be analysed from human error to the relevance of the regulations passing through the characteristics of the infrastructure, the operating conditions, the design and the condition of the rolling stock, the safety organisation, the training of the staff, the medical factors, etc.

This diversity of the investigations to be carried out leads the BEA-TT to identify and mobilise all the necessary competences for each case.

At the conclusion of the investigations or studies carried out, the BEA-TT publishes its reports on its internet site: www.bea-tt.developpement-durable.gouv.fr.

The recipients of the safety recommendations that are produced must advise BEA-TT of the action that they propose to take. The BEA--TT may publish their replies but it is not responsible for monitoring or checking that the recommendations put forward have in fact been effectively implemented.

1.4 - The transposition of the European Directive on railway safety

The European Directive 2004/49/EC specifies the role of the various stakeholders and, in particular, that of the investigating organisations for accidents and incidents that the Member States must put in place.

In France this organisation is the BEA-TT and the transposition of the appropriate parts of the Directive mentioned above was carried out in 2006. It essentially concerns three points:

- > the responsibility of deciding which railway events to investigate, which previously rested with the Minister responsible for transport, now rests with the Director of the BEA-TT;
- > the reporting to the BEA-TT by the Infrastructure Manager and the railway undertakings of accidents and incidents on which it may want to carry out an investigation;
- > the monitoring by the National Safety Authority, i.e. the EPSF in France of the implementation of the recommendations issued by the BEA-TT.

On the first and second points the transposition was achieved with the publication of Law No 2006-10 of 5 January 2006 (Art. 18) and Decree No 2006-1279 of 19 October 2006 (Art. 2 and Art. 65).

On the third point the transposition still needs to be done. The EPSF has, however, assumed responsibility for these activities since 2008.

1.5 - Organisation and resources

The BEA-TT is organised around its main activity, the carrying out of technical investigations into accidents and incidents. It uses for this purpose three categories of staff:

- > first of all its own permanent investigators;
- > secondly, temporary investigators who are commissioned by its Director to carry out an investigation and would benefit from the legislative status of technical investigator; these are people, active or retired, from a transport company, from an Infrastructure Manager or a group of civil servants entrusted with inspection or checking assignments;
- > finally, experts designated to deal with specific questions.

In addition the BEA-TT can, under the terms of its founding Decree, call on any of the services of the State that are competent in its domain: this is notably the case for the monitoring and reporting of accidents.

In practice, the investigations are carried out by permanent investigators with, when required, the assistance of temporary external investigators and experts chosen for their expertise judged necessary for the analysis of the accident concerned.

On 1 January 2011 the authorised staff of the BEA-TT was 14; two managers, nine permanent investigators and three administrative staff. Two doctors from the General Transport Labour Inspectorate are also attached to it to deal with medical matters.

In addition, seven non-permanent investigators have contributed to the work of the BEA-TT in 2010.

The operating budget in 2010 amounted to about €100 000.

1.6 - The monitoring and reporting of accidents and incidents

In order to monitor the events connected with safety, BEA-TT receives two types of information:

- > firstly, reports of accidents which are sent directly by the operators concerned by the events in question;
- > secondly, the daily reports prepared and distributed by the big operators, the emergency services or the crisis management services.

The direct reports only come from a few operators. Because of this, procedures were set up on this subject, in 2005, with SNCF and RATP as well as with the police for accidents to public transport or dangerous goods. A circular to be sent out in the near future will extend this to operators of ski lifts. The procedures remain to be defined and put in place for the other transport services referred to in the decree that set up the BEA-TT, in particular for provincial urban transport systems.

The daily bulletins currently come from four sources:

- > the national road information centre;
- > SNCF with daily reports from the national operations centre (CNO);
- > the Ministry of the Interior (Civil Defence – COGIC [Inter-ministerial crisis management operational centre of the Ministry of the Interior, Overseas, Territorial Communities and Immigration]);
- > The Ministry of the Ecology, Sustainable Development, Transport and Housing with the bulletins from the CMVOA and the publication of a press revue.

On the basis of this information which might be completed by an assessment investigation, the BEA-TT selects the accidents and incidents for which a technical investigation appears appropriate.

2 - The investigations carried out in 2010: overview

2.1 - The investigations carried out in 2010

Sixteen investigations were concluded in 2010 with the publication of the reports and the recommendations which were put forward. The accidents concerned resulted in the death of 28 people, 27 of which occurred during a road journey.

Six of these investigations were to do with rail transport, of which three were to do with collisions on level crossings. Seven others dealt with road accidents, two with inland waterway accidents, and one with the operation of a ski lift. The following Chapters contain summaries of these investigations.

2.2 - The causal factors highlighted

The **human factor** has obviously played a major role in all these accidents, regardless of whether it was the cause or whether it contributed to their severity. In the case of road transport a lack of vigilance going from inattention to falling asleep, bad appreciation of the risks connected with certain situations, an illness, unsuitable speeds, safety distances not observed, seat belts not worn although the vehicles concerned were fitted with them, are many direct or aggravating causes, one at least was the principle cause in each of the accidents analysed. As far as

rail transport was concerned the three investigations finalised in 2010 on accidents other than collisions on level crossings showed shortcomings on the physical checking of 'sensitive' loads and on the clarity of the incident reports. The human factor also contributed to the accident which involved the cable car from Planpraz to Chamonix, the direct cause of which was the non-observance of safety measures by the users.

The state of the infrastructure and its equipment as well as the environmental situation have been the main cause of six of the 16 accidents considered. In particular:

- > in the two pile-ups on the A4 motorway at Courcelles-Chaussy in Moselle and on the A54 motorway at Bellegarde in le Gard where the combination of banks of fog and dense smoke, due to fires that were insufficiently controlled, considerably reduced the visibility for the users;
- > in the collision at Allinges between a regional express train and a coach where the configuration and the conditions of operation of the level crossing did not guarantee the crossing of long heavy vehicles in complete safety;
- > in the crash at Nevers in which a coach was hit by a train where the device that manages the lines of vehicles waiting downstream of the level crossing failed;
- > in the derailment of two tank wagons carrying dangerous goods at Orthez in the Pyrénées-Atlantiques where the geometry of the track did not completely meet the characteristics required;
- > and finally, in the high voltage line crossing the Rhône downstream of Lyon near the Edouard Herriot port which was hit by a barge, because the unobstructed loading gauge above the water did not meet the prescriptions of the *règlement général de police de la navigation intérieure* (RGPNI) [General Regulations of the Interior Navigation Police].

Some factors connected with the vehicles have been definitely identified in six of the accidents analysed. In four cases they were related to the design, the equipment or the reliability of certain safety equipment of the mode of transport concerned. Accidents were, in particular, due to the reduced manoeuvrability of inland waterway boats, the risks of dislocation of the windows of some cable cars, the absence on some coaches of indicator lights to show that the baggage hold doors were closed and repeated anomalies of the locking devices of the doors of the shuttle freight wagons for Eurotunnel. In the two other cases a lack of maintenance and some inappropriate maintenance rules played a role. It was, in particular, critical in the derailment at Orthez of two tank wagons, caused in part by unusual wear of the parts that connect the bogie and the body.

Organisational factors and regulations have also been highlighted in twelve cases. They led the BEA-TT to formulate several recommendations aimed at completing the regulations or certain operating procedures. Without being exhaustive, in the field of road transport, some recommendations have been made on the frequency of the medical examinations of non-salaried drivers of heavy goods vehicles, the frequency of technical checks on minibuses with more than nine seats used for the public transport of people on the level of the sanctions relating to the non-observance of safety distances, as well as on the strengthening of warning procedures for users of motorways when there is smoke that reduces the visibility.

In the field of rail transport, it has, in particular, been recommended that the delay in announcing trains on level crossings should take account of the road vehicles authorised to cross them, that the rules of driving in sites intended to receive deliveries by road transport should be formalised, and that the emergency measures to be taken in the case of accidents involving wagons carrying dangerous goods should be included in the job texts of the staff responsible for the working the trains. The BEA-TT has also highlighted the interest presented for the safety of inland waterway navigation, the obligation to fold up cranes and lifting gear during transport on barges, and as far as mechanical lifts are concerned, the strengthening of the European Standard regarding glazed walls of cable cars. Moreover, the report prepared in co-operation with the British Investigation Authority the 'Rail Accident Investigation Branch' following the fire in 2008 in the Channel Tunnel on a freight train, invited Eurotunnel to adapt or to strengthen several of its internal management and safety procedures.

2.3 - The recommendations issued

Following these 16 investigations, 88 separate recommendations (63 for rail transport, 12 for road transport, 10 for inland waterways and 3 for ski lifts) have been put forward. Some of these have been sent with the same wording to several addressees, so that the total number of recommendations received by the addressees increased to 112 (81 for rail transport, 14 for road transport, 12 for inland waterways and 3 for ski lifts).

The addressees

These 112 recommendations have been addressed at the same time to:

- > 28 authorities in charge of the regulations or the inspection (Central administration managers, decentralised services, technical service, railway safety authority);
- > 20 to the managers of railway, road or inland waterway infrastructures;
- > 5 to railway undertakings;
- > 39 to a single railway operator, i.e. Eurotunnel;
- > 3 to road or inland waterway transport undertakings;
- > 3 to associations or professional organisations;
- > 3 to design organisations;
- > 11 to other addressees (wagon holders, designers of road vehicles, fire and emergency services).

2.4 - The action taken by the addressees

The decree of 26 January 2004 specifies that the addressees of the recommendations should advise the Director of BEA-TT within a time, fixed in general at 90 days, of the action they propose to take, and where appropriate, the time required to implement them. Their replies will be published as will be the recommendations.

Of the 112 recommendations mentioned above;

- > 81 have been accepted and their implementation confirmed with sometimes a

condition of delay or financing;

- > 12 have not been accepted or are subject to serious reservations;
- > No reply has been received from the addressees concerned in 16 cases;
- > 3 have been sent to a foreign organisation not subject to French regulations on technical investigations.

It should be mentioned that the BEA-TT has no authority to subsequently check the operational action actually taken in response to the recommendations put forward.

The follow-up of this action beyond the simple collection of the intentions of the addressees carried out by the BEA-TT is, in fact, done by an external authority.

For the principle railway stakeholders, this follow up is done by the EPSF, in accordance with European Directive 2004/49/EC which entrusts this role to the national rail safety authority.

For the other addressees of recommendations, and in particular, for the other modes of transport dealt with by the BEA-TT, the monitoring of the implementation of the recommendations has been carried out, since 2009, by the DGITM, the French Directorate-General for Infrastructure, Transport and the Sea.

2.5 - The investigations carried out in 2010

The BEA-TT carried out 18 investigations in 2010 which are listed in Annex 1 of this report.

These 18 investigations involved:

- > for the **railway sector**, 5 events, of which two were derailments and 3 were collisions which occurred on level crossings;
- > for the **road sector**, eight accidents, including two collisions between heavy goods vehicles one of which was carrying dangerous goods, two collisions between an HGV and a car, one of which involved crossing the central reservation of a motorway, one pile up, two cases of vehicles leaving the road, one of which involved a coach and one the embedding of a coach in an underground passage with reduced cross section.
- > for the **guided transport sector**, four accidents of which one fire, two collisions with cars and one collision between two trams.
- > for the **inland waterway sector**, one event concerning the sinking of a barge.

Annex 2 to this report gives the circumstances of various accidents.

At the end of 2010, 108 investigations had been carried out since the promulgation of the law governing technical investigations into land transport accidents, or since 2002. They are divided between the different modes of transport as follows:

Rail transport:	44 (of which 15 accidents on level crossings)
Guided transport:	9
Ski lifts:	2
Road transport:	39 (excluding accidents on level crossings)

Navigable waterways; 14

3 - The investigations carried out: Rail transport

3.1 - The investigations carried out in 2010

Six investigations concerning accidents in rail transport were concluded in 2010. The details, dates and places of these accidents are given in the table below. Three of them are collisions with heavy goods vehicles that occurred on level crossings. One of these collisions, which occurred on 2 June 2008 at Allinges in Haute Savoie resulted in the death of seven passengers in a school bus.

Moreover, four of the six accidents considered form, because of the number of victims or the importance of the material damage caused, serious accidents, in the sense of Directive 2004/49/EC on railway safety for which a technical investigation was definitely required. They are coloured blue in the table below.

Date	Details and location of the accident	No. of deaths	Mode*
02.06.2008	Collision between a TER and a school bus on the level crossing No 68 at Allinges (74)	7	Level crossing
11.09.2008	Fire on board the Eurostar freight shuttle 7412	0	Rail
03.02.2009	Collision between a TER and a school bus on the level crossing No 4 at Nevers (58)	0	Level crossing
20.05.2009	Collision between a train and the load of a passing train in Livernant tunnel (16)	0	Rail
25.09.2009	Collision between a freight train and a heavy goods vehicle on level crossing No 77 at Laluque (40)	0	Level crossing
24.11.2009	Derailment of two wagons carrying dangerous goods at Orthez (64)	0	Rail

3.2 - The recommendations issued

At the conclusion of these six investigations, 63 separate recommendations had been made by the BEA-TT of which 39 resulted from the analysis of the fire that occurred on 11 September 2008 on board a freight shuttle in the Channel Tunnel.

Subject of the measures recommended

On these 63 recommendations:

- > 10 deal with railway infrastructure;
- > six concern railway vehicles;
- > three concern the loading of trains;
- > two refer to the accompanying of trains and the information of passengers;

- > 12 are concerned with railway operation;
- > four are to do with the driving of trains;
- > seven are about the management of safety;
- > four are about road infrastructure;
- > five concern the organisation of road transport and the training of drivers;
- > 10 are involved with emergency operations and fire prevention.

The addressees

Sixteen of the recommendations listed above have been addressed with the same wording to two or three addressees so that the number of recommendations received by addressees as a result of the investigations carried out is increased to 81, of which:

- > seven by the regulation or inspection authorities (Central Administration Office or EPSF);
- > 14 by a railway infrastructure manager;
- > five by railway undertakings;
- > 39 by a single railway operator, i.e. Eurotunnel;
- > two by a wagon holder;
- > two by professional associations of the railway sector;
- > one by a road infrastructure manager;
- > two by a road transport undertaking;
- > seven by a fire and emergency service;
- > two by technical and design organisations.

3.3 - The action taken by the addressees

The table below indicates the actions that the addressees plan to take on the recommendations listed above.

Investigation	Recommendations				
	Number	Accepted	Not accepted	No reply	Foreign Addressees
Allinges	3	2	1	0	
Eurotunnel	48	38	8	2	
Nevers	4	3		1	
Livernant	6	3			3
Laluque	8	8		0	
Orthez	12	11*		1	
TOTAL	81	65	9	4	3

* of which two remain to be clarified by the addressee

Nine recommendations, of which eight were addressed to Eurotunnel, were not accepted by their addressees.

Three others were sent to a German railway undertaking which is not subject to the French regulations on technical investigations.

3.4 - Feedback on the implementation of the recommendations

Independently of the intentions expressed by the addressees and listed in paragraph 3.3 above, the monitoring of the effective introduction of the recommendations issued by the BEA-TT following accidents to rail transport is done by:

- > the EPSF, the safety authority for railway operators of the national rail network;
- > by the DGITM, the Central Office of the Ministry Responsible for Transport for the other stakeholders in the sector concerned.

On the basis of the monitoring carried out by EPSF progress with the introduction into operational service of the recommendations sent out between 2004 and 2009 to railway operators of the national rail network is as follows:

Year of publication of the report	Number of recommendations addressed			
	Total	Completed		In progress
		Carried out	Not proceeded with	
2004-2007	30	24		6
2007	19	11		8
2008	21	9		12
2009	24	13	2	9
Total 2004-2009	94	57	2	35

Annex 3.1 to this report shows the detailed position on this implementation. For the years 2004 to 2006 inclusive, this annexe only mentions the recommendations, the implementation of which had not been completed during the period covered by the activity report for the year 2008 of the BEA-TT.

As far as **the other stakeholders of the railway sector** were concerned, progress with the effective introduction of the recommendations which had been sent to them, as found in the **monitoring carried out by the DGITM** is as follows:

Year of publication of the report	Number of recommendations addressed				
	Total	Closed		In progress	Outside the scope
		Carried out	Not proceeded with		
2004	4	1		2	1
2005	2	2			
2006	7	4			3
2007	3			2	1
2008					
2009	15			7	8
Total 2004-2009	31	7		11	13

In this table the recommendations aimed at the authorities or undertakings that do not belong to the railway sector have been listed, for reference under the heading 'Outside the scope'.

The detailed report of this introduction is given in Annex 3.2 of this report.

3.5 - Summary of the investigation reports published in 2010

Collision between a TER and a coach which occurred on 2 June 2008 on level crossing No 68 at Allinges (74)



At about 13.55 on Sunday, 2 June 2008 a coach carrying school children was struck by a Regional Express Train in the village of Allinges (Haute-Savoie). The accident occurred on level crossing No 68 on the railway line from Evian to Annemasse and the RD 233 connecting Allinges to the RD 1005, on the shore of Lake Léman.

The result of this accident was 7 dead and 33 injured (of which 3 were seriously injured), all passengers in the coach.

The immediate cause of this accident was the stopping of the coach on the level crossing with the back end fouling the railway line.

The cause of this stop, which it was not possible to determine precisely was a combination of mechanical problems (fuel injection system, gearbox) and human factors (panic by the driver, bad manoeuvring).

Two factors connected with the configuration and the method of operation of the level crossing also played a part in this accident:

- > the difficult geometry of the road crossing makes it difficult for heavy vehicles that are obliged to move very slowly to pass over the level crossing;
- > the narrow safety margin offered by the time of announcement of the trains (firstly before the lowering of the half barriers and secondly before the arrival of the train) for a vehicle that is involved at the moment when the announcement signal is given.

The mechanical state of the coach and the lack of knowledge of this vehicle by its driver also played a part in this accident.

At the end of this investigation the BEA-TT issued three recommendations aiming to:

- > specify the actions to be taken when difficulties of crossing by certain road vehicles are detected during safety inspections of level crossings;
- > adapt the rules fixing the announce times of trains and closing of the barriers in order to take account of the actual time of crossing level crossings by authorised road vehicles;
- > specify the field of use of additional red flashing lights which can be placed behind the warning lights of level crossings.²

² <http://www.bea-tt.developpement-durable.gouv.fr/allinges-r105.html>

Fire on board the Eurostar freight shuttle 7412 on 11 September 2008



On 11 September 2008, the Eurostar freight shuttle 7412 left the English terminal at Folkestone on time (at 15.36³). It was loaded with twenty five lorries and two vans. The amenity vehicle where the truck drivers were accommodated was in its normal place, immediately behind the leading locomotive.

At about 15.45 a fire was detected on board this train. The train stopped shortly before 15.59 close to KP 49 situated in the last interval of this tunnel (interval No 6).

Of the 32 people on the train, 28 were quickly evacuated towards the service tunnel. 4 passengers who had ventured into the railway tunnel were rescued a little later; the first two at 16.13 and the last two at 16.26.

The evacuation operations to the French terminal were completed at 18.44 or nearly three hours after the start of the event.

Fire fighting operations began at 16.56. They were fully operational at 17.53 and finished the next day at about 12.00.

This fire did not result in any deaths or serious injuries; six slightly injured people were evacuated to the hospital at Calais.

As far as material damage was concerned all the loaded wagons and the lorries were burnt out. The two locomotives and the passenger carrying vehicle suffered damage resulting from the high temperature and the smoke to which they were exposed. The north tunnel, where the shuttle was operating, suffered very serious damage and could not be reopened for traffic until February 2009.

The initial cause of the fire is still not known exactly but it seems likely that a road vehicle caught fire and the fire had then spread to the rest of the train. It should be noted that one of the vehicles carried had an electrical defect and it was not possible to switch off its

³ French time (Central European Time)

headlights and this vehicle was located in the part of the rake where the fire appeared to have started.

The investigation by the French and UK organisations (BEA-TT and RAIB) was performed jointly in accordance with the agreement between them. It mainly concerned the performance of the evacuation and fire fighting operations with particular attention paid to any factors that might have made these operations more difficult or more dangerous, and any mishaps that might have been observed.

Although the event only resulted in minor injuries to people, there were a number of factors that directly affected the evacuation process and fire-fighting operations.

The main factors identified by the investigation were:

- > the stopping point of the shuttle, which meant that the amenity coach door normally used for evacuation was not opposite a cross-passage;
- > the amenity coach door normally used for evacuation was locked;
- > the communication difficulties between the conductor and the passengers;
- > the delay in opening the cross-passage door and starting the supplementary ventilation system;
- > excessive delays in attacking the fire, connected with electrical safety procedures;
- > numerous faults in technical systems.

In addition some organizational factors and areas for improvement in the safety management system were also identified.

The scope of the investigation did not cover an evaluation of the measures taken or planned by Eurotunnel after the fire and, in particular, the plan to create extinguishing stations (SAFE stations) in the rail tunnels.

The investigation led to 39 recommendations, most of which were in the following areas:

- > evacuation of people;
- > fire fighting;
- > rolling stock;
- > fixed installations;
- > procedures and tools used by the rail control centre;
- > the safety management system⁴.

⁴ <http://www.bea-tt.developpement-durable.gouv.fr/eurotunnel-r117.html>

Collision between a TER and a coach on 3 February 2009 on level crossing No 4 at Nevers (58)



On Tuesday, 3 February 2009, at 13.28, in the town of Nevers (Nièvre) on level crossing level No 4, a TER unit carrying 23 passengers struck the left side of the back of a coach carrying 44 passengers (37 children from a primary school and 7 supervisors), which was fouling the railway line. The TER was running the Dijon - Nevers service and the coach the trip from Pouilly-sur-Loire - Nevers

The impact occurred at a speed of 38 km/h; it did not cause any significant injuries but the two vehicles involved suffered material damage.

The direct cause of this accident was an error of judgement by the driver of the coach which fouled the level crossing because the traffic conditions did not guarantee that it could pass completely over the level crossing. In addition there are two other factors that might have played a part in the accident:

- > the limits of the effectiveness of the automatic device that manages the calling forward of the line of vehicles;
- > the inherent limits in the taking of a decision regarding the emergency braking of the train.

The results of the analysis resulted in an examination of two areas that might lead to recommendations to do with prevention:

- > the management of the line of waiting road vehicles close to level crossings;
- > the detection of an obstacle fixed on the level crossing and the information given to the train driver.

Three recommendations have been formulated; the evaluation of the system of regulation by traffic lights of the calling forward of the line of vehicles on the level crossing and the assessment of the automatic detection devices for vehicles stopped on level crossings⁵.

⁵ <http://www.bea-tt.developpement-durable.gouv.fr/nevers-r91.html>

**Collision between a train and
the load of a passing train that occurred
on 20 May 2009 in Livernant Tunnel at Charmant (16)**



On Wednesday, 20 May 2009, at 0.39 the articulated arm of a forestry vehicle loaded on train ECR 41249 of Euro Cargo Rail struck the passing train SNCF 56724 in Livernant Tunnel at Charmant (16).

This accident caused slight injury to the driver of train 56724, the partial destruction of the locomotive and damage of varying severity to the wagons and loads of the two trains as well as damage to the track and railway equipment.

The immediate cause of the accident was the uncontrolled rotation of the turret and articulated arm of the Skogsjan forestry vehicle causing it to foul the loading gauge of the adjacent track.

Two factors were the cause of this accident:

- > the improper locking of the mobile parts of the machine by the consignee, who was not an experienced professional, when the wagon was loaded in Germany;
- > the defective implementation by DBSR (German railway undertaking that took charge of this consignment) of the advise and checking procedure laid down for this type of consignment.

Two factors also contributed to the absence of detection or alert during the running of this train in these dangerous conditions:

- > the non-detection of the defects of immobilisation of locking and stowing during technical examinations in transportation;
- > the lack of clarity of the action to be taken by drivers if they hear noises of impacts which did not enable the train to be stopped when running in dangerous conditions before the accident.

This led the BEA-TT to issue five recommendations regarding:

- > the procedure for dealing with sensitive consignments peculiar to DBSR;
- > the carrying out of the technical examinations;
- > the measures to be taken by drivers of trains if they hear the noise of an impact⁶.

⁶ <http://www.bea-tt.developpement-durable.gouv.fr/tunnel-de-livernant-r119.html>

Collision between a freight train and a heavy goods vehicle on level crossing No 77 at Laluque (40) on 25 September 2009



On Friday 25 September 2009, at 12.46, SNCF freight train No 56701 running towards Bayonne hit a road tractor and semi-trailer loaded with railway sleepers on level crossing No 77 situated on the line from Bordeaux to Irun, close to the station of Laluque (Landes).

This road tractor and semi-trailer was manoeuvring to gain access to its delivery site inside the railway logistics site (basic work), adjacent to the main lines.

No one was hurt in the accident.

The installations of the level crossing were damaged as well as a catenary support. The front of the locomotive was smashed in, the tractor was seriously damaged, the semi trailer was destroyed and its load scattered.

The immediate cause of the accident was the sudden stopping of the heavy goods vehicle during the manoeuvre carried out on the level crossing.

The investigation showed four main causes:

- > the direct cause of the stopping associated with a possible driving error or a technical failure could not be precisely determined;
- > the under estimation of the risk on the level crossing by the road driver leading him to carry out a manoeuvre containing a risk of stopping on the level crossing;
- > the absence of information from the two road drivers involved on the procedure for access and moving around on the site leading them to follow the erroneous indications of the persons present on the site;
- > the lack of clarity, both in the publication and carrying out of the rules for traffic in force on the work site, leading to the staff working on the site unduly cluttering up the main internal traffic road and to give road drivers erroneous information and instructions.

This investigation resulted in the formulation of five recommendations regarding the drawing attention of the professional drivers to the specific risks of the level crossing, the systematic preparation of safety procedures between transporters and the reception undertakings, and to the procedure for the operation of a rail site served by road.

It also led to a remark about the choice between the modes of transport road and rail⁷.

⁷ <http://www.bea-tt.developpement-durable.gouv.fr/laluque-r122.html>

Derailment of two wagons carrying dangerous goods at Orthez (64) on 24 November 2009



On Tuesday 24 November 2009, at 18.14, two tank wagons of a complete train of dangerous goods (train 84892), running between Bayonne and Lacq, derailed at low speed in the town of Orthez (Atlantic Pyrénées), just before the station.

The first of these wagons situated in 26th position and loaded with propane tipped over damaging its emptying equipment and causing a leakage of the product.

The second, situated in the 27th and last position, remained standing upright and did not suffer any significant damage.

The fire brigade was called at 18.19 and arrived on the scene at 18.23. Seeing the leak they organised, with the help of the police, a safety perimeter with a radius of 500 m. As the leak was not very serious the houses and the hospital situated near the accident were not evacuated but the people were confined in their buildings until the leak had been sealed.

The leak was sealed at about 20.15.

Because of the risk of leakage or of breakage of the tank if the loaded wagon was lifted the fire brigade asked for it to be emptied on site. Then in view of the difficulties of emptying it was decided to create a flare stack and burn the whole of the cargo of the wagon. These flare stack operations lasted until Saturday, 28 November 2009.

No one was hurt in the accident.

The investigation showed that the derailment was due to the combination of numerous factors to do with the track, the rolling stock and the wheel-rail interface.

This investigation led to the formulation of a recommendation regarding the track, three recommendations concerning the maintenance of rolling stock and one recommendation about the lubrication of rails.

In addition this derailment led to the occupants of the following passenger train being exposed to risks connected with the leakage of propane.

This conclusion led to the formulation of three recommendations on railway protection measures to be taken in similar cases⁸.

⁸ <http://www.bea-tt.developpement-durable.gouv.fr/orthez-r134.html>

ANNEXES

Annex 1: List of investigations carried out since 2002 on accidents and incidents

Annex 2: Investigations opened in 2010

Annex 3: Follow-up on the implementation of the recommendations made by the BEA-TT

Annex 3-1: Rail transport: follow-up by EPSF

Annex 3-2: Rail transport: follow-up by DGITM

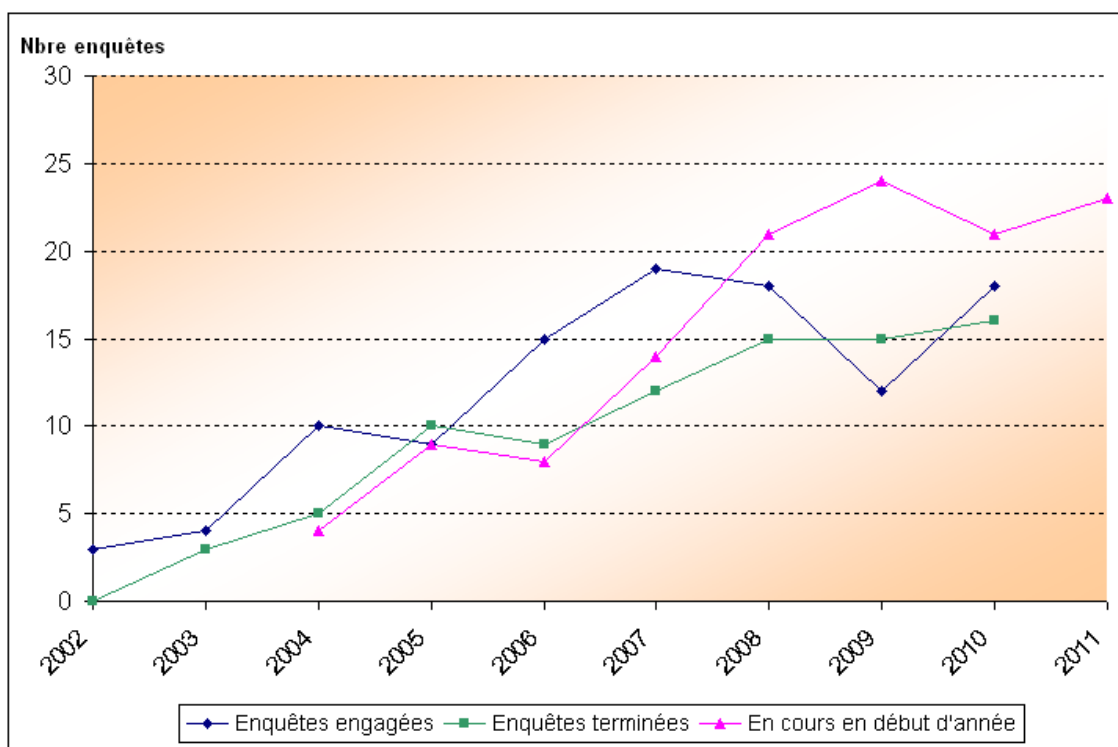
Annex 3-3: Guided transport and ski lifts: follow-up by DGITM

Annex 4: Organisational chart of BEA-TT at 1 August 2011

Annex 5: Legislation affecting the BEA-TT

Annex 1: List of investigations carried out since 2002 on accidents and incidents

The information contained in this annex includes the investigations carried out in 2002 and 2003 by the *Conseil Général de Ponts et Chaussées* (CGPC) [Structural Engineering General Council for Roads and Bridges] on the subject of the prefiguration of the permanent investigation organisation set up by Law No 2002-3 of 3 January 2002 regarding, in particular, the safety of the transport infrastructure and systems.



* ou sa préfiguration mise en place de 2002 à janvier 2004

Number of investigations	Nbre enquêtes
Investigations undertaken	Enquêtes engagées
Investigations completed	Enquêtes terminées
In progress at the start of the year	En cours en début d'année
Or prior to its creation from 2002 to January 2004	Ou sa préfiguration mise en place de 2002 à janvier 2004

Année	En cours en début d'année	Enquêtes engagées	Enquêtes terminées
2002		3	0
2003		4	3
2004	4	10	5
2005	9	9	10
2006	8	15	9*
2007	14	19	12
2008	21	18	15
2009	24	12	15
2010	21	18	16
2011	23		

** non compris l'enquête Fréjus, qui a donné lieu à un rapport provisoire en 2006 et a été clôturée par un rapport complémentaire en 2008*

Year	In progress at the start of the year	Investigations undertaken	Investigations completed

Not including the Fréjus investigation for which a provisional report was issued in 2006 and was closed by an additional report in 2008

List of investigations carried out since 2002

Date of the accident	Details and location of the accident	No of deaths	Mode*
05.11.2002	Pile up on the A10 at Coulombiers (86)	8	R
06.11.2002	Fire in the coach of the Paris-Munich train at Nancy (54)	12	F
2002	TVR Nancy and Caen	0	TG

27.01.2003	Train collision at La Biogna (06)	2	F
17.05.2003	Accident with a coach on the A6 at Dardilly (69)	28	R
20.09.2003	Incident on the RER D at Villeneuve-Triage Station (92)	0	F
18.11.2003	Collision of an HGV on RN 165 at Nivillac (56)	2	R

18.01.2004	River convoy at La Voulte-sur-Rhône (07)	1	VN
15.02.2004	Moving pavement snow at Val-Cenis (73)	1	RM
05.04.2004	Railway collision at Saint-Romain-en-Gier (69)	0	F
17.04.2004	Electrocution on the overhead line at Saint Nazaire (44)	1	F
22.06.2004	Coach on the RN10 at Ligugé (86)	11	R
28.07.2004	Boat 'Santina' at the Blénod-lès-Pont-à-Mousson (54) lock	0	VN
26.08.2004	Boat 'Foehn' at Nogent-sur-Seine (10)	0	VN
29.08.2004	Accident with a coach on the A63 at Lugos (33)	8	R
30.08.2004	Catching up between trams at Rouen (76)	0	TG
24.11.2004	Collision between a Corail train and a semi-trailer at Millau (12)	0	LC

15.01.2005	Coach on the RN7 at Saint-Martin-d'Estréaux (42)	0	R
16.02.2005	Collision of two TER trains at Longueville (77)	0	F
19.04.2005	Heavy goods vehicle school 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 at Francardo (02)	0	F
04.06.2005	Fire on an HGV in Fréjus tunnel (73)	2	R
09.06.2005	Accident on the level crossing at St-Laurent-Blangy (62)	0	LC
06.08.2005	Fire on the metro trainsets at Simplon station (75)	0	TG
August 2005	Fire on a bus at GNV at Nancy and at Montbéliard	0	R

* F=Rail ; R=Road; TG=Guided transport; LC=Level crossing; RM=Ski lift ; VN=Navigable inland waterway

Date of the accident	Details and location of the accident	No of deaths	Mode*
20.01.2006	Accident with a coach on the 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	F
28.03.2006	Cruise boat 'Camargue' at Pont-de-la-Voulte (07)	0	VN
26.05.2006	Collision of a car and an HGV on the RN134 at Ogeu-les-bains (64)	5	R
13.06.2006	Derailment of a train at Ferté-sur-Chiers (08)	0	F
28.06.2006	Quasi-collision in Tencin-Theys station (38)	0	F
24.07.2006	Derailment of a works train at Culoz (73)	0	F
24.07.2006	Collision of two HGVs and a camping van on the RN10 at Reignac (16)	5	R
07.08.2006	Accident of a tank lorry on the A55 at Châteauneuf-les-Martigues (13)	1	R
05.09.2006	Accident of a coach on the A1 at Brasseuse (60)	4	R
08.08.2006	River boat 'Provence' at Gervans (26)	0	VN
11.10.2006	Collision of a freight train and a TER at Zoufftgen (57)	6	F
18.10.2006	Collision of a TER and an abnormal load at Domène (38)	0	R
10.11.2006	Accident to a passenger in Chaville station (92)	1	F

27.02.2007	Derailment of a maintenance engine in Carcassonne station (11)	0	F
01.03.2007	Accident to a passenger in Villeneuve Triage Station (94)	1	F
13.03.2007	Collision between a heavy goods vehicle and a school bus at Angliers (89)	1	R
04.04.2007	Bumping into a high voltage line by a crane of the self propelled barge 'Le Désiré' on the Rhône at Pierre-Bénite (69)	0	VN
05.04.2007	Buffers hit by a train in Paris Est station (75)	0	F
22.04.2007	Loss of cargo by a self propelled boat in the Seine at Porte-Joie (27)	0	VN
26.05.2007	Accident of a cruise boat at Rhinau lock (67)	0	VN
04.06.2007	Collision of a tram and a car at Saint-Herblain (44)	1	TG
14.06.2007	Collision of a coach with a SANEF vehicle at Thillois (52)	2	R
11.07.2007	Beaching of the ship 'Natissa' near to Chasse-sur-Rhône (69)	0	VN
22.07.2007	Accident to a coach at Notre-Dame-de-Mésage (38)	26	R
08.08.2007	Accident to a coach at Ghyvelde (59)	3	R
13.08.2007	Buffers hit by a train in Versailles station (78)	0	F

* F=Rail ; R=Road; TG=Guided transport; LC=Level crossing; RM=Ski lift ; VN=Navigable inland waterway

*Translation provided for information purposes, by the Translation Centre for the bodies of the EU
The only valid version is the original version provided by the NIB*

14.08.2007	Accident involving a bus in Paris 19 ^e (75)	0	R
09.11.2007	Derailment of a train at Pertuis (84)	0	F
21.11.2007	Head-on collision of two trains at Barchetta (2B)	0	F
26.11.2007	Collision between a train and an HGV on the level crossing at St-Médard-sur-Ille (35)	0	LC
03.12.2007	Collision between a train and a car on the level crossing at Cadaujac (33)	3	LC
19.12.2007	Collision between a train and an abnormal load on the level crossing at Tossiat (01)	1	LC

Date of the accident	Details and location of the accident	No of deaths	Mode*
09.01.2008	Accident involving a school bus on the RD 765 at Esquibien (29)	0	R
25.01.2008	Collision between a train and a car on the level crossing at Neufchâteau (88)	4	LC
19.01.2008	Beaching of the ship 'Carina' on the Saône at Trévoux (01)	0	VN
23.02.2008	Fire on a coach on the A43 at The Marches (73)	0	R
26.02.2008	A member of SNCF staff hit on the level crossing at Bayard (52)	1	LC
01.03.2008	Fall of a passenger from a cable car at Chamonix (74)	1	RM
24.03.2008	Collision of a minibus and cars on the A9 at Gigean (34)	7	R
26.04.2008	Failure of the brake of a freight train at Montauban (82)	0	F
23.05.2008	Accident involving a coach on the A10 at Suèvres (41)	7	R
23.05.2008	Collision of two passenger boats on the Rhône at Avignon (84)	0	VN
02.06.2008	Collision between a train and a school bus on the level crossing at Allinges (74)	7	LC
24.06.2008	Fire in a train set running from Piges to Mézel (04)	0	F
07.07.2008	Collision between a train and an HGV on the level crossing at Roche-en-Brénil (21)	0	LC
12.07.2008	Collision between a coach and a van on the A6 at Saint-Ambreuil (71)	1	R
11.09.2008	Fire in a Eurotunnel freight shuttle in the Channel Tunnel	0	F
13.09.2008	Capsize of a tourist boat after collision with a Bateau-Mouche boat on the Seine in Paris	1	VN
19.10.2008	Pile up on the A4 at Courcelles-Chaussy (57)	1	R
18.11.2008	Collision of the ship 'Natissa' with a TGV bridge at Mornas (84)	0	VN

03.02.2009	Collision of a coach with a TER on the level crossing at Nevers (58)	0	LC
05.03.2009	Collision of a coach with an HGV on the A9 at Pollestres (66)	0	R
07.03.2009	Pedestrians struck by the RER at the Stade de France (93)	2	F
08.04.2009	Collision of two HGVs carrying dangerous goods on the A49 at Saint-Quentin-su-Isère (38)	0	R
20.05.2009	Collision of two freight trains in the Livernant Tunnel (16)	0	F
03.07.2009	Collision between a train and an agricultural trailer at Boisseuil (87)	0	F
01.08.2009	Collision of a coach with an HGV on the A20 at Bonnac-la-Côte (87)	5	R
25.09.2009	Collision between a train and an HGV on the level crossing at Laluque (40)	0	LC
08.10.2009	Collision between a tram and a lorry at Valenciennes(59)	0	TG
31.10.2009	Pile up on the A54 at Bellegarde (30)	1	R
24.11.2009	Derailment of a wagon carrying dangerous goods at Orthez (64)	0	F

* F=Rail ; R=Road; TG=Guided transport; LC=Level crossing; RM=Ski lift ; VN=Navigable inland waterway

20.12.2009	Derailment of an RER C trainset at Choisy-le-Roi (94)	0	F
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Date of the accident	Details and location of the accident	No of deaths	Mode*
26.12.2009 Investigation opened on 4	Fire on tram at Clermont-Ferrand (63)	0	TG
05.02.2010	Accident to a school bus at Rouen (76)	0	R
30.03.2010	Collision between a van and an HGV at Balaruc-les-Bains (34)	3	R
23.04.2010	Collision between a tram and a van at Orléans (45)	1	TG
27.04.2010	Collision between a tram and a van at Orvault (44)	1	TG
14.05.2010	Accident to a tourist train at Marseille (13)	0	R
12.05.2010	Collision of two trams at Montpellier (34)	0	TG
22.05.2010	Derailment of wagons carrying dangerous goods at Neufchâteau (88)	0	F
20.06.2010	Accident to a coach at Porté-Puymorens (66)	2	R
09.07.2010	Pile up on the RD9 at Aix-en-Provence (13)	4	R
15.07.2010	Collision of two HGVs on the RD974 at Asnières-lès-Dijon (21)	2	R
29.07.2010	Derailment of a freight train at Bully-Grenay (62)	0	F
02.08.2010	Crossing of the central reservation of the A9 motorway by an HGV at Lespignan (34)	4	R
03.08.2010	Sinking of a barge in the Seine at Paris	0	VN
27.09.2010	Collision of an HGV with a TER on a level crossing at Gimont (32)	0	LC
14.12.2010	Collision of a coach with a TER on a level crossing at Auxerre (89)	1	LC
16.12.2010	Collision of an HGV carrying dangerous goods on the A8 at La Trinité (06)	0	R
20.12.2010	Collision of a TER with a van on a level crossing at Recquignies (59)	3	LC

* F=Rail ; R=Road; TG=Guided transport; LC=Level crossing; RM=Ski lift ; VN=Navigable inland waterway

Annex 2: Investigations opened in 2010

1 - Investigations into rail transport accidents

The derailment of two wagons of dangerous goods that occurred on 22 May 2010 at Neufchâteau in the Vosges (88)

The last four wagons of a freight train which had left Sibelin station to go to Woippy derailed on the main line three kilometres from the station of Neufchâteau. These wagons, three of which were tank wagons carrying dangerous goods, overturned onto the adjacent line.

The immediate cause of this derailment was quickly determined. It was due to the fracture of the front left wheel of the first wagon derailed, following the development of cracks in the wheel centre.

As a result of the protective measures taken by EPSF and the investigation carried out by the BEA-TT, similar cracks have been detected on a number of wheels fitted to wagons in service.

In application of article L. 1621-20 of the transport code, in December 2010 the BEA-TT issued a first series of safety recommendations aimed at improving and making more reliable the detection of cracks in the wagon wheels.

The further investigations carried out by the BEA-TT concentrated on the search for the causes of the appearance and propagation of such cracks.

The derailment of a coal train on 29 July 2010 at Bully-Grenay in the Pas-de-Calais (62)

The 19 wagons of a train carrying coal derailed at the entrance to Bully-Grenay station and overturned blocking the two main lines of this station.

This accident did not cause any casualties. It did, however, cause serious damage to the railway infrastructure which was damaged over more than 600 metres.

It was due to the application of the brake of the first wagon for some fifty kilometres which prevented the rotation of the first two axles and caused the hollowing of the treads of the four corresponding wheels, then the derailment on the first switch of the station mentioned above.

The report of the technical investigation carried out on this accident was published in August 2011. It made recommendations regarding the qualification required from the workshops that work on wagon components that are most critical from the safety point of view as well as changes to the monitoring system and detection of anomalies of trains in service.

The collision between a TER and a lorry on 27 September 2010 at Gimont in the Gers (32)

A lorry loaded with 16 tonnes of gravel, running on a narrow communal track towards the hamlet of Julias à Gimont was struck by a TER as it was going over unguarded level crossing No 76 fitted with a St Andrew's Cross, on the single line from Toulouse to Auch.

Eleven people were injured, one seriously. The damage to the railway infrastructure was serious.

This accident showed the incompatibility between the time necessary for an HGV to cross this type of level crossing, after the driver had stopped to observe the track and the time at which the train may arrive.

It confirmed the interest in the safety plan for level crossings adopted in 2008 which will make it obligatory to install a colour light warning signal by 2013 on all level crossings where the speed of trains is greater than 40 km/h.

The collision between a TER and a coach on 14 December 2010 at Auxerre in the Yonne (89)

A coach with some thirty passengers was hit by a TER on level crossing No19 which is fitted with a warning colour light signal and two half barriers (SAL2), situated on the single track line from Laroche-Migennes to Auxerre.

The driver stopped his vehicle after this level crossing to deal with an argument between young passengers aged between 14 and 17 years old without realising that the rear of the coach was fouling the railway loading gauge by about a metre.

Two people were seriously injured.

This accident raises two questions:

- > how can discipline be maintained in coaches carrying adolescents;
- > how can drivers of coaches understand the length of their vehicle.

The collision between a TER and a private car on 20 December 2010 at Recquignies in the North (59)

A car, with three young people on board, was struck by a TER on level crossing No 100, which was fitted with four half-barriers (SAL4), on the double track between Jeumont to Busigny.

All the passengers in the vehicle were killed. They were returning from a discotheque. Checks on the driver for alcohol and drugs proved to be positive.

It was difficult to determine the exact circumstances of how the vehicle crossed the level crossing as the statements received and the technical investigation carried out did not agree.

4 - Investigations into accidents on guided transport

The fire on a rubber tyred tram at Clermont-Ferrand (63) on 26 December 2009

The driver of tram No 15 saw smoke inside one of the modules of the tram. He left it in a stabling siding. Some minutes later the tram burst into flames. The fire lasted for about thirty minutes.

There were no casualties but the tram concerned was totally destroyed.

The investigations already carried out showed that this fire was caused by the locking in the applied position of a brake and the heat generated by this had caused the decomposition by heat of the mudguard and the adjacent gangway bellows. The gas given off by the heat caused flames and the fire spread to the rest of the tram.

The design of the mechanical brakes of the tram, the insulation conditions between the passenger space and the brakes, the fire behaviour of the materials and the organisation of the feedback from incidents all contributed to this accident.

The collision between a tram and a car on 23 April 2010 in the Orléans district in the Loiret (45)

A car driven by a 20 year old student was hit by a tram at the crossroads with the rue de Châteauroux in the university quarter of Orleans. Under the impact the car was dragged and then crushed against a support post for the overhead contact wire set up between the two tramway tracks.

This accident raised the question of the legibility of the signs at the junctions of the roads and the tramway lines, as well as the understanding by car drivers of the colour light signals that control them. It was made worse by the presence of a non-fusible object immediately adjacent to the junction.

The collision between a tram and a car on 27 April 2010 in Nantes in Loire-Atlantique (44)

At the start of the afternoon of 27 April 2010, a tram which was crossing the roundabout at Le Cardo à Orvault, going towards the Grand Val terminus, struck a car which was crossing this junction on the track of the tram line after having passed the traffic light at red which is installed there. The car was pushed about 15 metres. The driver of the tram had tried to avoid the impact by applying the emergency brake.

The lady driver of the car involved in the accident died from her injuries during the evening.

The report of this investigation was published in May 2011. It stressed the complexity of the roundabout concerned and called for an analysis of the understanding by car drivers of the flashing red lights, called R 24, installed at the intersections of roads by tram lines.

The crash of two trams on 12 May 2010 at Montpellier in the Hérault (34)

This crash occurred on the common section used by lines 1 and 2 of the Montpellier tramway system which is in front of the railway station and has a gradient of 7%.

A line 1 tram which was stopped at the top of this incline to allow a line 2 tram to enter the section used by both lines, did not pull away, but ran back and then hit the back of the line 2 tram which had passed by a few moments previously and which was at the exit from the common section down to the junction of the two lines concerned. The two trams derailed under the impact.

Two passengers in the tram that was hit were slightly injured.

The report of the technical investigation carried out into this accident was published in July 2011. It called for particular attention to be devoted to the initial training given to the drivers by the operators of the tramway network.

Annex 3: Follow-up on the implementation of the recommendations made by the BEA-TT

Annex 3-1: Rail transport: follow-up by EPSF



Monitoring Department Database Division

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

Author: S.Quéva

Follow-up of the modifications

Version	Date	Reason for the modification	Author
1	22/08/2008	Creation	S.Quéva
2	19/08/2009	Revisions and additions	S.Quéva
2.1	18/09/2009	Revisions	S.Quéva
3	13/09/2010	Modification of the structure of the document in order to file the events in the year that the report appeared. Revisions from the last elements obtained.	S.Quéva

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Foreword

This document is the result of the follow-up by the EPSF of the recommendations issued by the BEA-TT in the reports of accidents that it has published. This monitoring is carried out from two sources of information. The first is the inspections and audits carried out as part of its job, as laid down in Decree No 2006-369 of 28 March 2006, to monitor and check the authorisations issued. The second source of information is the annual safety report sent to the EPSF by the Infrastructure Manager and the railway undertakings in accordance with Article 17 of Decree No 2006-1279 of 19 October 2006.

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

1 The reports published before 2007

For each report the recommendations are shown in the following manner:

- recommendations implemented (green);
- recommendations partly implemented (blue). This status is given to the recommendations addressed to several entities and of which at least one of these entities has implemented the recommendation;
- implementation of recommendations in progress (orange). This status concerns the recommendations for which the actions undertaken do not permit the recommendations to be considered as implemented or for which the EPSF has not yet got information on the actions in progress.

Among the reports that were published before 2007, only three reports of accidents have recommendations not yet implemented by the entities concerned.

1-1 Saint-Laurent-Blangy – 9 June 2006

Collision of a TER and an HGV on a level crossing at Saint-Laurent Blangy. On Friday 9 June 2005, a Regional Express Train collided with an HGV semi-trailer loaded with gas bottles that had broken down on level crossing 83 at Saint-Laurent-Blangy in the Pas-de-Calais. In spite of the seriousness of the accident, due to the explosion of the load, none of the 150 passengers of the TER were injured.
BEA-TT report of 28 December 2006

Recommendation R1 (CG 62 and RFF) Continue the search for solutions (a bridge or underpass or new itinerary) to eliminate this level crossing in order to reach a decision and implement it as soon as possible.
Actions undertaken [SNCF reply to the BEA-TT report – 17 December 2007] RFF will conclude a study by the second half of 2007 on the industrial zone of St Laurent Blangy and will follow two objectives: <ul style="list-style-type: none">– eliminate the level crossing by building a rail bridge close to the current level crossing;– reduce the number of HGVs that use this level crossing, especially those carrying dangerous goods.
State of progress [Annex 9 – RFF 2009 Annual Report – 10 June 2011] In June 2009 a meeting took place between RFF and the Town Council of Arras. At the end of November 2009 a financial agreement was signed to do a design study. It appeared that the design study should begin before the end of 2009.

In addition to the recommendation mentioned above all the recommendations of the report published in 2006 have been implemented.

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

1-2 Saint-Flour – 25 February 2006.

<p>Derailment of a Corail train at Saint-Flour. On Saturday, 25 February 2006 the Corail 5941 train from Paris to Béziers was derailed at KP 692,480 at the village of Saint-Flour. The locomotive and the first coach were pushed against the rock wall. Two of the 52 passengers on the train were slightly injured.</p>
BEA-TT report of 2 November 2006

Recommendation R1 (SNCF) Devise a methodology to define for lines fitted with DC rails, depending, in particular, on the equipment, the state of the track, its alignment, topography and the type of signalling, some 'special zones' where there will be speed restrictions for trains to a level that enables derailment to be avoided in case of rail fracture.
Actions undertaken [Leaflet Q – RFF Annual safety report] Preparation of a tool for classification of UIC lines 7 to 9.
State of progress [Leaflet Q – RFF Annual safety report] Assessment of lines 7 to 9 undertaken A new assessment tool for all the lines of groups 7 to 9 AV has been set up and is now in use. It includes, in particular, the presence of DC rails in its evaluation criteria and will be revised annually.
Recommendation implemented

Recommendation R2 (RFF and SNCF) If there is a defect in a DC rail which requires replacement of the damaged part, it is necessary to avoid repair by welding as far as possible and replace the rail complete.
Actions undertaken [Leaflet Q – RFF Annual safety report] Setting up reserve stocks of different types of DC rails [RFF Annual report – 29 May 2009] Replace where possible DC rails without carrying out Thermit welding
State of progress [Leaflet Q – RFF Annual safety report] Setting up stocks on two operations in 2007: Toulouse-Auch and Neussargès-St Chely d'Apcher. Form PAS 2008-6 [Annex 9 – RFF 2009 Annual Report – 10 June 2010] The monitoring of the level of stocks was put onto the Track Committee's programme of work at the end of March 2009

Recommendation R3 (RFF and SNCF) On sections of line equipped with DC rails, give priority to the mass replacement of sleepers and only carry out these mass replacements in conjunction with ballast cleaning.
Actions undertaken [Leaflet Q – RFF Annual safety report] Systematically associate ballast cleaning with any mass replacement of sleepers [RFF Annual report – 29 May 2009] Action identical to Leaflet Q of the RFF Annual report for 2008.
State of progress [Leaflet Q – RFF Annual safety report] In 2007 all the operations (OGE and renewal) involved ballast cleaning. Form PAS 2008-7 [Annex 9 – RFF 2009 Annual Report – 10 June 2010] The action plan provides for a census of the annual requirements for sleepers. This task planned in 2008 could not be carried out due to operations in 2008. This is a task to monitor in 2009. The second task concerned the organisation of an experimental Stoneblower which took place during the first half of 2009. The result of the experiment is satisfactory, the economic relevance is now being considered.

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

<p>Recommendation R4 (RFF and SNCF) Prepare a programme to refurbish lines open to passenger traffic fitted with DC rails. In due course, organise the progressive replacement of DC rails by flat bottomed rails in view of the age of the track, its increasing maintenance cost and the high risk of derailment should a rail fracture.</p>
<p>Actions undertaken [Leaflet Q – RFF Annual safety report] In due course, replace all the DC rails by flat bottom rails. [RFF Annual report – 29 May 2009] Refurbishment of AV lines fitted with DC rails</p>
<p>State of progress [Leaflet Q – RFF Annual safety report] Renewal programme: - 2007: EUR 34 million - 2008: EUR 48 million planned Form PAS 2008-8 [Annex 9 – RFF 2009 Annual Report – 10 June 2010] The planning 2008/2013 is extended until 2015 under the combined effect of the performance contract and the revival plan.</p>

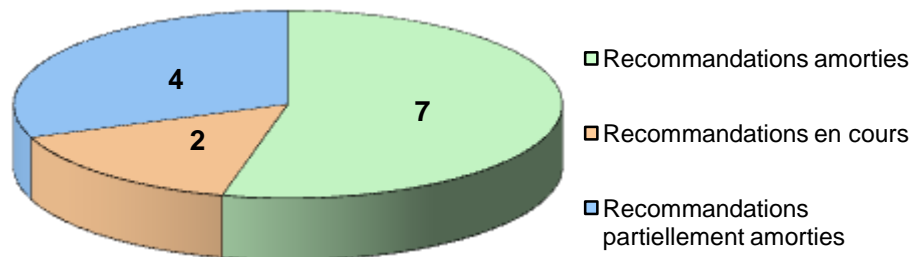
Follow-up by the EPSF of the recommendations of the BEA-TT

2 The reports published in 2007

In 2007, 13 recommendations (included in four reports) were published by the BEA-TT for the railway sector for which the EPSF has the role of national safety authority. The diagram below shows the status of these recommendations by classifying them in:

- recommendations implemented (green);
- recommendations partly implemented (blue). This status is given to the recommendations addressed to several entities one at least of which has implemented the recommendation;
- implementation of recommendations in progress (orange). This status concerns the recommendations for which the actions undertaken do not permit the recommendations to be considered as implemented or for which the EPSF has not yet got information on the actions in progress.

États des recommandations émises dans les rapports parus en 2007



ENGLISH	FRENCH
Status of recommendations made in the reports that appeared in 2007	États des recommandations émises dans les rapports parus en 2007
Recommendations implemented	Recommandations amorties
Recommendations in progress	Recommandations en cours
Recommendations partly implemented	Recommandations partiellement amorties

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

2-1 La Ferté-sur-Chiers – 13 June 2006

Derailment of a freight train at Ferté-sur-Chiers
On Tuesday, 13 June 2006 the last wagon in an iron ore train going from Dunkirk to Dieulouard derailed near the village of Ferté-sur-Chiers. The accident only caused one minor injury (to a maintenance worker) but damaged 10 km of track.

BEA-TT report of 7 September 2007

Recommendation R1 (SNCF)

When a wagon is dealt with for accident damage and work is necessary on the Lenoir damping system (detection of an insufficient dimension 'A'), specify the number of the axle box concerned, both on the initial inspection program and on the repair.

Actions undertaken

[SNCF reply to the BEA-TT report – 17 December 2007]
SNCF reference documents modified as a result

State of progress

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

Recommendation implemented

Recommendation R2 (SNCF and RFF)

Check on the national railway system for places where the geometrical situation of the track is similar to that of KP 190.200 of the North-east artery in June 2006 (series close together of regular defects of lining and camber likely to involve a dynamic resonance effect; simultaneous presence of a twist in the track of the alert value adding to the inherent twist in the parabolic connection when leaving a curve).
Prepare rules for attention to the track to correct these situations (redo the lining according to the values quantified after detection of repetitive and periodic lining defects when coming out of a curve).

Actions undertaken

[Leaflet Q – RFF Annual safety report]
Computerisation of the readings of geometrical defects between 10 and 30 m.
Opening of a research project to correlate the geometrical defects with the behaviour of wagons.
[SNCF reply to the BEA-TT report – 17 December 2007]
Definition of an alert threshold planned for 2009/2010

State of progress

[Annex 9 – RFF 2009 Annual Report – 10 June 2011]
Form PAS 2008-5
Computerisation of the tool has suffered delay in the preparation of the algorithm. The completion date for this task has been put back to June 2009.

Recommendation R3 (SNCF and RFF)

Remind staff directly concerned with the running of trains, of the use of the track to train radio for emergency situations and the introduction of emergency procedures for those present on the track.

Actions undertaken

[Leaflet Q – RFF Annual safety report]
The deployment of GSM-R will modify the means of communication available to staff of the IM and RUs. In this situation new procedures will be adopted.
[SNCF reply to the BEA-TT report – 17 December 2007]
Feedback sheets summarising the steps and measures that permit trains to be stopped in an emergency

State of progress

[RFF Annual report – 29 May 2009]
The Leaflet PAS 2008-17 mentions three steps the first of which has been completed:

- get feedback on the Ferté and decide if it is necessary to modify the procedures or remind staff about them;
- obtain the nomination of a project manager for the GSM-R maintenance experiment in the IM organisation;
- define and validate the means of communication and its functionalities provided to the staff

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

along the tracks as part of GSM-R

[Annex 9 – RFF 2009 Annual Report – 10 June 2010]

An experiment which lasted 6 months from mid-March 2009 took place at two work sites with the object of defining and validating the means of communication and its functionalities provided for staff along the track as part of the GSM-R. Feedback on this experiment will be available, as far as can be seen at present, from the end of June 2009

[Annex 3 – SNCF 2009 Annual Report – 26 May 2010]

Recommendation implemented

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

2-2 Tencins-Theys – 28 June 2006

<p>Near collision of two trains in Tencin-Theys Station</p> <p>On the morning of 28 June 2006 a train of rolling stock arrived in Tencin-Theys station. On the same line the TER Chambéry-Grenoble which was stationary was waiting for authorisation to depart. The driver of the rolling stock train made an emergency brake application and succeeded in stopping some twenty metres behind the TER avoiding an accident.</p> <p>While no injuries and no damage were caused, the consequences might have been serious in slightly different circumstances.</p>
BEA-TT report of 9 November 2007

Recommendation R1 (SNCF and RFF) Move the pedal for Pg2 as close as possible upstream to switch V2/V4 and examine equivalent situations on the whole of the National Railway Network in order to apply measures of the same type after a local analysis of the operation.
Actions undertaken [Leaflet Q – RFF Annual safety report] Risk analysis of similar situations Movement of the pedal planned during work carried out at the start of 2009 [SNCF reply to the BEA-TT report – 13 February 2008] The installations will be modified in agreement with RFF A letter has been sent to the regions to draw their attention to this type of situation. A study will start on dealing with these situations case by case. [RFF Annual report – 29 May 2009] During the programming of work include the moving of the pedal at Tencin
State of progress [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]
Recommendation implemented [Annex 9 – RFF 2009 Annual Report – 10 June 2010] The technical plan to neutralise switch B (access VS) has been prepared. The technical verification of the plan will be produced by the end of January which will enable the neutralisation to be carried out on the ground (planned for end of March 2010). To enable trains to pass in <i>voie unique temporaire</i> VUT [temporary single track], if applied instruction S3B will be modified to include the obligation to fit a stop board in front of the pedal before the use of VUT (G/H) These two provisions will prevent any possibility that a train in the opposite direction can operate the offending panel at an inopportune moment and it will not therefore be necessary to move it.

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.
Actions undertaken
State of progress [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]
Recommendation implemented [Leaflet Q – RFF Annual safety report] Modification carried out
Recommendation implemented

Recommendation R3 (SNCF) Remind the train running staff that until they have handed over their job, they must coordinate all their work and specify clearly and explicitly the tasks of each person.
Actions undertaken Letter sent to the regions Leaflet on the subject of handing over at the end of a shift now being finalised.
State of progress [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]
Recommendation implemented

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

2-3 Chaville – 10 November 2006

<p>Accident to a passenger in Chaville Rive Droite Station On Friday, 10 November 2006, following traffic problems, the local train 113473, unusually, did not stop at Chaville Rive Droite station. A passenger operated the alarm signal, opened a door and jumped out. In his fall he was seriously injured when he struck a concrete post on the station platform and died soon afterwards.</p>
<p>BEA-TT report of 9 November 2007</p>

<p>Recommendation R1 (SNCF) Design a modification for rolling stock that is due to have heavy maintenance operations in workshops that could prevent the possibility of manually opening the doors after operating the <i>signal d'alarme par interphonie</i> (SAI) [Alarm signal by intercom], until a threshold speed is reached that is less than the smallest detectable speed; prepare a programme to introduce these modifications.</p>
<p>Actions undertaken [SNCF reply to the BEA-TT report – 11 February 2008] A study of the situation has been carried out. Several trainsets are already fitted, others are in the course of being modified or programmed. A feasibility study has been requested from the rolling stock department for the rolling stock already renovated. No modifications are envisaged for rolling stock planned to be withdrawn in the near future.</p>
<p>State of progress [SNCF 2007 Annual Report – Mission of the Railway Undertaking – Annexe 3 – Investments made in 2007]. In 2007 continuation of the investments: - lateralisation of the indicator lamps for opening the doors on Transilien rolling stock; - management of the wires for the doors of Class Z2 rolling stock; - inhibition of the emergency opening command for the doors when the train is moving. During the 'comfort' operations on the Z2N trainsets (Z20500) the functioning of the doors was modified to maintain the locking of the doors if the alarm signal by intercom (SAI) is used as soon as the speed reaches 10 km/h when accelerating and 6 km/h when decelerating. [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008] After a survey was carried out on the vehicles concerned: for the Z20500, a modification order has been prepared; 27% modified at 1 December 2008. For the Z5600 and 8800 a modification order is being prepared, it will be applied starting in the first quarter of 2010. For the Z6400 and VB2N no modifications are planned. [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] The actions are being deployed.</p>

<p>Recommendation R2 (SNCF) Revise and specify the regulations applicable to journey changes by strictly limiting recourse to the abolition of regular stops especially after the train has left its originating station.</p>
<p>Actions undertaken [SNCF reply to the BEA-TT report – 11 February 2008] A framework document is being written. Taking the risks of the various situations into account, it will clarify the procedure for the introduction of the measures to be taken during the exceptional cancelling of regular stop or stops.</p>
<p>State of progress [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008] A new directive has been prepared and included in the system of the undertaking: VO0352 'Amendment of the commercial task of a Transilien train: principles for the cancellation of regular stops' of 25 July 2008.</p>
<p>Recommendation implemented</p>

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

2-4 Paris Est – 5 April 2007

On the morning of Thursday 5 April 2007 the Transilien train working the service Château-Thierry - Paris, hit the buffers of platform 21 of Paris-Est station at low speed.
The damage to rolling stock was limited but 58 slightly injured people were looked after by the emergency services.

BEA-TT report of 10 December 2007

Recommendation R1 (SNCF)

Remind drivers of multiple units about the different features of the control of the brake, in particular for 'full application' and 'emergency application'. This action must be included in the driving instructions and in the syllabus of the continuous training.

Actions undertaken

[SNCF reply to the BEA-TT report – 25 March 2008]

Training action and rewriting of the instructions for the rolling stock concerned by the linear brake handle TM 606.

State of progress

[SNCF reply to the BEA-TT report – 25 March 2008]

Completion by *Pratique Professionnelle Observable en Situation* PPOS [Professional Practice Observable in Real Life Situation] carried out by the *Dirigeants de Proximité* DPX [Local Managers] for the drivers concerned before the end of the authorisation cycle (end of 2007).

Computer assisted tuition devoted to TM 606 now being prepared. Available from 1 September 2008.

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

Actions introduced

Recommendation implemented

Recommendation R2 (SNCF)

For the design of the 'braking system' of future multiple units choose a configuration of the brake handle which includes the emergency braking control like that fitted on modern multiple units (MI2N, AGC, Z-TER).

Actions undertaken

[SNCF reply to the BEA-TT report – 25 March 2008]

This provision is included in all the specifications for rolling stock now being developed or about to be ordered.

State of progress

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

Actions introduced

Recommendation implemented

Recommendation R3 (SNCF)

Improve the response to the safety lessons that can be drawn from feedback: reduce the time required for the introduction of amendments to driving manuals, in particular when the subject concerns a safety function such as braking. Shorten the time frame for raising awareness of drivers on subjects very concerned with the safety of trains in service (subjects dealt with when inspectors travel in the cab with drivers and during continuing training days).

Actions undertaken

[SNCF reply to the BEA-TT report – 25 March 2008]

Local management action has been preferred to the collective actions as shown by the reply to recommendation R1.

The guarantees of traceability are supplied by *Suivi Informatisé et Traçabilité des Aptitudes Traction* SITAR [Computerised Monitoring and Traceability of the Traction Skills]

State of progress

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

Actions introduced

Recommendation implemented

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

Recommendation R4 (SNCF) Do a feasibility study on Class Z2N multiple units, to see if it is possible to reduce the threshold speed below which the access doors of the train unlock before the train stops. If it proves feasible, modify the whole of the fleet of Z2N multiple units.
Actions undertaken [SNCF reply to the BEA-TT report – 25 March 2008] Feasibility study in progress since the investigation of the incident at Paris-Est on 5 April 2007.
State of progress [Annex 3 – SNCF 2007 Annual Report – Remits of Railway Undertaking – 28 May 2008] During the 'comfort' operations on Z2N trainsets (Z20500) the functioning of the doors was modified to maintain the locking of the doors if the intercom alarm signal (SAI) is used as soon as the speed reaches 10 km/h when accelerating and 6 km/h when decelerating. [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008] The actions are being deployed. [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] The actions are being deployed.
Recommendation R5 (RFF and SNCF) Study whether it is relevant and feasible to introduce for the tracks in Paris-Est station that receive trains made up of Z2N trainsets a system that enables a significant proportion of the energy of the train arriving at the buffers at low speed to be absorbed.
Actions undertaken [Leaflet Q – RFF Annual safety report] Technical and financial study requested by RFF from IM-T
State of progress [Leaflet Q – RFF Annual safety report] Investment listed in priority of the number of incidents (low priority) [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008] An investment programme was presented. [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] An investment programme was presented. [Annex 9 – RFF 2009 Annual Report – 10 June 2010] The draft file has been prepared

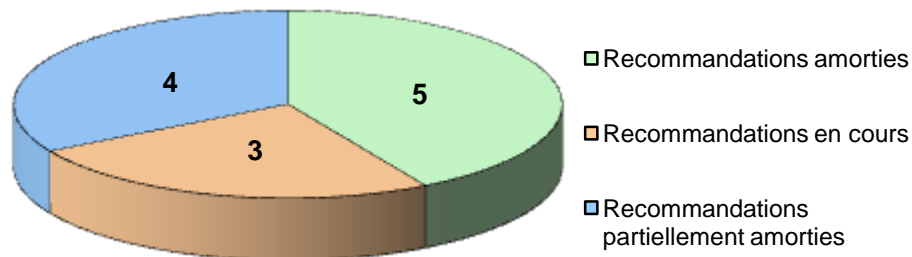
Follow-up by the EPSF of the recommendations of the BEA-TT

3 The reports published in 2008

In 2008, 12 recommendations (included in five reports) were issued by the BEA-TT for the railway sector for which the EPSF has the role of national safety authority. The diagram below shows the status of these recommendations by classifying them in:

- recommendations implemented (green);
- recommendations partly implemented (blue). This status is given to the recommendations addressed to several entities one at least of which has implemented the recommendation;
- implementation of recommendations in progress (orange). This status concerns the recommendations for which the actions undertaken do not permit the recommendations to be considered as implemented or for which the EPSF has not yet got information on the actions in progress.

États des recommandations émises dans les rapports parus en 2008



ENGLISH	FRENCH
status of recommendations made in the reports that appeared in	2008 états des recommandations émises dans les rapports parus en 2008
recommendations implemented	recommandations amorties
recommendations in progress	recommandations en cours
recommendations partly implemented	recommandations partiellement amorties

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

3-1 Carcassonne – 27 February 2007

Derailment of a maintenance engine in Carcassonne Station At 12.40 on Tuesday 27 February 2007 a maintenance engine of the SNCF equipment was derailed in Carcassonne station fouling track 2 at a point where trains run past at 110 km/h. This incident did not cause any casualties and little damage to rolling stock and track installations.
BEA-TT report of 9 April 2008

Recommendation R1 (SNCF) Remind operating staff of the importance of giving complete instructions to staff involved in movements in stations and, in particular, staff who are less familiar with the station installations.
Actions undertaken [SNCF reply to the BEA-TT report – 2 July 2008] National feedback now being prepared
State of progress [SNCF reply to the BEA-TT report – 2 July 2008] This leaflet will be issued in the third quarter of 2008. [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]
Recommendation implemented

Recommendation R2 (SNCF and RFF) Consider the introduction of a standard derailer on track 4 between switches 120b and 118a.
Actions undertaken [SNCF reply to the BEA-TT report – 2 July 2008] Feasibility study (SNCF) which showed the possibility of fitting a standard derailer between switches 120b and 118a. Necessity to consider possible changes. RFF reply to the BEA-TT report – 1 July 2008] RFF has considered the possibility of the appearance of a risk identical to or greater than that of the accident on 27 February 2007 on the basis of two hypotheses of track modification.
State of progress [SNCF reply to the BEA-TT report – 2 July 2008] Waiting for approval by RFF. [RFF reply to the BEA-TT report – 1 July 2008] This file is still being considered by the services concerned. [RFF Annual report – 29 May 2009] Introduction dependent on one or other of the two following hypotheses: 'principalisation' of track 4 or use of Carcassonne Station and track 4 as a works base in 2012. Waiting for a reply on one or other of the scenarios. [Annex 9 – RFF 2009 Annual Report – 10 June 2010] A definitive letter to BEA-TT will be sent when the solution has been chosen: SGSI unit + SGR. Awaiting reply. [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] The action is being processed.

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

3-2 Villeneuve-Triage Station – 1 March 2007

A person was struck in Villeneuve-Triage station At 06.45 on 1 March 2007 a person who was on one of the tracks of Villeneuve-Triage station was struck by a train. He died on the spot.
BEA-TT report of 13 March 2008

Recommendation R1 (SNCF and RFF) Ensure that sufficient notices with 'It is forbidden to cross the lines' or other equivalent wording are put up and kept clean so that they are legible.
Actions undertaken [SNCF reply to the BEA-TT report – 11 June 2008] National study commissioned to prepare a review of the equipment of each site. The objective is, in particular, to update the conditions where signs are installed and maintained. [RFF reply to the BEA-TT report – 10 June 2008] Directive IN 1724 is currently being updated. This will be the occasion to remind the local IM managers of their responsibilities to maintain all corresponding installations in good condition. [RFF Annual report – 29 May 2009] Use the revised version of IN 1724 to remind the local managers (IM actions)
State of progress [SNCF reply to the BEA-TT report – 11 June 2008] In 2007, 66 stations were fitted with platform notices to remind people that it is forbidden to walk across the lines [SNCF Annual Report – General items – 27 May 2009] The corresponding text has been rewritten and is now being validated by RFF. A review of the equipment of each depot is now being prepared.

Recommendation R2 (SNCF and RFF) Put up on the natural path for passengers of Villeneuve Triage Station, at least one notice indicating the existence of an underground passage and the obligation to use it to get to the other platforms.
Actions undertaken [SNCF reply to the BEA-TT report – 11 June 2008] Campaign to raise awareness in 64 stations of Ile de France. Put up a notice visible from the two possible accesses of the central underground passage at Villeneuve-Triage. [RFF reply to the BEA-TT report – 10 June 2008] This recommendation will be introduced by RFF after considering the layout. The installation is set to be completed by the end of 2008.
State of progress [Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008] The notice, visible from the access to the platforms, was put up on 18 June 2008.
Recommendation implemented [RFF 2009 Annual report – 29 May 2009]
Recommendation implemented

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

3-3 Pertuis – 9 November 2007

Derailment of a train at Pertuis At 20.11 on Friday 9 November 2007 the train working the Briançon-Manosque service became derailed at Pertuis. There were no casualties but there was damage to the rolling stock and track over a distance of 300 metres.
BEA-TT report of 26 June 2008

Recommendation R1 (SNCF and RFF) Prepare a report on Themit welds on the higher rail of curves, for the zones of Long Welded Rail (LWR) 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 explained: visual inspection of the underneath of the foot of the rail by an appropriate system or examination of the rail foot by ultrasonic testing.
Actions undertaken [RFF Annual report – 29 May 2009] Define and introduce a method of inspection for the two LRS zones specified between Aix-En-Provence and Manosque. [SNCF Annual report – 27 May 2009] A checking procedure has been developed for incipient cracking at changes of section (rail foot / welding bead) on the under face of the rail. After inspection of the zone around Pertuis, two rails, on which the welds produced a faint echo, have been removed and are now being analysed.
State of progress [SNCF Annual report – 27 May 2009] The laboratory report and then the definitive conclusions to R1 should be completed during February 2009. [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] Recommendation implemented [Annex 9 – RFF 2009 Annual Report – 10 June 2010] Recommendation implemented

Recommendation R2 (SNCF and RFF) From the annual feedback on rail fractures, select the sections of line of the Réseau Ferré National that potentially have similar risks (same context as at Pertuis), some relevant indicators (typical rate of fractures per km) that might show up the sections that require a check on the rail welds by the procedure specified in recommendation R1 (or an equivalent procedure).
Actions undertaken [SNCF Annual report – 27 May 2009] Examination of the zones identified by SNCF rail and welding experts.
State of progress [SNCF Annual report – 27 May 2009] The indicator of 'density of Themit weld failures' was completed in September 2008. The examination report will be published during April 2009. [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] Recommendation implemented [Annex 9 – RFF 2009 Annual Report – 10 June 2010] Recommendation implemented

Recommendation R3 (RFF) Carry out a feasibility study of a catalogue of sounds that represent an 'abnormal impact' in order to exercise the ear and feeling of drivers of different railway undertakings subject to such a situation (perception of the sound emitted depending on the gap of the rail, the axle load of the tractive unit, the type of locomotive and the speed of travel).
Actions undertaken [RFF Annual report – 29 May 2009] Questionnaire to the European Infrastructure Managers to see if they have available specific methods for the training of drivers to detect broken rails, and, in a more general way, recognise the impact or abnormal movement.
State of progress [Annex 9 – RFF 2009 Annual Report – 10 June 2010] Recommendation implemented

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

3-4 Versailles rive gauche – 13 August 2007

<p>At 10.27 on Sunday 13 August 2007 a Transilien train working the Paris-Invalides / Versailles Rive Gauche hit the buffers of platform 3 of Versailles Rive Gauche station at a speed of 6 km/h. No casualties were reported, either among the passengers or the driver and other SNCF staff. The accident caused material damage to the fixed installations and to the rolling stock.</p>
BEA-TT report of 28 March 2008

Recommendation R1 (SNCF) Do a feasibility study on Class Z2N multiple units, to see if it is possible to reduce the threshold speed below which the access doors of the train unlock before the train stops. If it proves feasible, modify the whole of the fleet of Z2N multiple units.
Actions undertaken [SNCF reply to the BEA-TT report – 2 July 2008] A feasibility study has been in progress since the investigation of the incident at Paris-Est on 5 April 2007.
State of progress [Annex 3 – SNCF 2007 Annual Report – Remits of a Railway Undertaking – 28 May 2008] During the 'comfort' operations on Z2N trainsets (Z20500) the functioning of the doors was modified to keep the doors locked if the intercom alarm signal (SAI) is used as soon as the speed reaches 10 km/h when accelerating and to release them when the speed reaches 6 km/h when decelerating. [SNCF 2008 Annual Report – General items – 27 May 2009] The feasibility study has been carried out and it was decided to reduce the door release threshold on all Z2N vehicles from 6 km/h to 3 km/h. The fitting of the modified boards to the trainsets is planned for 2009 and 2010. [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] The action is being processed.

Recommendation R2 (SNCF and RFF) Study for tracks in head end terminal stations that receive trains formed of Z2N trainsets the relevance and the feasibility of technical arrangements that enable either an impact with the buffers to be prevented, or to minimise the consequences for people on board or on the platform. It would be worthwhile to assess and to compare the beneficial effects produced by installing: - a shock absorber designed to slow a train that might hitting the buffers, - and/or an ultimate speed control signal (at an agreed distance from the buffers and controlling at about 4 km/h) to cause an additional deceleration of the train, or indeed to bring it to a stand.
Actions undertaken Shock absorber [SNCF reply to the BEA-TT report – 2 July 2008] Technical proposals to fit a shock absorber in position following the recommendation issued after the incident at Paris-Est will be sent by SNCF to RFF. A statement of principle is expected from RFF and will influence the study on the site of Versailles Rive-Gauche station. Control beacon [SNCF reply to the BEA-TT report – 2 July 2008] With the reply to the recommendation R1, SNCF will reconsider the effect of the track signal and its consequences on the driver's ergonomics, provided that the result of this study and the financing of the investment by RFF is positive. [SNCF 2008 Annual Report – General items – 27 May 2009] The SNCF Engineering Department has carried out a feasibility study which will be available during the 1st half of 2009.
State of progress Priority given to the number of incidents when investments are made (low priority) [Annex 9 – RFF 2009 Annual Report – 10 June 2010] A technical and financial study was done at the end of June 2008
Recommendation implemented [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] The action is being deployed

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

3-5 Culoz – 24 July 2006

<p>Derailment of a works train at Culoz At about 18.30 on Monday 24 July 2006 part of a works train derailed and fouled the lower and side loading gauge. While crossing a bridge on the Rhône the item fouling the loading gauge struck the deck of the first span which collapsed. Only one person was slightly injured but the material damage was serious: the deck of the bridge was destroyed as well as the active part of the train.</p>
<p>BEA-TT report of 15 December 2008</p>

<p>Recommendation R1 (SNCF and RFF) When moving specialised equipment (approved rail works) incorporated in a works train, on the main line from the area of the works to the garage and vice versa, ensure that the authorisation to depart is conditional upon a certificate that the train is in order to leave, duly signed by the representative of the operator of this specialised equipment, being delivered in advance to the employee in charge of issuing the authorisation to depart. (He could then send the information 'train ready to depart' to the employee of the Delegated Infrastructure Manager [IM] who could then authorise access to the network by releasing the corresponding signal).</p>
<p>Actions undertaken [SNCF reply to the BEA-TT report – 10 March 2009] This recommendation was the subject of an experiment, in the Chambéry region, of a new procedure for moving specialised equipment (approved rail works) incorporated in a works train. The conclusions of this experiment will be produced during the first half of 2009. [RFF reply to the BEA-TT report – 20 March 2009] The SNCF IM will propose changes to the texts concerned by this recommendation, in accordance with the Safety Management System of RFF and SNCF IM. In particular, for the text relevant to Article 10 of Decree No 2006-1279, RFF will approve and publish it, after consulting the EPSF.</p>
<p>State of progress [Annex 3 – RFF 2009 Annual Report – 26 May 2010]</p>
<p>Recommendation implemented [Annex 9 – RFF 2009 Annual Report – 10 June 2010] Supplementary examination between EPSF, <i>Syndicat des Entrepreneurs de Travaux de Voie Ferrées</i> SETVF [French Union of Rail Track Contractors], SNCF IM and RFF of draft of IN 1418 to be carried out (future RFN CG MR 3 A No 2)</p>

<p>Recommendation R2 (SNCF and RFF) For future complex track maintenance vehicles covered by document IN 1418, check their ability to negotiate distorted track and apply the complete protocol for dynamic testing on line as specified in UIC Leaflet 518 for vehicles using new technologies, which provides, in particular, for measuring the wheel/rail Y and Q interaction forces. In the case of a train similar to P21/95, at least submit the axle of the working group to these measurements.</p>
<p>Actions undertaken [SNCF reply to the BEA-TT report – 10 March 2009] This recommendation has already been taken into account in the draft special operating rule (RFN CG MR3 A No 3) concerning specialised equipment or equipment for exclusive use for infrastructure maintenance operations which will be put shortly to RFF for approval and publication. In the transitional period until this rule is applied, the instruction body (SNCF – Industrial Production Department Locomotives and Tools, DPI EO) has applied this recommendation since mid 2008 for equipment for which the files are under review. RFF reply to the BEA-TT report – 20 March 2009 The test on the axle when negotiating distorted track must be restricted to cases where it would be relevant. The text concerned is currently being drawn up by SNCF IM, which is in charge of its preparation, and will take this recommendation into account. As soon as it is received, and in accordance with the process for drawing up and updating this type of text under Article 10 of Decree No 2006-1279, RFF will publish it and make it applicable, after consultation with the EPSF and approval by RFF.</p>
<p>State of progress [Annex 3 – SNCF 2009 Annual Report – 26 May 2010]</p>

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<p>Recommendation implemented [Annex 9 – RFF 2009 Annual Report – 10 June 2010] Supplementary examination between EPSF, SETVF, SNCF IM and RFF of the draft of IN 1418 to be carried out (future CG MR 3 A No 2)</p>
<p>Recommendation R3 (RFF and SNCF) Develop the reference framework relating to the running of works trains; when these trains travel outside their working route on lines equipped with track-train radio (RST), and whatever the number of accompanying employees, provide for a track-train link on board the train, of the analogue RST or RST GSMR type.</p>
<p>Actions undertaken [SNCF reply to the BEA-TT report – 10 March 2009] SNCF is moving gradually towards the following general change, not achievable in the short term, which will take around ten years:</p> <ul style="list-style-type: none">– all new SNCF locomotives will from now on be equipped with RST when they have to travel on equipped lines;– all SNCF locomotives that are not equipped, which still constitute the majority of fleet will be upgraded as the deployment of the GSM-R is implemented on the ground. <p>While awaiting this change, SNCF will use portable RST equipment, which does not, however, offer the same performance in terms of reception sensitivity. RFF reply to the BEA-TT report – 20 March 2009] The track-train radio equipment of works trains must [...] be subject to particular conditions, all the more so as it is not considered to be a safety installation within the meaning of Decree No 2006-1534 of 6 December 2006 for the application of Articles 1, 1-1 and 1-2 of Law No 97-135 of 13 February 1997 creating the public body Réseau Ferré de France (RFF – French Rail Network) with a view to renewing rail transport.</p>
<p>State of progress [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] Recommendation implemented [Annex 9 – RFF 2009 Annual Report – 10 June 2010] To be followed up in the re-writing of IN 1418.</p>

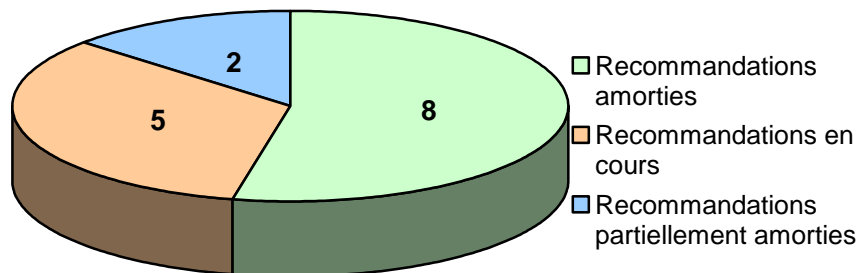
Follow-up by the EPSF of the recommendations of the BEA-TT

4 The reports published in 2009

In 2009, 15 recommendations (included in five reports) were published by the BEA-TT for the railway sector for which the EPSF has the role of national safety authority. The diagram below shows the state of these recommendations by classifying them in:

- recommendations implemented (green);
- recommendations partly implemented (blue). This status is given to the recommendations addressed to several entities and one at least of them has implemented the recommendation;
- implementation of recommendations in progress (orange). This status concerns the recommendations for which the actions undertaken do not permit the recommendations to be considered as implemented or for which the EPSF has not yet got information on the actions in progress.

États des recommandations émises dans les rapport parus en 2009



ENGLISH	FRENCH
Status of recommendations made in the reports that appeared in 2009	États des recommandations émises dans les rapports parus en 2009
Recommendations implemented	Recommandations amorties
Recommendations in progress	Recommandations en cours
Recommendations partly implemented	Recommandations partiellement amorties

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

4-1 Montauban – 26 April 2008

At 06.36 on Saturday 26 April 2008 freight train 467 473 belonging to the railway undertaking Veolia Cargo France, travelling from Bordeaux-Bassens to Boussens, made an emergency stop in Montauban station without being able to respect the signals protecting the junction on the Brive - Toulouse and Agen – Toulouse lines, despite applying the brakes. Between the initiation of the emergency brake application 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 injuries or material damage, thanks to the quick reaction of the signalman at Montauban and the absence of rail traffic on the junction and on the track occupied by train 467 473 at this time. This incident could have become a serious accident under slightly different circumstances.

BEA-TT report of 16 January 2009

Recommendation R1 (Veolia)

When drafting 'locomotive' rosters, specify the time for the routine preparation of locomotives prior to shunting and the formation of freight trains.

Actions undertaken

[VEOLIA reply to the BEA-TT report – 3 March 2009]

Publication of a 'preparation of a train' feed back sheet, on 15 July 2008, which states that routine preparation should be carried out before the locomotive is coupled.

Publication of a general management note on 25 July 2008, concerning routine preparation of traction units, laying down three requirements:

- carry out the preparation of a locomotive before coupling;
- make the routine preparation of each locomotive systematic in the vehicle roster and service graph, so that the locomotive is not coupled to its rake of wagons;
- involve depot managers to pass this information on to those in the field.

State of progress

Recommendation implemented

Recommendation R2 (Veolia)

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

Actions undertaken

[VEOLIA reply to the BEA-TT report – 3 March 2009]

Publication of Safety Note No 39, on 27 May 2008: 'Traceability of recognition, training and brake test operations': introduction of a track to train driver communications sheet.

Meeting between VCF and SOCORAIL on 2 July 2008, which decided to take the following action: 'improving and formalising the track to driver relation by setting up a communications sheet'

Check on 1 September 2008 that the communications sheet has been set up within the VCF South West Area.

State of progress

Recommendation implemented

Recommendation R3 (Veolia)

Strengthen and improve the efficiency of management control (and the control within contractual relations) of the railway undertaking on the training operators and train drivers.

Actions undertaken

[VEOLIA reply to the BEA-TT report – 3 March 2009]

Drafting a VCF-SOCORAIL plan of action on 2 July 2009:

- to improve the KN1 for SOCORAIL operators by assigning a permanent track manager to the VCF South West Area.
- to describe the measures set up by SOCORAIL to improve the organisation of work on the Bassens site and ensure the effective implementation of such measures by the manager.

As at 23 October 2008, all sub-contractor employees had been checked in KN1.

The plan of action drafted by SOCORAIL was completed on 5 December 2008.

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:

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- Analysis of monitoring 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, etc.).
- Proposals for improving methods of monitoring in the field for each area.
- Methods of accompanying trainees during practical courses: (analysis of current practices, conditions for reception, efficiency of the tutor system, logbook, proposals for improvement)

State of progress

Recommendation implemented

Recommendation R4 (Veolia)

For each train leaving for operation, conduct a routine 'Braking efficiency test' as close as possible to its place of departure.

Actions undertaken

[VEOLIA reply to BEA-TT report – 3 March 2009]

Publication of Safety Note No 37, on 5 May 2008 concerning the 'Braking efficiency test' 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.

State of progress

Recommendation implemented

Note

During the feedback meeting 'Sharing to make progress' of 8 April 2009, the EPSF drew the attention of the RUs to the 'Braking test' recommendation.

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

4-2 Zoufftgen – 11 October 2006

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 [Wrong-Line Working Fixed Equipment System]. While an SNCF freight train was running on this track from Thionville to Bettembourg, a TER regional passenger train was allowed to run in the opposite direction on the same track from Bettembourg station. These two trains were involved in a head-on collision at about 11.44 in France, a few dozen metres from the border near KP 203.700 (commune of Zoufftgen).

BEA-TT report of 28 February 2009

Recommendation R2 (CFL, SNCF and RFF)

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

Actions undertaken

[RFF reply to the BEA-TT report – 10 June 2009]

The possibility of extending the *Système Automatique d'Annonce des Trains* SAAT [SNCF automatic train announcing system] to Bettembourg was analysed but the result was not conclusive. It led to considering another solution thought to be more effective and which involves the setting up of an interconnection between the RFF SAAT and the CFL *Zugnummernmeldanlage* ZNL [Train number announcing system] systems. The SNCF is studying its feasibility and testing is in progress.

[SNCF reply to the BEA-TT report – 8 June 2009]

The compatibility of the functionalities and interconnection of the systems require an interface and this is being developed by the contractor selected for similar projects with DB (German Railways), such as the German and Luxembourg systems (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 will be installed at Bettembourg.

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

State of progress

[Annex 9 – RFF 2009 Annual Report – 10 June 2010]

Application in progress

[Annex 3 – SNCF 2009 Annual Report – 26 May 2010]

An initiative is in progress to interconnect the Luxembourg (ZNL) and French (SAAT) systems.

Recommendation R11 (CFL, SNCF and RFF)

Change the ground-train radio systems so that radio warnings and radio telephone communications sent by Bettembourg or Thionville signal boxes can be received on the systems of the section blocks located on the other side of the border.

Actions undertaken

RFF reply to the BEA-TT report – 10 June 2009]

Commissioning of the GSM-R system on the section on the border with Luxembourg, Thionville (Fr) – French border planned for 5 July 2009.

[SNCF reply to the BEA-TT report – 8 June 2009]

On 5 July 2009, the date of commissioning of the GSM-R on the French part of the border section, a new SNCF GSM-R unit was put into service in the main signal box at Bettembourg and the *Poste de Régulation à Commande Informatisée* PRCI [Computer controlled signal box] at Thionville. These 2 signal boxes have an alert button used to trigger an RST GSM-R alert on the French border section. The border instructions will be reissued at this time in order to take such modifications into account.

[Annex 9 – RFF 2009 Annual Report – 10 June 2011]

In July 2009, IANA was installed (an automatic alert between the CFL and the French systems) and a GSM-R desk in the central signal box at Bettembourg and in the PRCI of Thionville. These devices must be adapted when the RSR switches to GSM-R in Luxembourg.

State of progress

[Annex 3 – SNCF 2009 Annual Report – 26 May 2010]

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

Recommendation implemented

[Annex 9 – RFF 2009 Annual Report – 10 June 2010]

The IANA system has been installed since 14 September 2009

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

Recommendation R12 (SNCF, RFF and EPSF)

Consider tightening the regulations in the event of a radio fault, by stipulating that the fault must be remedied (by changing the traction unit, providing a portable radio set, etc.), according to more rigorous criteria.

Actions undertaken

[RFF reply to the BEA-TT report – 10 June 2009]

After review, RFF together with the EPSF and SNCF, was not in favour of tightening the rules in the event of a failure of the track to train radio

[SNCF reply to the BEA-TT report – 8 June 2009]

Given the information set out in the SNCF reply to the BEA-TT report of 8 June 2009, the SNCF is not in favour of tightening the rules beyond what has already been done.

[EPSF reply to the BEA-TT report – 12 June 2009]

The EPSF recommends that a study be conducted, under the responsibility of RFF, to review the possibilities 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 availability 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 and the development programme.

State of progress

[Annex 3 – SNCF 2009 Annual Report – 26 May 2010]

Recommendation implemented

Recommendation R14 (CFL, SNCF and RFF)

Install telephone links required to cut off the power quickly on request from the Bettembourg Central Control Post (CCP) in the event of an emergency on the French border-Thionville section of line.

Actions undertaken

[RFF reply to the BEA-TT report – 10 June 2009]

At the date of the letter, the telephone links are operational.

Therefore, the Bettembourg CCP has a direct telephone link with the Central Sub-Station (CSS) Eastern-France, which is responsible for the power supply to the catenary on the French section of the line – Thionville.

Similarly, the PRCI of Thionville can communicate directly with the CSS Luxembourg, which is responsible for the power supply to the catenary on the Luxembourg – Luxembourg border section of the line.

[SNCF reply to the BEA-TT report – 8 June 2009]

The telephone links between Bettembourg CCP and the (CSS) Eastern France and between the Thionville PRCI and the CSS Luxembourg are in service and their use is defined by an agreement between the SNCF and CFL. The re-issue of the border instructions planned for 5 July 2009 will take these points into account.

State of progress

[Annex 3 – SNCF 2009 Annual Report – 26 May 2010]

Recommendation implemented

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

<p>Recommendation R18 (CFL, SNCF and RFF) Prepare staff responsible for safety to deal with the emergency situations that are most likely to occur, including in particular:</p> <ul style="list-style-type: none">• identifying the risks to be dealt with;• formalising reaction scenarios;• training and the staging of exercises.
<p>Actions undertaken RFF reply to the BEA-TT report – 10 June 2009] Insofar as employees responsible for safety are concerned, such as those concerned by this recommendation, RFF is not directly involved, with the exception of the financing of the training of SNCF IM employees who have a safety responsibility under the terms of this order. [SNCF reply to the BEA-TT report – 8 June 2009] Controllers, traffic employees and signalmen:</p> <ul style="list-style-type: none">• reinforcement of training in the different languages used by operators on cross border sections;• setting up common safety management documentation;• 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. <p>Drivers:</p> <ul style="list-style-type: none">• 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;• drivers should be ridden with both by SNCF DPX Traction Inspectors and their counterparts on foreign networks every year on cross border routes.
<p>State of progress [Annex 3 – SNCF 2009 Annual Report – 26 May 2010] Recommendation implemented</p>

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

4-3 Saint-Médard-sur-Ille – 26 November 2007

On 26 November 2007, a lorry loaded with gravel was hit by the Rennes/Saint Malo Regional Express Train (TER) on the level crossing at Saint-Médard-sur-Ille. Forty people were injured, including 20 who were hospitalised. All were passengers on the train. Rail traffic was stopped for several hours.

BEA-TT report of 11 December 2009

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

Study and implement measures to facilitate the crossing of HGVs and their passing one another on this level crossing (arrangements or operating measures, regarding road or railway).

Actions undertaken

[RFF reply to the BEA-TT report – 12 March 2010]

Recommendation R1 falls within the national approach to provide safety diagnostic equipment for level crossings open to road traffic. [...] Level crossing No 11 at Saint-Médard-sur-Ille is part of this approach. Following the accident of 26 November 2007, and in agreement with the circulars, a meeting is planned for 30 April 2010 between RFF and the General Council of Ille-et-Vilaine in charge of the introduction of safety diagnostics. The purpose of this meeting is to launch the safety diagnostics for level crossing No 11. RFF will contribute to the assessment of the railway aspects in the implementation of the diagnostics and the definition of necessary additional safety measures.

State of progress

Recommendation R2 (SNCF)

Integrate in the texts governing the SNCF project management, the consultation with the regional Level Crossing expert for all work sites likely to affect the safety of a level crossing.

Actions undertaken

[SNCF reply to the BEA-TT report – 2 March 2010]

The two documents (IN 2934 and IN 2702) setting out the principles for organising safety will be supplemented by the requirement that the main contractor should consult the Level Crossing expert (new position of Regional Level Crossing Expert since 1 January 2010) for all work sites likely to affect the safety of a level crossing.

This matter will be the subject of a written information note to the Etablissements Equipements [Area Managers] before the end of the first half of 2010.

State of progress

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

The action is being processed.

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

4-4 La-Roche-en-Brenil – 7 July 2008

On 7 July 2008, an HGV loaded with a bituminous mix, on its way to an industrial area nearby, was hit by the Autun/Avallon Regional Express Train (TER) on the level crossing at La Roche-en-Brenil. Six people were slightly injured, all passengers on the train. Rail traffic was stopped for two days. Road traffic over the level crossing has not been re-established.

BEA-TT report of 14 December 2009

Recommendation R1 (SNCF and RFF)

Remind rail operating services to do the following when they are aware of significant changes to road traffic on a level crossing:

- check that the safety conditions are maintained, in particular as far as criteria fixed by the order of 18 March 1991 are concerned;
- then, if necessary, alert those concerned and the authorities responsible to take appropriate measures to re-establish the safety of this level crossing.

Actions undertaken

[SNCF reply to the BEA-TT report – 2 March 2010]

A letter briefly stating the circumstances of the accident on level crossing No 19 at La Roche en Brénil was sent on 16 February 2009 to all the Area Managers with the aim of raising the awareness of the services in charge of managing level crossings on several points, including the following:

- when they are asked for an opinion on a case involving a level crossing, ensure that the provisions of the Order of 18 March 1991 are complied with both during an intermediate stage of a works site and in the final situation;
- if necessary, start the administrative procedure relating to the classification of the level crossing;
- set up the project file to put supplementary equipment in place;
- arrange for information to be given to road users.

This letter also stated that if the safety of the level crossing was affected when work was being done, the parties involved (in particular the contractors and clients) and the authority concerned should be warned.

[RFF reply to the BEA-TT report – 23 March 2010]

This recommendation is part of the organisation currently in place within RFF to deal with problems of safety when non-railway works are carried out beside level crossings. Therefore, RFF will send a letter reminding its regional directorates of the implications of such works sites and the organisations to be taken into account. The note drawn up by the *Service d'Etude sur les Transports, les Routes et leurs Aménagements* (SETRA) [Technical Department for Transport, Road and Bridge Engineering and Road Safety] on 'Road works close to level crossings' will be attached to the reminder letter. In fact, although it does not apply directly to the accident on level crossing No 19, it offers solutions that may be applied generally to other work configurations.

State of progress

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

Recommendation implemented

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

4-5 Stade de France – 7 March 2009

On 7 March 2009, after attending a match at the Stade de France in Saint-Denis, some supporters of province were returning to their coach along the railway track close to the stadium. At about 23.25 they were hit by an RER B train. Two people were killed, three were seriously injured and one had minor injuries.

BEA-TT report of 15 December 2009

Recommendation R3 (SNCF and RFF)

Set in place organisations and specifications for closures ensuring that the doors and access gates to the railway are a reasonable deterrent to third parties while remaining easily accessible to authorised persons.

Actions undertaken

[SNCF reply to BEA-TT report – 3 March 2010] and [RFF reply to BEA-TT report – 23 March 2010]

Launch a joint specific study between SNCF and RFF before the end of 2010 to re-evaluate the specifications of current closures. This study must take into account the impact on the organisations and the human factor (ease of use and checking, adaptation to the local context, etc.).

State of progress

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

The action is being processed.

Recommendation R4 (SNCF)

Remind track maintenance employees of the importance of checking that closures and access facilities are in good condition during their rounds. Specify the service expected of SUGE [Railway Police] during their rounds, particularly seeing that the locks on the access points are properly closed, when it is decided to assign this task to them.

Actions undertaken

[SNCF reply to the BEA-TT report – 3 March 2010]

Since the end of March 2009, the following specific measures have been introduced to ensure that access points on the perimeter of the Stade de France are properly closed:

- an inspection round is carried out on the day of the event, including weekends, by an employee of the Equipment Department;
- if there is any doubt about the efficiency of a closure, the employee doing the round should close the access using a chain and padlock;
- if this is impossible, he should notify the SNCF Railway Police so that officers can be positioned at that point of access;
- this round will be traceable by a note on a document sent by fax to the Stade de France supervisory unit situated in the Traffic Management Operational Centre for Paris North.

A note for the attention of all employees of the Equipment Department will be drawn up and issued before the end of March 2010.

State of progress

[Annex 3 – SNCF 2007 Annual Report – General items – 28 May 2008]

Recommendation implemented

Recommendation R5 (RFF)

Review the policy for putting up notices stating that access to railway land is prohibited as well as the associated dangers, at the doors and gates providing access to the railway platforms. Define the ways of implementing this policy.

Actions undertaken

RFF reply to the BEA-TT report – 23 March 2010]

The policy of marking the boundaries of RFF railway land, formalised in document PO IF 2 B 42 No 1 of 22 October 2008 and in the practical guide NG IF 2 B 42 No 2 of 22 October 2008, provides for defining safety measures (notices, closures) depending on the level of the risks of intrusion.

The implementation of this policy was begun in 2009 with the identification of sensitive areas. The policy document will be amended by the end of 2010 so that notices are put up at the entry points of the national rail network situated close to locations of mass attendance.

Consequently, in the area around the Stade de France, the doors and gates providing access to the railway platforms will be systematically fitted with specific notices. The notices chosen will aim to prohibit access to the national rail network by unauthorised persons, state the penalties that may be incurred and

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warn of the risks in the event of intrusion.
State of progress

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

Annex 4: Organisational chart of the BEA-TT at 1 August 2011

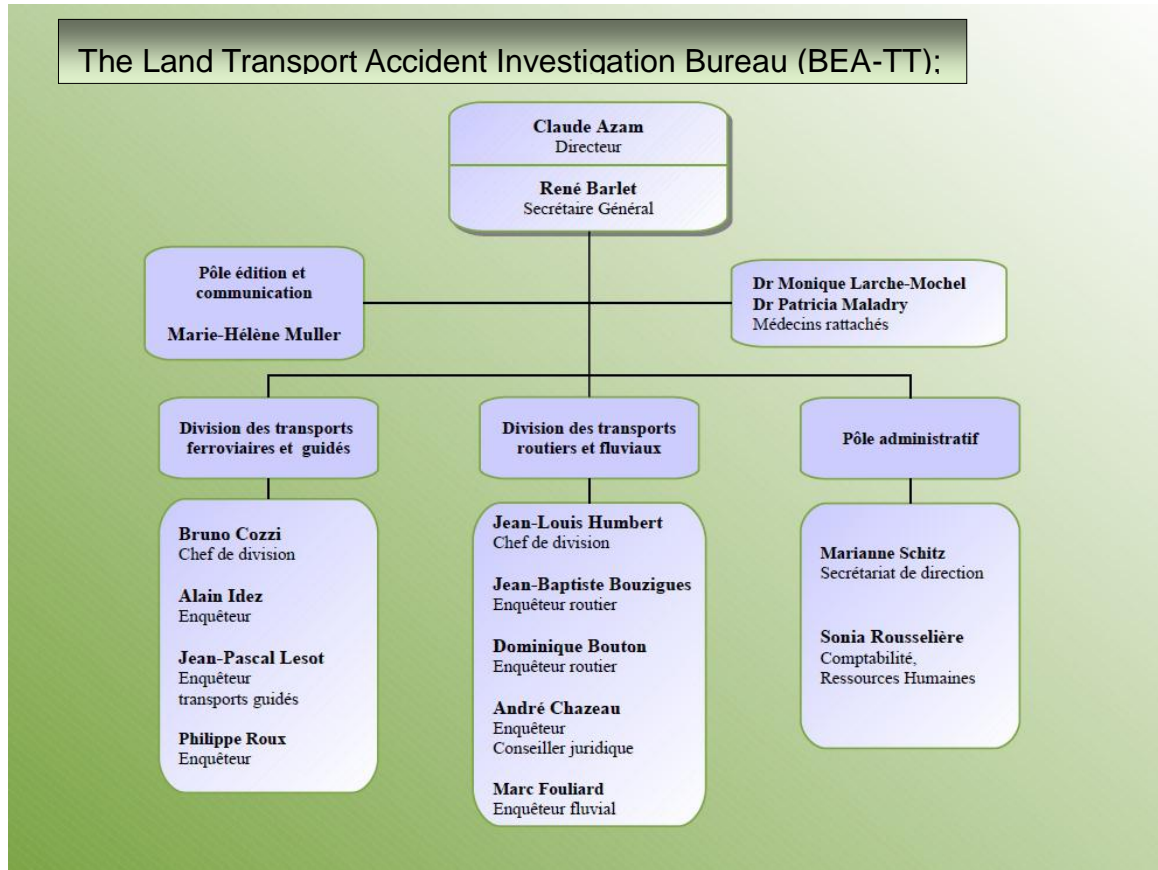
Claude Azam
Director

René Barlet
Secretary General

Edition and Communication Centre Marie-Hélène Muller		Dr Monique Larche-Mochel Dr Patricia Maladry Doctors attached
Division of Rail and Guided Transport	Division of Road and Inland Waterway Transport	Administrative Centre

Bruno Cozzi Head of Department	Jean-Louis Humbert Head of Department	Marianne Schitz Secretary of the Department
Alain Idez Investigator	Jean-Baptiste Bouzigues Road Investigator	Sonia Rousselière Accounting Human Resources
Jean-Pascal Lesot Guided Transport Investigator	Dominique Bouton Road Investigator	
Philippe Roux Investigator	André Chazeau Investigator Legal Adviser	
	Marc Fouliard Inland Waterway Investigator	

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

Annex 5: Legislation

- Law No 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 chemicals.⁹

Law amended by Law No 2006-10 of 5 January 2006 and Law No 2006-686 of 13 June 2006.

Technical investigations come under Heading III of Law No 2002-3.

It has been classified in Articles L 1621-1 to 1622-2 of the Transport code.

- Decree No 2004-85 of 26 January 2004 relating to technical investigations following maritime incidents and land transport accidents or incidents. Decree amended by Decree No 2006-1276 of 19 October 2006.

⁹ Published in the Official Journal of 4 January 2002, page 215.