BEATT

Bureau d'Enquêtes sur les Accidents
de Transport Terrestre

ANNUAL REPORT 2018

Land Transport Accidents Investigations Board

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2018

Land Transport Accidents Investigation Board (BEA-TT)
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A word from the director

Ladies and gentlemen,

More than 2800 land transport incidents or accidents were brought to the attention of BEA-TT in 2018. The first elements of information collected on these events helped to deepen the analysis for nearly 500 of them, which led to the opening of an investigation in 11 cases: 2 in the roadway sector, 5 in the railway sector, 3 of which were on level crossings, 2 concerned guided urban transport, 1 ski lifts and 1 inner navigation.

The year 2018 was particularly marked by the investigations carried out following the dramatic accident that took place on a level crossing in Millas in December 2017. In parallel, the investigators contributed to the general reflections that were undertaken to improve the safety of level crossings, especially within the framework of the parliamentary mission assigned to Mrs. Laurence Gayte.

Ten investigations were concluded and led to the formulation of preventive recommendations addressed to 22 recipients. Only one of them was not disclosed as provided for in the Transport Code.

Finally, 2018 was the fifteenth year of the existence of BEA-TT and it is an opportunity to renew our thanks to all those who have supported us with their assistance and abilities with regard to the 207 investigations opened, 191 of which were concluded and led to the formulation of 654 recommendations intended to improve land transport safety.

I hope you enjoy reading the 2018 edition of our annual report and remain at your disposal for any observations or suggestions that you may have to offer.

Jean PANHALEUX

1 - Roles and organisation of BEA-TT

1.1 - Reasons for a technical investigation of accidents

The human dramas caused by transport accidents and the spectacular damage they can cause remind us that people, equipment and organisations are fallible despite the progress made in safety terms.

Public authorities, accident victims and travellers are constantly demanding that the lessons from the most serious or complex accidents or incidents should be learned independently.

This involves analysing the circumstances and causes of these accidents in order to establish safety recommendations that could prevent them happening again, in the form of a technical investigation and an in-depth and transparent approach. Since highly-qualified and independent investigators need to be mobilised and the lessons learned capitalised on, these technical investigations are assigned to a permanent specialised organisation. This has been the role of the Land Transport Accidents Investigations Board (BEA-TT) since 2004.

Its scope covers rail transport, guided urban transport systems (underground railway and tram), ski lifts, road transport (particularly goods and public passenger transport) and navigation on internal waterways, each of these sectors having its own regulations and economic, technical, professional and even cultural logic.

Decisions to open technical investigations are made by the director of BEA-TT on his/her own initiative or at the request of the minister of transport. In the rail transport area, investigations must be carried out for all serious accidents as defined by EU directive 2016/798 of 11 May 2016 on rail safety.

This technical investigation must be completely different from a judicial investigation, which has different objectives focused on establishing responsibility, and different constraints, particularly in terms of deadlines.

In order to carry out their work effectively, technical investigators are commissioned to access all useful documents, evidence and information, even if covered by judicial, professional or medical secrecy. These are legal prerogatives.

On conclusion of the investigations or studies carried out, BEA-TT publishes its reports on its website: www.bea-tt.developpement-durable.gouv.fr. It notifies the recipients of the safety recommendations it makes.

1.2 - Organisation and resources

BEA-TT is organised around its main role, i.e. conducting technical investigations on accidents and incidents. For this purpose it enlists three categories of participants:

- firstly, its own full-time investigators;
- secondly, temporary investigators commissioned by its director for the purposes of an investigation and who benefit from the legal status of technical investigators; these can be active or retired agents of a transport company, an infrastructure management agency or a body of civil servants in charge of inspection or monitoring assignments;
- finally, experts appointed to answer precise questions.

Thus in 2018, BEA-TT called on a general engineer from the ministry and an investigator from outside the ministry to contribute to two investigations: one concerning an accident on a level crossing, the other, the collision of a passenger boat with a bridge pier.

In addition, in accordance with its constitutive texts, BEA-TT may call on all competent State services in its field. This is specifically the case when reporting accidents.

On 1 January 2018 BEA-TT had 14 authorised agents: 2 executive staff, 9 permanent investigators and 3 administrative agents. One physician from the General Labour Inspectorate has also been seconded to it to deal with medical aspects.

Its 2018 budgetary allocation for operations and studies was €50,000.

2 - Feedback on the incidents of the previous year

2.1 - Accident and incident reporting

As stipulated by the Transport French legislation, land transport incidents and accidents are brought to the attention of BEA-TT at the earliest opportunity after they have occurred. In practice, this feedback is mainly provided through the bulletins and the reports from the Ministerial Center of Operational Intelligence and Warning (CMVOA) of the ministry for an ecological and solidary transition and the cohesion of the territories, from the daily reports of the Interdepartmental Crisis Management Operational Centre (COGIC) of the Ministry of the Interior, as well as alerts and daily reports from some major transport operators.

The first thing done by BEA-TT is to use this information in order to be able to determine whether it is appropriate to open an investigation. Given the large number of reported events, this necessary and daily task is a very time-consuming activity and it has not previously been explicitly mentioned in the department's annual report.

The summary of this analysis is as follows:

	Reported events	Analysed events	Selected events
Road and river transport division	1349	188	6
Rail and guided transport division	1467	304	5
Total	2816	492 *(17,5 %)*	11 *(0,4 %)*

2.2 - Investigations opened in 2018

BEA-TT undertook 11 investigations in 2018 concerning the following:

- in the **roadway sector**, one collision between a bus and a light vehicle, one coach accident;
- in the **railway sector,** one derailing, two collisions occurring to the right of a level crossing, two pedestrian collision, one of which on a level crossing;
- in the **guided transportation sector**, two derailing involving an RER and a metro train;
- in the **ski lifts sector**, the fall of a cable car cabin;
- in the **river navigation sector,** the collision of a passenger boat with a bridge.

2.2.1 - Road and river transport division

1) Collision of a school bus and a light vehicle on 25 January, 2018, on RN524 in Manciet (32)

At about 12:30, on Thursday, 25 January 2018, a bus transporting students from a 3rd year class accompanied by their teachers, driving in the main lane, arrived at an intersection and rammed into the front left side of a light vehicle that pulled out right in front of it.

Surprised by this maneuver, the bus couldn't avoid it. It propelled the car into the ditch on the left side and swerved to the right with a trajectory that was slightly off of the road toward the field that bordered it. Because of the negative downhill gradient between the roadside and the field, the bus tipped onto its right side, hit the damp ground and slid around twenty metres before stopping.

This accident did not cause any deaths but 29 passengers were injured, 7 of which were seriously injured.

2) Bus accident on highway A7 on 26 May 2018 in Chantemerle-les-Blés (26)

At approximately 22:47, on Saturday, 26 May 2018, a bus transporting 31 people (18 of which minors) and driving in the right lane on highway A7, abruptly left its lane and rammed into the concrete barrier on the right side of the roadway, rolled over on its right side and stopped in the emergency lane.

This accident caused to the death of the driver and two passengers in the bus, the three of which were ejected during the accident. 8 passengers were declared in critical condition and 6 in critical but stable condition. 14 passengers were uninjured.

The accident caused significant damage to the bus and moderate damage to the roadway infrastructure.

3) Collision of the passenger boat "Bijou du Rhône" [Rhone Jewel] with a bridge pier of highway A47 on 6 April 2018, in Givors (69)

Departing from Lyon at the start of the cruise, the "Bijou du Rhône" descends the Rhone River and prepares to pass under the A47 highway bridge near the municipality of Givors on 6 April 2018, around 23:40.

Three-quarters of the way through, the boat impacts a bridge pier located at the centre of the river with its starboard aft side. Water begins to enter the equipment cabin. The captain decides to dock as quickly as possible to secure all of the passengers and equipment.

Once at the dock, the passengers are evacuated from the boat with the help of the land emergency services that quickly arrived on site. No one was injured and there were no casualties.

2.2.2 - Rail and guided transport divisions

1) Collision between a TER [regional express train] and a light vehicle on 14 January 2018 on the LC No. 19 in Auxerre (89)

Around 17:34, on Sunday, 14 January 2018, a TER coming from the Auxerre station impacts a light vehicle driving on the RN 77 with two people inside, stopped between the barriers, on the level crossing No. 19 of the railway line from Auxerre to Laroche-Migennes.

The two occupants of the light vehicle were killed in the collision.

2) Impact of a pedestrian by a TER on a crossing at the Écommoy (72) station on 22 February 2018

At 20:06, on Thursday, 22 February 2018, an empty passenger train en route to Alençon via Le Mans arrives at a high speed in the Écommoy station. There it passes a TER, which is leaving the station after having been served.

Three people cross the rails behind the TER on an equipped crossing. One of them is fatally impacted by the crossing train.

The crossing in the station is equipped with lighted pictographs indicating that it is prohibited to cross as trains pass by. The only witness statement collected states that this signaling was not functioning.

3) Collision between a locomotive and a light vehicle, 3 April 2018, on the LC No. 82 at Coulogne (62)

Shortly before 16:00, on Tuesday, 3 April 2018, a light vehicle, after restarting 50m upstream of a construction sight red light, arrives on low speed before a closed level crossing. The vehicle veers to the left, avoiding the lowered barrier and enters the tracks as a locomotive arrives at 75 km/h.

Upon impact, the car is thrown around 30 metres. The two passengers die on the spot.

4) Derailment of a TGV on 24 August 2018, at the entrance of the Marseille-Saint-Charles station (13)

Before 18:00, on Friday, 24 August 2018, the TGV 6145 coming from Paris arrives at the Marseille-Saint-Charles station, its terminal. The TGV is composed of two primary trains connected in multiple unit. When the front of the train reaches the platform, the rear of the train derails from the seven last cars and the rear engine.

Before stopping, the TGV continues 155 metres and causes significant damage to the track devices. The cars and the engine that derailed undergo significant damage on the underside. No travelers were injured. Evacuation operations were then carried out without difficulty.

Four tracks of the station site thus remain unusable until the complete repair of the infrastructure, requiring redevelopment of the connections and schedules for a week. Numerous trains were cancelled.

5) Impact of a pedestrian by a TER on a level crossing in the station on 3 September 2018, in Nouan-le-Fuzelier (41)

At 18:41, on Monday, 3 September 2018, a 15-year-old was impacted by a train when crossing the closed and guarded level crossing in the Nouan-le-Fuzelier station.

After having descended from a TER serving the station, he tried to cross the tracks behind his train on the level crossing in order to access downtown. Despite the calls of the gatekeeper and other people who descended from the same train, the young man continued his way and was impacted by a crossing train moving at 145 km/h. In this area, the speed of trains can reach up to 200 km/h.

6) Derailment of a RER B train on 12 June 2018, in Saint-Rémy-les-Chevreuse (78)

At 05:00, on Tuesday, 12 June 2018, on line B of the Parisian RER between the stations Sain-Rémy-lès-Chevreuse and Courcelle-sur-Yvette, a train heading toward Paris derails and partially rolls over.

The engine remained on the rails, while the 2nd, 3rd and 4th cars rolled over on the left side and tipped into the ditch. The rear train, still attached to the derailed cars, also remained on the track.

The seven passengers present in the train were cared for by the firefighters. No serious injury was reported. Three passengers with minor injuries were taken to the hospital. At 16:00, all of them were already discharged.

7) Derailment of a metro train on line M2, on 21 December 2018, in Marseille (13)

At 08:25, on Friday, 21 December 2018, a line 2 metro train in Marseille derailed from a bogie just after leaving the terminal Sainte-Marguerite-Dromel.

An evacuation was carried out and proceeded in good conditions. The train was transporting around 100 passengers. There were 15 passengers with minor injuries, 14 of them were cared for by the navy fire department.

Significant material damage occurred with regard to the railway and the train. The line was once again operational the following day at 16:00.

8) Fall of a Costebelle cable car cabin on 28 March 2018, in Pra Loup (04)

The event concerns a Costebelle cable car located in the ski resort Pra Loup, in Uvernet-Fours in the Alpes de Haute-Provence.

At 13:33, on Sunday, 25 March 2018, cabin No. 7 of the cable car Costebelle fell a dozen metres shortly after its departure from the lower station. It slowly rolled down the slope before stopping in the nets below. The cabin was empty and there were no victims. The

installation stopped when the conductor pressed the emergency shutdown button, after being informed that the cabin had fallen via radio.

A vertical evacuation of users was implemented at 15:35: 62 people ascending and 10 descending were counted. Rescue continued until 16:55.

The operator stopped the operation of the cable car and a Prefectoral decree suspending the operation of the device was taken on 12 April 2018.

3 - Published reports

3.1 - Rail transport

3.1.1 - Investigations concluded in 2018

Two investigations into rail transport accidents were concluded in 2018. The nature, dates and locations of these accidents are specified in the table below.

With regard to Directive 2016/798 of 11 May 2016 on rail safety and in view of the scale of their consequences, these two accidents did not constitute serious accidents for which a technical investigation was mandatory. But given the significance of the safety risks they have revealed or the conditions of their occurrence, investigations have been opened.

Date	Nature and location of the accident	Number of deaths	Mode*
26.12.2016	TER to Antibes (06) crossing a closed signal and hitting a point	0	R
18.08.2017	Two TER catching up to one another near the La Redonne-Ensuès station (13)	0	R

3.1.2 - Recommendations issued

In conclusion of these 2 reports, 5 separate recommendations were made by BEA-TT.

Nature of the recommendations

- 1 concerns the development of benchmarks or procedures;
- 2 aim at improving the training of operators;
- 1 concerns the performance of rolling stock;
- 1 concerns the development of risk analyses for better safety.

Recipients

The 5 recommendations were sent as follows:
- 4 to the RFN infrastructure manager;
- 1 to a rail transport company;

Follow-up action planned by recipients

The table below shows the follow-up action that the recipients of the above recommendations plan to carry out.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
Antibes	2	2	0	0
La Redonne	3	3	0	0
TOTAL	5	5	0	0

3.1.3 - Monitoring the implementation of the recommendations

Independently of the intentions expressed by the recipients and summarised in paragraph 3.3 below, the National Rail Safety Authority (EPSF) monitors the effective implementation of the recommendations that BEA-TT sends to national rail network operators.

*R = rail; LC = level crossing

On the basis of this monitoring, the state of progress of operational implementation of the recommendations sent between 2004 and 2017 to these operators is as follows:

Year of publication of the report	**Number of recommendations addressed**			
	Total	Closed		In progress
		Completed	Not accepted	
2004-2006	30	28	0	2
2007	19	19	0	0
2008	21	21	0	0
2009	24	21	2	1
2010	15	13	1	1
2011	10	9	0	1
2012	15	8	4	3
2013	12	7	0	5
2014	10	8	0	2
2015	14	2	0	12
2016	23	10	0	13
2017	17	9	0	9
Total 2004-2017	210	155	7	48

3.1.4 - General summaries of investigation reports published in 2018

TER crossing a closed signal and running through a switch at Antibes (06) on 26 December 2016

At 16:10 on Monday, 26 December 2016, in the Antibes station, TER No. 86036 Ventimiglia Cannes ran through, at a speed of 15 km/h, a track switch located on the main AN2 track and positioned to allow the crossing of a TGV arriving on the central rail.

The impact was the consequence of crossing the C1324 signal, which was closed and was not observed by the conductor.

Poorly informed by the conductor, the Antibes signalman believed it was a functional failure of the installations of the switch station and continued to operate his station.

The TER conductor continued his task and would only find out the next day, when investigations showed he had crossed the signal.

The TGV, which was arriving 5 minutes later, stopped as normal at the signal protecting the tswitch, which was now out of service. He continued his route using another itinerary.

There were no victims or damage to rolling stock material. Only the impacted switch was damaged, rendering crossing impossible and thus, circulation on the AN2 track.

The impact was the immediate consequence of crossing the closed signal. Crossing the closed signal was the result of the TER conductor not observing the point protection signal. Nevertheless, a collision accident between the TGV and TER was avoided.

Numerous loopbacks didn't function:

- the speed control automated system (KVB) which was out of service following a software failure on the train;
- the signal detonator, whose cartridge had exploded and was not perceived by the conductor;
- the "closed signal" repetition in the cabin that should have led the conductor to initiate emergency braking.

Furthermore, the handling of the situation by the signalman was not adequate.

The analysis of this situation led BEA-TT to make two recommendations in the following areas:

- the processing of computer bugs disturbing the functioning of KVB on the SN Regio material;
- the ability of new traffic agents to handle complex situations.

http://www.bea-tt.developpement-durable.gouv.fr/antibes-r253.html

Two TERs catching up to one another on 18 August 2017 near the La Redonne-Ensuès station (13)

At 08:40, on Friday, 18 August 2017, the conductor of the TER 879719 Miramas – Marseille-Saint-Charles via Martigues, while leaving the Metheron tunnel, noticed the two rear red lights of the TER 879715, which was traveling on the same track in front of him.

The conductor of the TER 879719 initiated emergency braking and stopped near kilometer 857,400, around 50 m from the TER 879715. A collision was avoided.

The cause of this incident is a lack of respect by the signalman in the Martigues station of the procedure that includes, in a situation involving a disruption in the block, to ensure that the bock is free of any traffic before authorising a train conductor to use axle counter reset preparation system and to cross a signal presenting the indication “semaphore.”

The failure to respect the procedure led these two trains to be in the same block when the system only counts one. The first train leaving the block put the signal “open lane” (green light), allowing the entrance of a new train at full speed in the already occupied block.

The organisational and human factors leading to this error are:

- a lack of visualization tools for the positioning of trains to obtain the assurance that the trains leave the block and instructions whose terms can lead to confusion and include contradictions;
- a lack of understanding with regard to the functioning of the axles counter reset preparation device;
- difficult management of an incident in a configuration of rapidly occurring events, in which the timing of trains with the same number of axles were separated by 30 minutes.

BEA-TT is providing three recommendations and two invitations in the following areas:

- the clarification of instructions and availability of operational tools;
- the training and continuous control of agent knowledge in situations involving the disruption of installations;
- the systematic performance of an impact study, during changes in operation methods, according to the common safety method..

http://www.bea-tt.developpement-durable.gouv.fr/la-redonne-ensues-r261.html

3.2 - Road transport

3.2.1 - Investigations concluded in 2018

Five reports dealt with road traffic accidents (not including level crossings and intersections with tramlines).

The table below sets out the locations and dates of the five accidents under consideration, which cost the lives of 24 people.

Date	Nature and location of the accident	Number of fatalities
17.09.2015	Pile-up on the A8 highway at La Turbie (06) toll gate	1
29.10.2015	Accident on A8 highway at Saint-Isidore toll gate in Nice (06)	1
11.02.2016	Collision of a school bus and a heavy vehicle in Rochefort (17)	6
24.03.2016	Collision of a truck and a heavy vehicle on the RN79 in Montbeugny (03)	12
08.01.2017	Loss of control of a bus on the RN79 in Charolles (71)	4

These accidents have indicated the need to improve the respect for existing signals by adapting or reinforcing them, as well as developing an alert in case of the utilization of material installed in the vehicles used for Construction and Public Works (BTP).

3.2.2 - Recommendations issued

Nature of the recommendations

Upon the conclusion of these five investigations, BEA-TT issued 6 separate recommendations:

- 1 relates to vehicle layout regulations;
- 1 concerns the amendment of the unique professional risk assessment document;
- 4 concern respect for signals.

Recipients

These recommendations were addressed to several recipients:

- 1 to a professional BTP body;
- 3 to an infrastructure manager
- 2 to general government departments (DGEC, DSR and DGITM).

3.2.3 - Follow-up action planned by recipients

The table below shows the follow-up action that the recipients of the above recommendations plan to carry out.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
La Turbie	2	1	0	1
Saint-Isidore	2	2	0	0
Rochefort	2	2	0	0
TOTAL	6	5	0	1

The reports on the Montbeugny and Charolles accidents did not lead to any recommendations.

3.2.4 - General summaries of investigation reports published in 2018

Pile-up involving a bus, two light vehicles and a motorcycle on 17 September 2015 on the A8 highway to the right of the La Turbie (06) toll gate

At 13:30, on Thursday, 17 September 2015, an accident involving a bus, two light vehicles and a motorcycle took place on the A8 highway in the direction of Italy to France at La Turbie toll gate in the commune of La Turbie in the Alpes Maritimes (06).

In this accident one passenger in the bus died and 20 people were injured among the passengers in the bus and the light vehicles as well as the motorcycle driver.

The accident led to the closure of the toll gate in the direction Italy-France and the suppression of the fast lane on the A8 highway in the direction Italy-France.

The direct cause of this accident is the loss of control of a bus by its driver, following an inappropriate speed as it approached the toll gate.

At the bottom of the Turbie slope , this driver wasn't able to brake before reaching the toll plaza and hit a stationed light vehicle at a high speed (around 112 km/h) causing a chain collision.

The dramatic consequences of this driving error could have been avoided or lessened if the bus driver had respected the 70 km/h speed limit in the descent.

Consequentially, BEA-TT formulated, for the Estérel Côte-d'Azur highway company, a recommendation with regard to the reinforcement of signaling in order to inform heavy vehicle drivers of the dangerous nature of the descent and the importance of controlling their speed.

BEA-TT also recommends to the Alpes-Maritimes Prefecture and Delegation of Road Safety the installation of a speed camera for the La Turbie slope.

http://www.bea-tt.developpement-durable.gouv.fr/la-turbie-r231.html

Accident that occurred on 29 October 2015 in Nice (06) on the A8 highway at the Saint-Isidore toll barrier

Around 16:50, on Thursday, 29 October 2015, a car-carrying articulated truck traveling on the A8 highway in the direction Italy – Aix-en-Provence, driving on the last part of the Nice Saint-Isidore descent, suddenly lost its braking ability a few hundred meters from the toll.

The articulated truck descended this steep slope zigzagging between the vehicles and arrived at the toll at a speed of around 115 km/h.

As a last minute reaction, he entered a toll lane that seemed to be less busy than the others, hit several vehicles in the line, destroyed the toll barrier structures, lost part of its load and stopped around fifty meters ahead.

This accident took the life of a motorcyclist, caused injuries to eight people, several of them had to be hospitalised for more than 24 hours, and led to significant material damage.

The direct and immediate cause of this accident is the failure of the braking system of the articulated truck in the descent.

Numerous factors played or could have played a part in the occurrence of this accident:

- the degraded state of the braking system;
- the accessibility of arrester beds.

The analysis of this accident led BEA-TT to formulate two recommendations for the ESCOTA company, and one for the Directorate General for Infrastructure, Transport and the Sea (DGITM), regarding the safe distance between heavy vehicles and the signaling of arrester beds.

http://www.bea-tt.developpement-durable.gouv.fr/saint-isidore-r236.html

Collision of a school bus and a heavy vehicle which occurred on 11 February 2016 in Rochefort (17)

On the morning of Thursday, 11 February 2016, on avenue Victor-Louis Bachelar in Rochefort (17), around 07:10, a school bus passed a dump truck whose left sideboard was open at a 90° angle with regard to the vertical.

Encroaching on the opposite lane at the time of crossing, the sideboard sliced the entire left side of the bus, killing six young high school students seating next to the window.

The direct cause of the accident is the overage, width-wise, of the size of the truck.

Several factors contributed to the occurrence of this accident:

- the conditions of the moment, darkness of the night, mist, and the shadowed area of the left side of the truck could have hindered the driver;
- the absence of a warning device to alert the driver that the sideboard was in an open position before proceeding and traveling on the public road;
- the absence of signaling of this sideboard, which was not seen by the driver of the bus until the moment of passing.

Taking these elements into consideration, BEA-TT issued two recommendations regarding:

- the improvement and securing of warning devices;
- the enhancement of prevention using the unique risk assessment document.

http://www.bea-tt.developpement-durable.gouv.fr/rochefort-r245.html

Collision involving a heavy vehicle and a van which occurred on 24 March 2016 on the RN 79 at Montbeugny (03)

At about 23:40 on Thursday, 24 March 2016, a van with a trailer carrying 12 people travelling from Switzerland to Portugal for Easter collided with an articulated truck on National Road No. 79 in the commune of Montbeugny (03).

This accident cost the lives of 12 people, all passengers in the van.

The direct cause of the accident is the decision of the van driver who, without sufficient visibility, attempted to overtake, at an excessive speed, with a vehicle in a deplorable state (worn brakes and tires) and with overload, which was also pulling a trailer in poor technical condition.

The consequences of this action were a head-on collision with an articulated truck and the death of 12 people present in the van and transported in an illegal and dangerous manner (seats illegally added with defective or missing seatbelts...).

Taking into consideration the nature of the causes and circumstances of this accident, BEA-TT can't formulate specific preventative recommendations. Observing basic rules of the highway code would have without doubt prevented such an accident from occurring.

http://www.bea-tt.developpement-durable.gouv.fr/montbeugny-r246.html

Bus run off the road
on the RN 79
on 8 January 2017
in Charolles (71)

On the night of 7 to 8 January 2017, at about 04:12, a bus pulling a trailer, which was transporting 32 people from Portugal to Switzerland, drove off the Nation Road No. 79 at the exit of a viaduct in the municipality of Charolles (Saône-et-Loire department).

This accident cost the lives of 4 people, all passengers on the bus. It also resulted in the hospitalisation of 28 people (3 in critical condition and 25 in critical but stable condition).

The direct cause of this loss of control is most likely an excessive driving speed with regard to the state of the roadway, with a bus whose rear tires were overinflated, thus with reduced adherence, and that was pulling a trailer with faulty brakes.

The analysis of the causes and circumstances of this accident by BEA-TT didn't lead to the issuance of specific recommendations, apart from the reminder of the basic rules of the highway code for driving vehicles, especially driving with caution when the road's skid resistance is degraded due to bad weather conditions, checking the state of the vehicle, the obligation to wear a seatbelt, which would have decreased the dramatic outcome of this accident.

http://www.bea-tt.developpement-durable.gouv.fr/charolles-r257.html

3.3 - Guided transport

3.3.1 - Investigation concluded in 2018

An investigation concerning a guided transport accident was completed in 2018

Date	Nature and location of the accident	Number of fatalities
23.08.2015	Derailing of a tramway train in Lyon (69) following its collision with a light vehicle	0

This accident demonstrates the sensitivity of certain tramways to derailing when they collide with a light vehicle, and the risk of further accidents that can result from the tramway leaving the rails. The risk is to be addressed by the introduction of appropriate speed limits for tramways crossing intersections and by seeking to improve the a train's behaviour during an accident.

3.3.2 - Recommendations issued

Upon conclusion of this investigation, BEA-TT made 3 separate recommendations.

Nature of the recommendations

Of these 3 recommendations:

- 2 consider the improvement of the behaviour of future and current tramways in case of a collision;
- 1 concerns the adaptation of tramway driving instructions, especially with regard to appropriate speed limits when crossing intersections.

Recipients

One of the above-mentioned recommendations was addressed, with the same wording, to several recipients, so that the total number of recommendations sent regarding the investigations in question amounts to 6, of which:

- 2 were sent to mobility organising authorities;
- 2 sent to operators;
- 1 to STRMTG;
- 1 was sent to a rolling stock manufacturer.

3.3.3 - Follow-up action planned by recipients

The table below shows the follow-up action that the recipients of the above recommendations plan to carry out.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No reply
Lyon	6	6	0	0

3.3.4 - Monitoring the implementation of the recommendations

On the basis of monitoring carried out by the Ski Lift and Guided Transport Technical Department (STRMTG), the state of progress of the operational implementation of the recommendations made between 2013 and 2017 following guided transport accidents is as follows:

Year of publication of the report	Number of recommendations addressed			
	total	closed		In progress
		completed	Not accepted	
2015	3	0	0	3
2016	7	2	0	5
2017	14	0	2	12
Total 2013-2017	24	2	2	20

3.3.5 - General summaries of investigation reports published in 2018

Derailment of a train on the T2 tramway line in Lyon (69) following a collision with a light vehicle on 23 August 2015

At 15:51 on Sunday, 23 August 2015, in the 8th arrondissement of Lyon, a train on the T2 tramway line driving on Jean XXIII boulevard toward its terminal “Saint-Priest - Bel-Air” was struck in the front by a Citroën Berlingo vehicle coming from rue Bataille and entering the platform.

Due to the impact, the three bogies of the train were derailed, and it crossed the adjacent roadway, hit two parked cars in the process, one of which hit a third car by ricochet. It then crossed the fence of a co-property and stopped a few metres from the entrance to the building. It traveled a total of 55 metres following the collision.

There were 5 victims with minor injuries resulting from this accident. The consequences, however, would have been more dramatic if another train, vehicles, pedestrians or a building were in the trajectory of the derailed train.

The direct cause of the accident was the failure of the vehicle driver to respect his traffic light which had been red for more than 30 seconds.

The driver’s inattention, who was deep in thought, and the train conductor’s lack of caution when approaching the intersection, who had limited visibility of the crossing street, contributed to the collision.

Two other factors also contributed to the significant derailment:

- the sensitivity of this type of tramway in the event of impacts with roadway vehicles;
- the significant speed of the tramway and the failure of the conductor to brake before the impact.

The analysis of this accident led BEA-TT to issue three recommendations and an invitation on these two subjects.

http://www.bea-tt.developpement-durable.gouv.fr/lyon-r230.html

3.4 - Ski lifts

3.4.1 - Investigations concluded in 2018

One investigation on an accident that occurred during the operation of ski lifts was completed in 2018.

Date	Nature and location of the accident	Number of fatalities
8.09.2016	Immobilisation and delayed evacuation of the cable car “Panoramic Mont-Blanc”	0

This event concerns a very unique installation due to its extensive reach and high-altitude location on the Mont-Blanc massif. The event illustrates that for a ski lift for which evacuation is planned via “integrated recovery,” meaning returning to a station in any cabin circumstances, latent defaults and a weak resistance of the installation can lead to a long-lasting immobilisation for travelers, which can be dangerous to their health. The analysis of risks prior to operation should consider and address all eventualities, feasibility testing should be carried out to verify behaviour in a degraded situation and passenger rescue and assistance devices should be properly sized.

3.4.2 - Recommendations issued

Upon conclusion of this investigation, BEA-TT made 5 separate recommendations.

Nature of the recommendations

Of these 5 recommendations:

- 2 concern the improvement of regulations and methodological guides intended for the profession;
- 1 deals with enhancing the instructions given to operators and those involved in maintenance;
- 1 has to do with the improvement of installations to minimize risks;
- 1 concerns the reinforcement of safety management by the operator.

The 5 recommendations were sent as follows:

- 2 to STRMTG;
- 3 to an operator.

3.4.3 - Follow-up action planned by the recipients

The table below shows the follow-up action that the recipients of the above recommendations plan to carry out.

Investigation	Recommendations			
	Number	Accepted	Not accepted	No response
Chamonix	5	5	0	0

3.4.4 - *Monitoring the implementation of the recommendations*

On the basis of monitoring carried out by the Ski Lift and Guided Transport Technical Department (STRMTG), the state of progress of operational implementation of the recommendations made between 2013 and 2017 following accidents affecting the operation of ski lifts is as follows:

Year of publication of the report	**Number of recommendations addressed**			
	Total	Closed		In progress
		Completed	Not accepted	
2013	3	0	0	3
2014	8	1	1	6
2015	2	1	0	1
2016	0	0	0	0
2017	8	3	0	5
Total 2013-2017	21	5	1	15

3.4.5 - General summaries of survey reports published in 2018

Immobilisation and delayed evacuation of the cable car “Panoramic Mont-Blanc” on 8 September 2016 in Chamonix (74)

The event concerns the Panoramic Mont-Blanc cable car located in the Chamonix commune on the Mont-Blanc massif.

At 15:20, on Thursday, 8 September 2016, following an unexpected stoppage of the device, oscillations of the line occurred and led to a tangling of the traction cable with the carrying cable on three parts of the line.

A cable “untangling” procedure was therefore initiated. The sudden breaking of part of the motor interrupted and prevented this procedure from being completed.

At 17:20 the cable car was still stopped with 110 passengers on the line. All options for restarting it seemed exhausted. A helicopter evacuation was therefore decided upon.

54 people were rescued by 20:50, which was nightfall time. 24 other people were rescued by 22:30, but via vertical rescue and walking along the glacier. 32 people remained in the cabins all night.

During the night, the motor was repaired. A new attempt to untangle the cables was carried out at 07:15, with success. It however caused a new incident: the derailing of an empty cabin from the carrying cable. The repatriation of the last passengers was carried out at a low speed and was completed by 08:50. They were stuck on the line since 17:30.

The initiatory fact of the prolonged immobilisation of the cable car was the trigger of a safety feature that theoretically should have made the installation safer. This safety feature was activated due to a modification in the setting of the installation carried out the day before.

The latent defaults and a weak resistance of the installation and its operation led to a progressive degradation of the situation, which the operator didn’t know how to manage without using public rescue services.

The causes of the prolonged immobilisation and its repercussions were:

- the sensitivity of the device to oscillations of the traction cable which led it to cross the carrying cable in several places and thus led to immobilisation;
- the breaking, during an attempt to uncross the cables, of a badly crimped hose on a motor that had just been replaced and whose ability to uncross the cables had not been verified;
- the omission of devices reducing certain risks of immobilisation, due to an incomplete safety study;
- the overestimation, before the event, of passengers' ability to withstand hostile environments, for a long duration, and the underestimation of the assistance they would need;
- the lack of operational rigor to ensure a high level of safety of the installation.

BEA-TT issued five recommendations and an invitation in the following areas:

- knowledge of dynamic effects on the Panoramic Mont-Blanc;
- the safety of cabins with regard to derailing;
- operational rigor for the maintenance of a high level of safety;
- the consistence of feasibility testing concerning, more generally, installations sensitive to dynamic effects;
- the quality of cable car safety studies for integrated evacuations;
- the vigilance of cable cars safety control services.

http://www.bea-tt.developpement-durable.gouv.fr/chamonix-mont-blanc-r249.html

4 - Summary of the recommendations

4.1 - Global overview

Ten investigations were concluded in 2018. The 10 accidents to which they refer cost the lives of 24 people.

For one of these cases, the investigations carried out quickly made it possible on the one hand to determine the causes and circumstances of these accidents and on the other hand to note the absence of factors likely to lead to preventive recommendations. As a result, BEA-TT made the decision to close it in the form of a summary sheet summarising the findings of the investigations.

It concerns the passenger boat Bellefleur, which was navigating on the Rhone on 10 October 2015, colliding with a bridge pier of the A7 highway.

The decision to close the investigation as well as the summary forms are available on the BEA-TT website.

4.2 - Nature of the recommendations

In concluding these 9 reports, BEA-TT made 19 distinct recommendations:

Of these 19 recommendations:

6 concern the road sector:

- 2 relate to regulations concerning vehicle layout;
- 2 concern the upgrading or reinforcement of signage;
- 1 deals with occupational risks and updating of the unique occupational risks assessment document (DUERP);
- 1 concerns safe distances between heavy vehicles on highways.

5 concern the railway sector:

- 3 cover the improvement of driver training (continuous monitoring), that of traffic agents (provide a “two-lane traffic agent” module) and specific continuous training on the functioning of BAPR*;
- 1 deals with the updating of BAPR regional instructions;
- 1 concerns taking occupational risks into consideration, especially with regard to a change in operation.

3 have to do with guided transport:

- 1 concerns safety and speed limits when tramways cross intersections;
- 1 concerns the validation of reference material and the derailing rate of tramway trains;
- 1 covers the measures to be taken for new rolling stock to reduce sensitivity to derailing

5 for the ski lift sector:

- 1 concerns the creation of an “instructions” document intended for operators for the operation of the Panoramic Mont-Blanc;
- 1 relates to the reinforcement of rules in technical guides on dynamic tests for installations sensitive to cable oscillations;
- 1 concerns the strengthening of safety regarding the derailing of cabins;
- 1 covers studies on safety and establishment of a minimal list of risks for integrated recovery cable cars;

* BAPR: Automatic blocks with restrained permissiveness

- 1 concerns the reinforcement of the management of safety for the operation of Panoramic Mont-Blanc

Some of the recommendations mentioned above were sent with the same wording to several recipients, so the total number of recommendations received by recipients was 22, i.e. 5 for rail transport, 6 for road transport, 6 for guided transport and 5 for ski lifts.

4.3 - Follow-up action planned by the recipients

Article R. 1621-9 of the Transport Code stipulates that the recipients of recommendations must inform the director of BEA-TT within 90 days of the actions they intend to take in response and, if applicable, the time required to implement them. Their replies are published, as are the recommendations themselves.

Out of the 22 recommendations issued in 2018:

- 21 were accepted and their implementation confirmed, in some cases setting a deadline;
- 1 has not yet been answered by the concerned recipient.

It should be noted that BEA-TT does not have the authority to monitor the operational follow-up effectively given to the issued recommendations.

By law or de facto, an external authority takes charge of monitoring this implementation beyond the simple collection of information on the intentions of recipients by BEA-TT.

With regard to the main rail transport players, this monitoring is carried out by the National Rail Safety Authority (EPSF)* in accordance with EU directive 2016/798 of 11 May 2016 and national transport texts.

DGITM*, the central administrative department of the ministry of transport or STRMTG* (Ski Lift and Guided Transport Technical Department), a service that is part of the DGITM, monitors the implementation of the recommendations by their other recipients.

* Term contained in the glossary

APPENDICES

Appendix 1: EPSF table showing monitoring of the implementation of rail transport recommendations issued by BEA-TT

Appendix 2: STRMTG table showing monitoring of the implementation of guided transport recommendations issued by BEA-TT

Appendix 3: STRMTG table showing monitoring of the implementation of ski lifts recommendations issued by BEA-TT

Appendix 4: BEA-TT organisational chart and institutional texts

Appendix 5: Glossary

Appendix 1: EPSF (National Rail Safety Authority) table showing monitoring of the implementation of rail transport recommendations issued by BEA-TT

Recommendations issued in 2006

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
12/2006	Collision between a regional express train and a heavy goods vehicle on a level crossing at Saint-Laurent-Blangy (62) on 09/06/2005	R1	To continue studying the solutions (an underpass on location or a new route) to eliminate this level crossing in order to reach a decision and implementation as soon as possible.	SNCF Réseau General Council 62	The agreement for the preliminary study is being read and validated within SNCF Réseau. After validation, it will be signed by the departmental council and DREAL. Action in progress	O
11/2006	Corail train derailment at Saint-Flour (15) on 25/02/2006	R4	To draft a program to bring lines open to passenger traffic equipped with DC rails up to standard. In the longer term, to organise the gradual replacement of DC rails with Vignole rails in view of the aging of this equipment, its increasing maintenance costs and the high risk of derailing in the event of rail failure.	SNCF Réseau	A programme to regenerate the open lines has been launched. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2007

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
11/2007	Passenger accident in the station at Chaville-Rive-Droite (92) on 10/11/2006	R1	For rolling stock on which a major workshop maintenance operation is required, modifications should be designed to allow the doors to be opened manually after a fire alarm system is activated, at a lower speed threshold than the lowest detectable speed; a program should be drafted to implement these modifications.	SNCF Mobilités	Following an assessment of the concerned equipment, a modification programme was launched: - 100% of Z2N equipment were modified; - Z20900 (54 trains) equipment will be modified during their modernisation between 2018 and 2023; - post-Z2N equipment have built-in required operational systems. Taking these elements into account, this action is completed.	C

* C= Closed; O = Open

Recommendations issued in 2009

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
12/2009	Collision with a group of people at the Stade de France at Saint-Denis (93)	R5	The policy for locating signs prohibiting access to railway areas and warning of the dangers related to doors and gates giving access to railway platforms should be reviewed. Procedures for implementing this policy should be established.	SNCF Réseau	The document describing the policy for controlling risk of collisions with unauthorised people is being updated. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2010

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
02/2010	Collision between a coach and a regional express train at Allinges (74) on 02/06/2008	R2	The decree of 18 March 1991 (Article 10) should be supplemented, specifying that the delay in closing a level crossing must allow all authorised heavy goods vehicles entering at the moment when an approaching train warning is issued to clear the entry barrier to traffic in the opposite direction before it closes. This condition should be checked in consultation with the road infrastructure managing agency to determine the time required for authorised vehicles to cross. If taking this into account leads to excessive delays with regard to other considerations, leading to limiting the delay in the warning (e.g. the risk of careless users zigzagging through half barriers), measures should be taken to prohibit road vehicles from passing if they cannot cross the level crossing within the allotted time.	DGITM	The decree of 19 April 2017, amending the decree of 18 March 1991 relating to the classification, regulation and equipment of level crossings was released in the JORF No. 0109 of 10 May 2017. Action closed	C
09/2010	Collision between a coach and a regional express train at LC no. 4 in Nevers (58) on 03/02/2009	R3	Evaluate and study the LC no. 4 fire control system (as well as LC no. 5) to search for simple optimisation measures (duration of fire cycles, possible coordination of upstream and downstream lights, activation delay for upstream fire after detection, effectiveness of the detection loop, etc.) to reduce the risk of an immobilised vehicle at the tail end of the queue downstream of the crossing encroaching on the railway.	Nevers municipality	Action in progress	O
12/2010	Collision between a train and the load of an oncoming train in the Livernant tunnel (16) on 20/05/2009	R5	Examine the procedures for enabling train drivers to assess whether the dimensions of an oncoming train foul the gauge when they hear an unusual impact noise on passing a goods train at night or in poor visibility by adapting regulatory text IN 1514-S2C or by means of specialised railway company documents.	EPSF	The operational document RFN-IG-SE 02 B-00- No. 004 “Train stoppage in case of serious or imminent safety risk”, taking into consideration the measures to be taken when a train is running in dangerous conditions, was published. Action closed	C

* C= Closed; O = Open

Recommendations issued in 2011

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
10/2011	Collision between a regional express train and a heavy goods vehicle on an unmanned level crossing at Gimont (32) on 27/09/2010	R2	Pending the removal of the level crossing no. 76 or the installation of a light and sound signalling on this LC, heavy vehicles should opt for access to the Julias hamlet via the route crossing the railway by a lower passage.	Gimont municipality	A follow-up letter was sent. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2012

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
01/2012	Goods train derailment in the station at Neufchâteau (88) on 22/05/2010	R2	Address the European Railway Agency (directly in the case of EPSF, through the Joint Sector Group [JSG] in the case of SNCF and through the European Railway Wheels and Wheel Sets Association [ERWA] in the case of Valdunes) in order to promote a set of studies and tests to assess the actual forces exerted on the running gear of tank wagons on the line and in marshalling yards and the interactions between these forces with a view to taking them into account in wheel design standards.	BNF	Action in progress	O
05/2012	Collision between a regional express train and a heavy goods vehicle in Saint-Médard-sur-Ille on 12/10/2011	R2	1 - Arrange for an assessment of the conditions for implementing the level crossing safety improvement policy, particularly with regard to: - procedures for listing level crossings referred to as “causing concern” in terms of the relevance of the classification criteria and considering the safety diagnoses prescribed by the circular of the transport minister dated July 2008 and approval of this list; - clarification of the procedures and actions involved in entering a level crossing on this list, particularly with regard to programming design studies and works to develop or eliminate them; - putting this policy into operation in terms of assessing and possibly redirecting actions already implemented or pending implementation; - role of the national body for coordinating the policy for the elimination and development of level crossings in the implementation of this policy. 2 - Introducing the adjustments ensuing from this assessment.	DGITM	Action closed	C

* C= Closed; O = Open

Recommendations issued in 2012 - continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
06/2012	Collision between a goods train and a lorry carrying an abnormal load of metal girders stopped by LC 222 at Balbigny (42) on 25/01/2011	R3	Arrange for the French rail network (RFF) and SNCF to draft information on the special hazards involved when abnormal loads pass through level crossings and disseminate it among professional road transport organisations, in particular drawing attention to the precautions to be taken to avoid immobilisation on level crossings and situations for which the rail infrastructure managing agent must be asked to provide protection.	DGITM	Level crossings with a “difficult profile” were listed in 2017 on the CARTELIE du CEREMA site, accessible on the internet. Nevertheless, a work group started by DSCR contributes to developments at the regulatory level to amend the degree of 4 May 2006 regarding exceptional transport of goods, motors or vehicles and articulated vehicles with more than one trailer. In particular, the work focuses on specifying the conditions for crossing railways. Action in progress	O
11/2012	Catch-up collision of two goods trains at Maillé (37) on 01/02/2012	R1	Ensure that safety communications between the regulators and signalmen on their service landline telephones are recorded and traceable. *In addition, BEA-TT calls on rail operators on the national rail network to remind their drivers of the safety requirements attached to travelling at restricted speed, particularly in terms of vigilance and controlling the speed of their train, so as to be able to stop before any signal or obstacle.*	SNCF Réseau	Recorders are currently being installed in the stations. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2013

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
06/2013	Collision between a regional express train and an automobile at Le Breuil (69) on 04/12/2011	R1	Establish and implement the national unmanned level crossing safety programme as soon as possible at Croix de Saint-André.	DGITM	Action in progress	O
		R3	Take the required steps to eliminate level crossing No. 65 on the Lozanne railway line at Paray-le-Monial and, pending this, restrict access to it strictly to residents only by all appropriate means. *Furthermore, without issuing formal recommendations, the BEA-TT:* *- called on railway companies to ensure that their drivers comply with "S" signs and, more generally, the regulations for the use of the audible warning;* *- drew the attention of the French Rail Network to the fact that the surroundings of certain unmanned level crossings at Croix de Saint-André make it difficult to hear the warning signals of trains, increasing the risks run by road users, and called on it to take account of this in the level crossing safety programme.*	SNCF Réseau Rhône Prefecture Breuil Municipality	The construction of the road (with closure of the LC) is planned for the fall of 2018. Concerning administrative procedures, a prior investigation into the removal of the LC took place, the investigating commissioner gave a favourable opinion. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2013 - continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
06/2013	Collision between a rail motor vehicle and an insulator at Sevran (93) on 01/02/2012	R2	List the characteristics of front windscreens and windscreen heaters fitted on rolling stock and the regulations for the use of these windscreen heaters. For rolling stock equipped with front windscreens that do not comply with EN 15152 or NF F 15-818 or an equivalent national standard, examine the possibility and relevance of improving protection against the entry of projectiles into driving cabs during cold weather, for example by specifying the rules for the use of windscreen heaters or by planning to replace the glass with components with improved impact strength at low temperatures.	All EF	Of the 24 railway companies concerned by this recommendation, a reminder was sent to two entities that have not yet provided the elements for implementing the planned actions. Action in progress	O
		R3	Ensure that the changes in EN 15152 on rolling stock windscreens take account of the variability of the glass with temperature and impact resistance and ensure that driver protection is maintained or even improved throughout the temperature range currently encountered on the national rail network and particularly at negative temperatures. *In addition to this last recommendation, BEA-TT also called on rail companies other than SNCF to endeavour to take similar steps with regard to the national or international standardisation authorities in which they take part.* *In addition, BEA-TT called on AGC glass and Saint-Gobain to acquire actual knowledge of the impact resistance of the glass used for rolling stock windscreens through tests, studies or any other means, throughout the entire temperature range currently encountered on the national rail network, including in hot weather with the windscreen heater in operation, and to share this knowledge in the course of the work to revise EN 15152.*	BNF SNCF Mobilités	The European standard NF EN 15152 has be amended by specifying other functional requirements applicable to the front windows of high speed trains to be built. This standard went into effect on 21 December 2017. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2013 - continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
07/2013	Collision between a train and a works machine at Lachapelle-Auzac (46) on 04/07/2012	R3	Ensure that all communications related to operations carried out from signalmen's service telephones are recorded. *In addition, BEA-TT calls on SNCF to carry out a feedback process on the use of new LOR'AXE catenary maintenance engines and on the conditions for training their drivers.*	SNCF Réseau	Recorders are currently being installed in the stations. Action in progress	O
8/2013	Derailment of a passenger train at Mercuès (46) on 22/05/2012	R1	Establish and implement procedures and methods for monitoring combined works to ensure that they are comprehensively supervised, particularly when they include works on sensitive land.	SNCF Réseau	The following procedures were revised: - IN 00256 "Earthworks, drainages and platforms monitoring"; - IN 01253 "Monitoring of structures and related constructions"; - IN 02088 "Technical requirements for the monitoring and maintenance of coated walls and structural devices." Action closed	C
		R2	In acquiring familiarity with the surroundings of the works and establishing the procedures for monitoring them, data contained in the different information and documents and prevention documents related to major natural hazards produced by public authorities (departmental documentation of major hazards, local authority information documents on major hazards, natural risk prevention plans and local contingency plans) should always be considered.	SNCF Réseau	A census was conducted on a priority and systematic basis, on sensitive earthworks as well as on engineering works such as retaining and facing walls. Action closed	
		R3	Improve simple real-time rail traffic warning systems that can be activated quickly, drawing lessons from national or foreign road and rail projects, pending permanent measures, for dangerous disorder affecting works.	SNCF Réseau	In response to the results obtained in early 2017, the project known as SURFO (Railway Network Monitoring through Fibre Optics) was launched in April 2017. Its results are expected in the second half of 2018. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2014

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
01/2014	Inter-city train derailment at Bretigny-sur-Orge (91) on 12/07/2013 (progress report)	R1	Overall improvement in the level of knowledge of the bolted assemblies of switch points and crossings by working on different factors, in particular: • technical specifications and the quality of the components; • bolt tightening systems; • compliance with the instructions for bolt tightening and, more generally, with the specifications and industry standards during assembly and maintenance of these assemblies.	SNCF Réseau	Internal regulations formalising and describing the principle of deployment of new bolted assembly models in the entire network were released. Action closed	C
		R3	Identify switch points and crossings or groups thereof with features that require enhanced maintenance or premature regeneration in comparison with the general prescriptions. Provide systems to ensure that these special features are taken into account in a reliable and auditable manner in the general organisation of maintenance works or that of the establishments.	SNCF Réseau	The process and organisation for defining "fast moving devices" is in place. Roll-out across the country has been partially completed. A feedback on the efficiency of this process must be organised. Action in progress	O
04/2014	Collision between a regional express train and a mobile crane in Marseille (13) on 13/04/2013	R1	Make it impossible to cross the no. 1 Miramas railway line level crossing in Marseille by the Côte Bleue for heavy vehicles coming from rue Albert Cohen with characteristics that do not allow them to circulate easily downstream from the railway right-of-way. Indicate this ban at the crossroads of Chemin du Passet with rue Albert Cohen.	Bouches-du-Rhône prefecture City of Marseille	A signage announcing the restriction as from the intersection of Chemin du Passet with rue Albert Cohen must be put in place. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2015

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
05/2015	Collision due to loss of control at Modane (73) on 24/01/2013	R1	Re-tighten and specify the maintenance regulation for finding and eliminating coupling devices on all wagons for which you are the entity in charge of maintenance that do not carry marks of compliance with the European standard or recognised national standards.	ERMEWA	Action in progress	O
				SNCF Mobilités Equipment division	The visit sheet V C3 503 version C “equipment traction elements”, applicable on 14/04/2017, was edited. Action closed	O
		R2	For type C3A and C3W type distributors, make a suitable change in the specifications of the sleeves of “disconnecting” and “initial stage” devices or their assembly in order to ensure that the brake cylinder circuit is leakproof down to -25°C for a service life consistent with the maintenance schemes.	FAIVELEY-TRANSPORT	Investigations in progress	O
				SNCF Mobilités Equipment division	Waiting for the results of the study conducted by Faiveley Transport. Action in progress	
		R3	When the modification specified in recommendation R2 has been perfected, apply it at the time of inspections of the relevant distributors in wagons for which you are the entity in charge of maintenance.	SNCF Mobilités Equipment division	Awaiting release product from studies called by R2 recommendation	O

* C= Closed; O = Open

Recommendations issued in 2015 - continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
06/2015	Loss of control of a regional express train at Mérens-les-Vals (09) on 18/12/2013	R2	In the procedure manuals intended for personnel in charge of rail traffic management, specify the steps to be taken in the event of major skidding, particularly in the event of repeated skidding not limited to a precise location.	SNCF Réseau	The work group set up in order to respond to this recommendation provided its findings in October 2017. The results are experiments that started being carried out in November 2017 to end in May 2018. Generalisation is planned for the second half of 2018. The update of procedures is planned for June 2018 (if the experiments are conclusive). Action in progress	O
		R3	Introduce organisation and checks at the Toulouse service station to ensure that sand hoppers are filled each time an AGC type train passes.	SNCF Mobilités	Action completed following the implementation of a tool to ensure the monitoring and control of the chosen organisation.	C
		R4	Improve the braking performance of high-capacity self-propelled trains in cases of poor adhesion by: - quickly lowering the speed threshold below which electromagnetic rolling stock brake blocks must not be in contact with the rails to as low a level as possible that is compatible with the infrastructure and passenger comfort and with the constraints on this rolling stock; - prescribing and organising systematic checks on the operation and filling of sand hoppers every time the rolling stock visits the service station.	SNCF Mobilités	A note is under validation. Action in progress	O
06/2015	Collision between a TGV high-speed train and an articulated tank transporter at Saint-Rémy-de-Sillé (72) on 15/10/2013	R1	Prevent the access of low-clearance vehicles by all appropriate means to local road No. 3 or restore the profile along this route immediately to the north of level crossing No. 128 so that these vehicles can cross it without getting stuck.	SNCF Réseau Saint-Rémy-de-Sillé municipality	A study was launched to reconsider the road profile in order to determine the technical and financial feasibility of improving the conditions of the LC roadway crossing. Depending on the results of the study and the level of improvement of safety conditions, the municipality and SNCF Réseau intend to pursue the studies and work. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2015 - continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
09/2015	Inter-city train derailment at Bretigny-sur-Orge (91) on 12/07/2013 (Final report)	R4	By means of external audits and on the basis of explicit targets, check that changes in the average age of the different components of the national rail network comply with the guidelines adopted and that the resources allocated to maintenance are consistent with the requirements in connection with the state of the facilities and the expected performance.	SNCF Réseau	An audit was commissioned to assess, among other things, the developments in the state of the network with regard to the economic trajectory specified in the new contract and with regard to the associated strategic choices. Action in progress	O
		R5	Improve the management personnel allocation policy in bodies in charge of maintaining the rail infrastructure: - by avoiding concentrations of young managing personnel in operational units and keeping this objective in mind when determining the managing personnel to organise these units; - by ensuring the required complementarity of skills, competence and seniority of the teams at the head of the rail track sectors, including the line manager, the support technician and the operational technician. - by reducing their turnover, particularly in establishments located in the Île-de-France region.	SNCF Réseau	The majority of actions decided on by SNCF Réseau were implemented. Testing of the system that allow a significant reduction of the risks of appointing young executives whose profiles are inappropriate with the professional environment of the position to which they are assigned are underway. Action in progress	O
		R6	In the safety audits of bodies in charge of rail infrastructure maintenance, always include inspection of the actual state of a sample of equipment on which monitoring or maintenance work has recently been carried out in order to assess the relevance of the maintenance regulations and the quality of their implementation. In this connection, pay particular attention to the implementation of supervisory and inspection tours for category B switch points and crossings.	SNCF Réseau	The verification of the actual state of installations was permanently integrated within the framework of internal security audits carried out by ASNO. The integration of this type of verification in the controls carried out by the operational management in maintenance establishments was initiated. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2016

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF at the end of 2016	Code*
01/2016	Multiple fracture of rail passed at high speed by trains in Carbonne (31) on 26/11/2013	R1	In accordance with the programme established after the Carbonne rail fracture, depending on the track condition and local operating conditions, replace the half-turnings with the old type of machining on which a rail fracture would not be detectable by a track circuit. Furthermore, ensure the implementation of the enhanced procedures for monitoring all faults affecting these devices.	SNCF Réseau	As at 31/08/2017, 39% of the replacement of devices required by the plan had been carried out. Although a few months delay have been sadly reported for the replacement of certain devices, the objective of fully completing the operation remains set for 31/12/2021. Action in progress	O
		R2	On line sections without a signal-related track circuit, the operating procedures must take into account the risk of rail fracture in the event of a malfunction of any track-based system.	SNCF Réseau	Action in progress	O
		R3	Assess a change in the opposable reference system relating to train traffic providing, in case of doubt as to the nature of the shock felt on the train, a lighter procedure than the current procedure for reporting an abnormal shock, in particular for line sections without continuous coverage by track circuits connected to signalling.	SNCF Réseau	Action in progress	O
				EPSF	In accordance with the commitments made, EPSF participated in the work group started by SNCF Réseau. In 2017, a proposal for the updating of the benchmark was made by this work group. Action in progress	O
01/2016	Catch-up collision between a regional express train and a TGV in Denguin (64) on 17/07/2014	R2	Beyond the scheduled maintenance and cleaning operations of the premises, recommend searching and reporting rodent breaches and damage to the wiring during any preventive or corrective intervention carried out in the signalling premises. Set up the traceability of signing and standardise the deadlines for corrective interventions.	SNCF Réseau	The reference IN366 dealing with maintenance intervals will be modified. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2016 - continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF at the end of 2016	Code*
05/2016	Collision of a regional express train stopped at the platform by an infrastructure monitoring train at Saint-Germain-des-fossés (03) on 15/12/2014	R1	Ensure the recording and traceability of telephone exchanges between the train drivers and the traffic agents and traffic management department whose telephone numbers appear in the technical records of the national railway lines.	SNCF Réseau	Recorders are currently being installed in the stations. Action in progress	O
08/2016	Accidental diversion of a suburban RER A train into siding in Saint-Germain-en-Laye (78) on 09/12/2014	R1	Reinforce the practical training and supervision of young SE supervisors on the aspects related to work on safety installations, with particular emphasis on the mandatory provisions specific to shunting work.	SNCF Réseau	SNCF Réseau has decided to focus its action both on the initial training of its supervisors and operators, and on support for continuous training. In 2015, the signaling training specifications were modified to take into consideration a REx form established following the incident. Other benchmarks still need to be updated, especially to reinforce the module “Sensitisation of Testing” of young executives. The release of these benchmarks is planned for 2018. Action in progress	O
		R2	Improve the readability of the SNCF standards relating to work on security installations by clearly highlighting the imperative security provisions and explaining the associated issues. Pursue the development of simple and educational business documents for operators for different types of work on security installations.	SNCF Réseau	Action in progress	O
		R4	Provide local procedures to ensure the adequacy of testing programmes developed as part of the small work on security installations.	SNCF Réseau	IN 3137, “Control and safety monitoring in establishments or related entities within the Industrial Production Department” to better define expectations is being rewritten. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2016 - continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF at the end of 2016	Code*
11/2016	Loss of control of a regional express train following a collision with cattle at Serqueux (76) on 20/10/2015	R1	Implementing the AGC Improvement Plan Effectively implement the modifications of the purge valves and their protection by the end of December 2017 and the modifications of the 72 V electrical circuit, by the end of September 2019 across the fleet concerned.	SNCF Mobilités	Two modifications concerning purge valves and electric insulation are being carried out on the entire fleet. Action in progress	O
		R2	Positioning of the obstacle-deflector and protection of sensitive underslung parts By involving the rail sector and having determined the most appropriate form for the European context: - explain how to calculate and operate the rolling stock construction template in order to optimise the positioning of the obstacle hoists with respect to risk overlap of an obstacle on the track; - formulate the necessary requirements for the identification of sensitive underslung parts, their protection and their height positioning in relation to the obstacle-deflector.	EPSF	Analysis in progress regarding the release of the new version of the rolling stock size standard (EN 15273-2). Action in progress	O
11/2016	TGV high-speed train derailment at Gare de Lyon in Paris (75) on 28/01/2015	R1	Reinforce the practical training and supervision of young SE agents on aspects related to the maintenance of very particular old security installations.	SNCF Réseau	Action in progress	O
		R2	Improve the quality of local standards relating to the maintenance of security facilities by continuing to develop simple and educational business documents for operators concerning very particular old installations.	SNCF Réseau	A risk analysis study aimed at detecting very specific old installations for which difficulties would be associated with the documentation concerning them was initiated. Action in progress	O
		R3	Modernise the installations of Posts 1 and 2 of Paris-Gare-de-Lyon as soon as possible.	SNCF Réseau	Commissioning of the centralised network control (CCR) system of Paris Gare de Lyon in March 2017. Action in progress	O

* C= Closed; O = Open

Recommendations issued in 2016 – continued

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF at the end of 2016	Code*
11/2016	Regional express train derailment due to trail through of points in Laroche-Migennes (89) on 01/12/2015	R1	Specify the procedures for using the Point R safety installations, particularly when the emergency key is used.	SNCF Réseau	An action for raising the awareness of all agents regarding the knowledge of handling points was carried out. Action closed	C
		R2	Specify the roles and assignments of the permanent operational managers at regional and national levels, particularly in terms of security, so as not to interfere with the tasks incumbent on local operators.	SNCF Réseau	A revision of texts in order to specify the roles and missions of the directors was carried out. Action closed	C
12/2016	Collision between an exceptional transport and an Intercités train in Nangis (77) on 21/04/2015	R2	Amend the decree of 18 March 1991 relating in particular to level crossings, to extend the use of telephones used at railway crossings to alert the agents in charge of the rail traffic in case of emergency.	DGITM	The decree of 19 April 2017, amending the decree of 18 March 1991 relating to the classification, regulation and equipment of level crossings was published in JORF No. 0109 of 10 May 2017. Action closed	C

* C= Closed; O = Open

Recommendations issued in 2017

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
01/2017	Derailing of a TER on the entry point of the Sainte-Pazanne station (44) on 12/10/2015	R1	- Launch a useful study or investigation in order to improve awareness of the wheel clogging phenomenon. - Without delay, take this phenomenon and the possibility of deshunting on clean rail into consideration in the reflections on risks relating to deshunting, including on ITE track circuits, and examine the relevance of a scrubber equipment (or any other wheel cleaning equipment) for X 73500. - Take the results of these studies into account to modify, if necessary, the benchmarks for admission of equipment on RFN and at the European level, in connection with the European railway agency.	SNCF Réseau SNCF Mobilités EPSF	Study in progress	O
		R2	Examine the relevance of planning systematic cleaning of rails after renewal, including outside of the track circuit zones.	SNCF Réseau	IN 3188 incorporating the obligation to deoxidize the renewed rails on lines without track circuits during work carried out “on closed line” was revised. Action closed	C
		R3	Formalise the criteria and process for granting S6A No. 4 exemptions such as to limit them to cases where they correspond to a real need for the operation of the station concerned.	SNCF Réseau	IN 1575 “Special measures for handling traffic that may disrupt the functioning of track circuit interlocking stations” is being rewritten. Action in progress	O
		R4	Reflect on the functionality of modern substations in order to adapt them to the real needs of stations where they are located and thus limit their vulnerability in case of deshunting.	SNCF Réseau	Action in progress	O
		R5	Within the framework of feedback on deshunting and when assessing the effectiveness of action plans, arrange to systematically distinguish the main types of track circuits concerned, in particular UM71 and ITE.	SNCF Réseau	All deshunting characteristics are recorded in a file. A commission for classifying the severity of deshunting events was established within SNCF Réseau in order to improve on the quality of the monitoring of deshunting Action closed	C

* C= Closed; O = Open

Recommendations issued in 2017 – suite

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
06/2017	Derailing of a TGV test train at Eckwersheim (67) on 14/11/2015	R1	Complete the ongoing process for clarifying and preparing approval requirements for high speed lines included in the SNCF IN 3279 benchmark. Bring them to the international level, to UIC by SNCF Réseau and to ERA by EPSF.	SNCF Réseau EPSF	A procedure aiming to complete the approval rules for new lines was initiated. Action closed	C
		R2	Improve the preliminary risk analysis methods in a manner to effectively researches the dangers related to particularities of the line in connection with the planned test campaign. Inform stakeholders of the specific risks identified. BET-TT invites all railway tests contractors operating on project lines on the national territory to ensure the quality of their methods as well.	SYSTRA	A standardisation of the risk analysis method was implemented. Action closed	C
		R3	Implement a system for the selection, training and authorisation of trial CTTs (traction transport supervisor) to ensure the provision of driving teams with skills and qualifications that are consistent with the particularities, complexity and risk level of the planned tests. BEA-TT invites the other railway companies that are likely to carry out circulation tests to also implement this recommendation.	SNCF Mobilités	A complementary system has been put in place to enhance access to the driving of test trains. Action closed	C
		R4	Provide the test teams with practical tools to guide them in the determination of braking strategies and methods to ensure that the chosen strategies are well understood by everyone. Define, for the main types of test, the distribution of tasks within the driving team and, for other tests, develop the methods allowing the CTT to carry out this distribution and ensure that the distribution is well understood. BEA-TT invites the other railway companies that are likely to carry out circulation tests to also implement this recommendation.	SNCF Mobilités	All tools available to test runs participants were reviewed. Action closed	C

* C= Closed; O = Open

Recommendations issued in 2017 – suite

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
06/2017	Derailing of a TGV test train at Eckwersheim (67) on 14/11/2015	R5	Update the benchmarks for organising test campaigns taking into consideration the feedback from the Eckwersheim accident and in a manner that specifically guarantees: - the experience and qualification of the test leader with regard to the criticality of the planned tests; - a runs programme allowing sufficient preparation and debriefing time; - an organisation of collaboration between the test leader and CTT prioritizing direct contacts; - a redefinition of the role of pilots avoiding placing them in interaction with the test leader and CTT and limiting the risk of interference with the driving crew missions; - a realistic and clearly expressed distribution of responsibilities between the test leader and the CTT. BEA-TT invites the other railway companies that are likely to organise or carry out circulation tests or test campaigns on the RFN to also implement this recommendation.	SYSTRA	All the benchmarks were reviewed, taking the feedback from the accident into account. Action closed	C
		R6	During tests involving the installation of an intercom system between the driving cabin and the test leader, systematically install a system for recording sounds in the cabin and communications carried out over the intercom. BEA-TT invites AEF to pursue the development of the ESVE and to design new technical devices to improve the safety of test trains. It also invites other railway test operators that may operate in France to develop similar systems.	SNCF Mobilités	This specific equipment (camera, recording) is systematically installed during the tests concerned. Action closed	C

* C= Closed; O = Open

Recommendations issued in 2017 – suite

Report date	Title of the investigation	No.	Wording of the recommendation	Entity	State of progress of action taken by EPSF	Code*
11/2017	Breakage of numerous rails between the Beilland and Jonzac stations (17) on 13/12/2016	R1	Measure, on a sample of 30 wagons randomly selected from the series of 185 EX 90 wagons, the empty pressure delivered by the weight pressure reducers. If anomalies are noted for a significant number, research the causes along with the supplier of this equipment. BEA-TT therefore invites SNCF Mobilités to specify the tolerance to apply during the brake tests for the wagons equipped with the auto-levelling empty-loaded device. BEA-TT invites ERMEWA to analyze along with its manufacturer the causes of the rapid drift of the pressure of reducers (wagon left the factory in 2015).	ERMEWA	Awaiting a response before the end of the first quarter of 2018	O
		R2	During the training and monitoring actions, take the necessary measures to ensure that all agents who may monitor moving trains (STEM) or manage traffic are aware of the risks inherent in the movement of wagons having out-of-tolerance flat spots. Make it clear to them that in the absence of action on their part, the flat spots may get worse and the wagons in question may cause at any time a breakage in the rails or run for rather long periods subjecting the track to abnormal impacts and stresses.	SNCF RESEAU	Awaiting a response before the end of the first quarter of 2018	O
		R3	Establish and implement a policy for the deployment of convoy anomaly detectors on the major freight traffic flows. These detectors should aim to stop convoys with vehicles that have dangerous wheel defects but also identify and report to the railway company, to the entity in charge of maintenance (ECM) or to the concerned owner, vehicles having non-critical defects that may damage the infrastructure.	SNCF RESEAU	Awaiting a response before the end of the first quarter of 2018	O

* C= Closed; O = Open

Appendix 2: STRMTG (Ski Lift and Guided Transport Technical Department) table showing monitoring the implementation of guided transport recommendations issued by BEA-TT

Recommendations issued in 2015

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Fall of a child under a tramway train that occurred on 28 April 2013 at “René Cassin” Station in Nantes (44)	R1	Adding to the operational resources and procedures for triggering and processing alarms so as to ensure, as soon as there is the suspicion of an accident, the rapid stoppage of the tramway vehicles involved. To this end, providing the stations on the Nantes tramway network with simple devices to enable any witness of an accident to issue warnings to the central control station without delay.	SEMITAN		display of an emergency number at all tram stations and development of a procedure at the PCC for handling calls	

Recommendations issued in 2016

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Mortal fall of a traveler in a tramway after emergency braking on 3 September 2012 in Montpellier (34)	R1	Request the tramway operators to ensure that the driver has sufficient time, and certainly more than two seconds, between the moment when an alarm indicates that they are unable to activate the safety device and the one where the corresponding emergency brake is activated.	STRMTG	05/07/16	This measure tends to reduce the occurrence of untimely standby FU unrelated to a driver's potential unease. The STRMTG will initiate a discussion with the operators and the Transport Organising Authorities to determine the conditions for implementing this recommendation. For future rolling stock, the technical guide "Tramway Watch Function - Safety Requirements" being developed by the STRMTG will take into account this recommendation. Technical guide "Tramway standby function" published on 10/02/2017	R
	R2	Check that the NF EN 13452 standard is specified in the safety files of the next tramway trains. In particular, ensure that the emergency braking design achieves different performance levels depending on whether it is triggered by the driver or by the standby device.	STRMTG	05/07/16	Designing an emergency brake with different performance levels depending on whether it is triggered by the driver or by the FU Standby is a measure that tends to reduce the severity of the events associated with the emergency brake activation related to standby. The STRMTG has already started this work with the rolling stock manufacturers and the latest generations of rolling stock already have different braking performance levels depending on whether it is triggered by the driver or by the FU standby. These elements will also be included in the aforementioned guide. Technical guide "Tramway standby function" published on 10/02/2017	R
	R3	Examine, in conjunction with operators and the STRMTG, to what extent instant deceleration and jerk of existing trains can be decreased under acceptable technical and economic conditions when emergency braking is triggered by the standby device or by technical security measures unrelated to a proven and imminent danger outside the train.	ALSTOM			
Derailment of a train on the Nice-Digne-les-Bains line, following the fall of a rock, on 8 February 2014 in Saint-Benoît	R1	Define a common monitoring device for the rocky slopes overlooking the railway or road rights-of-way, in areas at risk of falling rocks, in order to detect the warning signs of mass destabilisation and check the condition of the protective devices. Specify the criteria for triggering exceptional inspections and measures to take in case of the detection of an anomaly.	PACA Region, Interdepartmental Direction of Mediterranean Roads	2016	"The RRT PACA has already concluded with the General Council of Alpes-Maritimes an agreement that defines a common alert procedure for road and railway networks in the case of a fall of a block or a landslide. This agreement has been included in the safety regulations of the Chemins de Fer de Provence in the form of a local directive DL-INF no. 2. The RRT PACA is currently working with DIRMED to establish an identical procedure for the risk zones identified in the Alpes de HauteProvence department. Field monitoring and risk studies led to the construction of structures for protection against falling blocks. This work was funded under the contractual investment programmes (in particular CPER and PDMI)." STRMTG Opinion delivered on 28/10/15 on the pre-report; 23 June 2016: the STRMTG relaunched the study for the development of a forecasting tool for a more rational consideration in railway operations, variable data of natural hazards. CEREMA will deal with natural hazards, and the STRMTG working group and operators will propose associated operational measures. Ongoing contact with IRSTEA and SNCF. *Their study is ongoing at the start of 2018. The Cerema must finish the inventory phase of the two networks before the alarm threshold proposals according to the climatic hazards.*	EC

Recommendations issued in 2016 - continued

Unknown outcome: NC

Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
The collision of two metro trains on 18 June 2013 in Toulouse (31)	R1	Ask the operators of automatic VAL metros that have steep sections of track, located in the open air or tunnel entrance, to counter-streak their tracks by directing the arcs of the striations in the opposite direction of the slope, to improve the evacuation of water.	STRMTG	23/12/2016 30/01/2017	13-14/12/16 : Inter-VAL GT: exchanges with the profession on the content of the STRMTG recommendation 30/01/17: Publication of a recommendation from the STRMTG headquarters 15/06/17: deadline for the operators' responses 15/10/17: effective date when notices were issued to operators after analysis of their responses Points still monitored by the control offices in connection with the notices issued	EC
	R2	To ensure that VAL metro operators have an efficient procedure for monitoring the level of dirt on tracks and effective cleaning tools when criteria such as clogging of streaks are met.	STRMTG	23/12/2016 30/01/2017	*It should be noted that Recommendation R3 was the subject of a remark to all operators in the STRMTG notices issued: "However, I am asking you, while waiting for a tool to measure track adhesion on an ongoing basis [R4], to now show in the annual report a follow-up of the level of adhesion achieved with the help of means currently available, specifying the operational procedure employed,"* *This comment links recommendation R3 (STRMTG) to recommendation R4 (Siemens). The progress of recommendation R4 on the development of the tool is difficult today (Siemens is waiting for all networks to adhere to the approach (reasons a priori financial) and the STRMTG does not currently have action levers, it is feared that ultimately, the follow-up given to recommendations R3 and R4 will not be the expected ones.* *Overall, the topic of adhesion is regularly and consistently addressed by the Inter-VAL WG, which brings together the entire profession.*	EC
	R3	Have VAL metro operators check and, if necessary, restore traction on the tracks of their network.	STRMTG	23/12/2016 30/01/2017		EC
	R4	Develop, in conjunction with the operators of the VAL automatic metro systems and the STRMTG, an effective way of measuring the grip of the tracks. Develop the corresponding operational instructions for triggering corrective actions when these tracks no longer provide sufficient adhesion, including in adverse weather conditions.	Siemens	10/10/16		EC
		"Furthermore, without making a formal recommendation, the BEA-TT: *➢ invites the Siemens manufacturer and the building owners of the future VAL automatic metro lines or their future extensions to check the proper compliance with the requirements for the manufacturing of the tracks and to introduce a measure of their adhesion, making it possible to constitute a "point zero";* *➢ calls on light-rail manufacturers to equip the next models of tyre trains they will develop with anti-lock devices;* *➢ sees only advantages in pursuing and developing the current actions of research dealing with tyre adhesion of automatic VAL metro trains on their metal tracks, and invites other designers and automatic metro operators to join or conduct similar ones in connection with the STRMTG;* *➢ encourages the Michelin company to increase the adhesion of the next series of tyres intended for the VAL automatic metro trains that it may put on the market."*				EC

Recommendations issued in 2017

Completed Recommendation:R
Amended Recommendation:RM
Recommendation in Progress:EC
Rejected Recommendation:NR
Unknown Outcome:NC
Outcome Not Monitored by STRMTG:NS

Investigation Title	Date Sent	Recommendation No.	Recommendation Item	Addressee(s)	Reply Date	Outcomes Specified and Progress Status (Literal and Encoded)	
						Literal	Encoding
Derailing and dislocation of a line T1 train on the Valenciennes tramway on 11 April 2014	01/05/17	R1	Reinforce operating safety at PCC by writing operational instructions clearly defining the organisation of traffic safety in both nominal and degraded modes (disturbances).	Transvilles			
		R2	Describe the organisation of the circulation of maintenance machines outside the framework of circulation run by the PCC, as well as the measures to be taken to return to the nominal situation.	Transvilles			
		Invitation	BEA-TT therefore invites the STRMTG to finalize this guide to bring designers, manufacturers and operators together to reinforce safety awareness in these operating areas. The work being fully underway, BEA-TT is not providing a recommendation. => Finalised guide (October 2017)	STRMTG	SO	SO	

Recommendations issued in 2017 – continued

Completed Recommendation: R
Amended Recommendation: RM
Recommendation in Progress: EC
Rejected Recommendation: NR
Unknown Outcome: NC
Outcome Not Monitored by STRMTG: NS

Investigation Title	Date Sent	Recommendation No.	Recommendation Item	Addressee(s)	Reply Date	Outcomes Specified and Progress Status (Literal and Encoded)	
						Literal	Encoding
Collision of a tramway train and a car on 21 December 2013 in Saint-Denis (93)	27/06/17	R1	Rapidly complete the programmes for processing fixed obstacles that may aggravate consequences of collisions between the tramway trains and roadway vehicles, and in the meantime, take simple and temporary preventive measures for the most critical.	AOM of the 11 tramway networks commissioned before 2003			
		R2	Review the internal feedback processes for accidents occurring on operating tramway lines, in order to improve the collection of information, analyses at different levels, as well as the definition and follow-up of corrective measures.	RATP			

Recommendations issued in 2017 – continued

Completed Recommendation: R
Amended Recommendation: RM
Recommendation in Progress: EC
Rejected Recommendation: NR
Unknown Outcome: NC
Outcome Not Monitored by STRMTG: NS

Investigation Title	Date Sent	Recommendation No.	Recommendation Item	Addressee(s)	Reply Date	Outcomes Specified and Progress Status (Literal and Encoded)	
						Literal	Encoding
Collision of a tramway train and a car on 21st December 2013 in Saint-Denis (93)	27/06/17	R3	Ask the Transport Organising Authorities in charge of tramway lines and their operators to formalize their relationships with roadway managers and traffic police authorities, in order to effectively take into account the feedback from accidents and incidents.	STRMTG, UTP, GART	25/09/2017 11/01/2019 (information about the closing of actions undertaken by the STRMTG)	Decree No. 2017-440 of 30 March 2017, relating to the safety of guided public transport (STPG decree) provides for the formalisation of exchanges between AOT, roadway operators and managers within the framework of feedback from accidents and incidents by means of the provisions of the following three articles: Article 81 - "The Transport Organising Authority, the operator, the infrastructure manager, the lead manager and the roadway manager, shall ensure, each for what concerns them, for the entire duration of the operation, that the level of safety with regard to users, operating personnel and third parties, is maintained." Art. 89. – Any serious accident or incident affecting the operational safety of a guided public transport system shall be brought without delay to the knowledge of the Prefect, the Transport Organising Authority, the lead manager and the office of investigation of land transport accidents, by the operator or the infrastructure manager. This information shall specifically focus on the occurrence of this accident or incident and its gravity. Within two months from the occurrence or discovery of the serious accident or incident, the operator or lead manager will address a detailed report on this event to the Prefect and to the Transport Organising Authority. The report will analyze the causes and consequences observed from this event, potential risks and indicate the information that was collected as well as the measures taken in order to prevent its reoccurrence. All the entities mentioned in article 81 shall provide information, allowing for the analysis of the circumstances of the serious accident or incident. Article 92 - "The operator or lead manager shall establish an annual report on the safety of the operation of the system, which specifically includes a section regarding accidentology, a section concerning internal control, a section regarding the development of the system and a section relating to a single plan of action intended to maintain and improve the safety of the system. The entities mentioned in Article 81 will contribute to the drafting of these sections, each for what concerns them. The Transport Organising Authority shall provide this report to the competent authority, accompanied by its advice regarding the plan of action that its contains". STRMTG will indeed ensure the proper implementation of these provisions within the framework, particularly of the elaboration of its technical guides. For these purposes, STRMTG has, specifically undertaken an action to homogenize and enhance the annual reports following the proposal to delete the updated safety files. The work group associated with this action is ongoing, in collaboration with firstly the operators and secondly with the Transport Organising Authorities and the roadway managers in order to successfully update the STRMTG guide on the content of annual reports. Furthermore, STRMTG will launch a survey among the Transport Organising Authorities in order to make an assessment relative to the existence of a system (agreement or other) between AOT and roadway managers enabling them to provide State control services with supporting documents relating to the maintenance over time of the system's safety level, specifically taking into account the changes that may have been made. Concerning the transmission of information allowing for the analysis of the circumstances of a serious accident or incident as laid down in Article 89 mentioned above, the STPG decree of 30 March 2017 only confirms the practices already in place on the networks (for example the transmission of information in connection with the proper functioning of light signaling). Regarding traffic police authorities, as to their responsibilities, they do not directly intervene in the feedback process for accidents and incidents and, in fact, rely on their roadway managers, who are now essential actors in this process.	EC

Recommendations issued in 2017 – continued

Completed Recommendation: R
Amended Recommendation: RM
Recommendation in Progress: EC
Rejected Recommendation: NR
Unknown Outcome: NC
Outcome Not Monitored by STRMTG: NS

Investigation Title	Date Sent	Recommendation No.	Recommendation Item	Addressee(s)	Reply Date	Outcomes Specified and Progress Status (Literal and Encoded)	
						Literal	Encoding
Collision of a tramway train and a car on 21st December 2013 in Saint-Denis (93)	27/06/17	R4	Implement, in the decree of application and technical guides, the new provisions laid out in decree No. 2017-440 of 30 March 2017 concerning the safety of guided public transport, ensuring that the following is rendered operational: ➢verification of the implementation of corrective actions; ➢the systematic involvement of roadway managers and traffic police authorities ➢coercive measures in case of delay, lack of involvement or failure of the actors in the process. Establish a statement of their efficiency when there is sufficient hindsight.	DGITM STRMTG	25/09/17	As for the verification of the implementation of corrective actions, the STRMTG through control offices will ensure continuous proximity control of the networks in operation according to the following provisions: operation monitoring meetings These meetings will provide for the maintenance of a permanent contact with the AOT operators, establishing a relationship of trust and provide information in good time of any evolution in the networks. The follow-up of the provisions of safety files and corrective actions following events are approached here, and tracked thanks to the monitoring tables. operation control audits These are effective tools that ensure the operators implement their safety and operational regulations and are organised to maintain the safety level of the systems they operate. instructions from the annual reports They are, first of all, useful to the operator, to AOT and the roadway managers to identify the areas of progress in the safety plan and, secondly, to the control service to ensure continuous improvement in safety. Henceforth, the involvement of roadway managers will allow STRMTG to intervene with an actor against whom until now, it had no means of taking regulatory action. "periodic" monitoring In addition to the previously noted items is the "periodic" monitoring carried out by control offices through operational events, which allows quick detection of security problems (accidents, pathology, etc.). All these modalities of control and monitoring of guided urban transport networks implemented by STRMTG are meant to verify the implementation of corrective actions following accidents or incidents and respond to the first point of your recommendation. On this subject, it is important to ensure that the active intervention of the State is not accompanied by a loss of the sense of responsibility of primary actors, those who are directly in charge of maintaining the level of safety. Concerning the second point of your recommendation, the comments are the same as those previously presented for recommendation R3. Regarding coercive measures in case of delay, lack of involvement or failure of actors in the process, Article 85 of the STPG decree states that the Prefect may request the operator, infrastructure manager, lead manager or the Transport Organising Authority to remedy any default or insufficiency in the transport system or its operation in terms of safety, each for what concerns them, and impose restrictive operational measures (provision already in force in STPG degree No. 2003-425). Furthermore, a new provision allows the Prefect to request that the operator, infrastructure manager, lead manager or Transport Organising Authority call upon a qualified body to carry out a diagnosis of the safety of the system when the annual report has not been submitted or its content is insufficient to assess the maintenance of overall safety. These provisions serve as a response to the third point of your recommendation. Finally, STRMTG regularly brings together industry professionals by means of work groups or information days and can thus perform an assessment in due course of the efficiency of the new provisions of the STPG decree.	EC

Appendix 3: STRMTG (Ski Lift and Guided Transport Technical Department) table showing monitoring of the implementation of ski lift recommendations issued by BEA-TT

Recommendations issued in 2013

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Technical inquiry report on passenger fall from a Pleney cable-way car that occurred on 31 December 2011 in Morzine (74)	R1	Permanently strengthen the handling of operational safety of the Pleney cable-way and, more generally, of all the ski lifts that serve the Pleney and Nyon areas by: - Increasing training and skills-monitoring of the staff involved, of the head of operations, the area manager, drivers and watchpersons; - Formalising the safety procedures to be applied both in normal operations and in fail-safe mode, including in the case of accidents or incidents into operating instructions; - Organising effective internal checks, including an independent level of operational running of the facilities involved; - Ensuring exhaustive logging of incidents and accidents and of the remedial action undertaken.	SA du Pleney		See response from SA du Pleney dated 18 July 2013 published on the BEA-TT website. SA du Pleney has incorporated the BEA-TT recommendations into a plan of action (15 actions) drafted after a safety audit performed by an external consultant in April 2012. Also see BHS audit following the accident	EC

Recommendations issued in 2013 - continued

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Technical inquiry report on passengers falling from a Pleney cable-way car on 31 December 2011 in Morzine (74)		*Furthermore, in the sequence of recommendations made in the inspection report that the Environment and Sustainable Development General Council (CGEDD) made on the safety of mountain lifts and of track-guided transport, BEA-TT:* *- Invited the Directorate General for Infrastructures, Transport and the Sea (DGITM) to launch a study into additions to be made to regulatory requirements, in terms, on the one hand, of the approval of ski lifts by operators, by heads of operations and by staff that perform major safety tasks, and on the other hand, of setting up, partly independent internal checks for larger facilities on their operations;*	DGITM		The Tourism Code was amended by the decree of 19 January 2016 to introduce the obligation for all operators of ski lifts and mountain conveyors to implement a safety management system (SMS), i.e. a device that aims to organise all the means, rules, procedures and methods implemented at the level of each operator with a view to ensuring the safety of their activity. With regard to the SMS validation and monitoring procedure, the operator must choose one of the following two possibilities, permitted by the regulations: - Case 1: submit its SMS to a validation and control procedure with the services of the State; in this case, the regulation provides for a training period of 2 months; - Case 2: submit its SMS to a periodic inspection by an accredited or approved inspection body within 6 months from the date on which it begins operating; this period is extended to 2 years for existing operators. Thus, since 1 April 2016, all new operators1 must notify the State services of the existence of their SMS before they can start their activity. In addition, if the operator uses Case 1, the SMS must have been validated by these services in order to carry out its activity. In terms of the operators in place, the deadline for the application of the above-mentioned provisions was extended to 1 October 2017, except for those operating only ski lifts or conveyors, for which the deadline of 1 October 2019 was established. A ruling dated 12/04/2016 specifies the content expected for each SMS, in particular the consideration of 8 mandatory issues. These issues include skills management. If an enabling device is not required by the decree or the STRMTG RM-SGS1 guide which complements it, the device clearly articulates the identification of the security tasks, the definition and the implementation, and the follow-up of the qualifications corresponding to the complexity of these tasks, then the organisation of operations to ensure the availability on the ground of qualified personnel. For the moment, these provisions will be upheld and will be the subject of an evaluation for second time to see if they need to be reinforced. The organisation of a permanent internal control system is another subject that must be dealt with in the context of SMS, even if its definition is left to the discretion of the operators. The independence of this internal check from the staff in charge of the operation was not required.	R
		- Encourage the ski lift and guided transport technical department (STRMTG) to develop a programme for inspecting operators of mountain lifts, based on a formalised methodology and references.	STRMTG		Initial experiments on the use of the audit technique to complete the RM control tool panel were carried out from 2005-2006. After the merger of code inspectors with STRMTG at the end of 2011, joint criteria for planning operator inspections have been defined and inspection frameworks have been rediscussed. Nowadays inspections are performed by all offices of STRMTG and internal communications meetings have been organised to enable experience to be shared and for the tool to be further refined. This practice is supported by the introduction of safety management systems.	R

Recommendations issued in 2013 - continued

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Technical investigation report on the fall of five cars from the "Aup-de-Véran" cable car that occurred on 13 October 2011 on the skiable area in Flaine (74)	R1	Together with manufacturers and operators, organise studies and trials of technical or organisational devices to be developed in order to detect any cars or chairs in ski lifts that jam while passing a pylon. Updating regulations, standards or guidelines in accordance with the conclusions of those analyses.	DGITM STRMTG		STRMTG held a meeting with professional partners to ask them to consider the issue in June 2014. During 2015, STRMTG had to define the specifications to state the expected performance and the scenarios that must be taken into account by these arrangements. However, for planned workload reasons, the STRMTG could not move as fast as desired on the file and these specifications were not established. However, bilateral contacts have been made with some RM manufacturers to discuss the subject. It shows rather contrasting positions; adherence and proactivity on the one hand, doubts surrounding the interest and the technical feasibility (with simple means) on the other. The initial discussions with the profession seem to place the majority opinion on the side of this second position. In any case, during 2018 we plan to finalise the aforementioned specifications and to distribute them to the professional partners in order to learn their official position on the subject. This makes it possible to check the positions before directing the strategy to move forward on the subject	EC
		In addition, BEA-TT has invited approved principals and STRMTG to ensure, through tests performed prior to commissioning, that the values for maximum longitudinal tilting of the cars or chairs of new or amended facilities in all circumstances remain less than those taken into account during their design.				

Recommendations issued in 2014

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Technical investigation report on the derailment of a Grande Motte cable car cabin that occurred on the 3rd December 2011 in Tignes (73)	2011-017-R1	By way of feedback, ensure that the design, maintenance and supervision terms for the scrapers fitted to the cable-way cars prevent the derailment risk that could be caused by those parts coming loose.	STRMTG	15.09.14	The STRMTG issued a recommendation dated 11/07/2014 aimed at: 1) List the ice scraper mountings on existing twin-cable cableway cars in France, 2) Assess the reliability of the mountings 3) Change any mountings deemed inadequate 4) Fix the terms for monitoring homogeneous mountings across France. The date for filing information for the survey has been set at Friday 12/09/2014. The summary of this survey was formalized through the STRMTG recommendation of 18/12/2014 establishing the following elements: The evaluation led to the conclusion that the scraper assemblies of the bi-cable cableways cars are generally satisfactory, although small improvements could still be occasionally carried out, and that it is, however, necessary to establish minimum rules for controlling these elements, given the wide variety of monitoring methods found on the field. The STRMTG has therefore decided to recommend the following rules to be implemented on the two-way cable cars whose trucks are fitted with ice scrapers: Recommendation no1: At the level of the bolted fastening systems of the scrapers, it is requested, if necessary, the implementation of solutions avoiding a loosening of the screws such as threadlock, Nylstop nut, Nord Lock washer, ... Recommendation no2: In order to facilitate the visual inspection of the scrapers, it is advisable, where possible, to position their fixing nuts on the visible side. Recommendation no3: The RM1 guide provides in particular "§A.3.2 - weekly checks" a visual check on the carriage to check the status. Verification of the correct position and assembly of the scrapers must be included in this weekly check. Recommendation no4: Setting up a check of the fixings and the position of the scrapers after each installation deicing operation. These provisions were implemented on the cable cars upon receipt of the recommendation (ie from the 2014/2015 season). They have been included in the RM1 guide in its Rev.3 edition of 18/05/2016.tion	R
	2011-017-R2	Ensuring, especially during exercises, that all timing for work set out in the Grande Motte cable car rescue plan can be complied with even in the most difficult weather conditions in which the use of the facility is permitted.	Société des Téléphériques de la Grande Motte [Grande Motte Cable Car Company]			NS

Recommendations issued in 2014 - continued

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Technical investigation report on the derailment of a Grande Motte cable car cabin that occurred on the 3rd December 2011 in Tignes (73)	2011-017-R3	Check that the goals set in the ski lift rescue plan, especially as regards evacuation times, can be complied with even in the most difficult weather conditions in which the use of the facility is permitted. In this context, invite operators to perform exercises regularly, for each of the modes of evacuation provided, in such weather conditions and execute them on the most sensitive facilities in particular.	STRMTG	15.09.14	Feedback on past situations shows that difficult evacuations are very largely encountered in equipment at risk. A facility can be described as being at risk when it presents difficult access, extensive overflight, a watercourse, very rough or very sloping overflights (thus with difficult access on the ground), etc. The existence of specific procedures such as a zip line for evacuation or the use of car access equipment using non-standard cables are also to be considered for this definition. Furthermore, over a thousand cable-ways exist in French territory (chair lifts, cable cars, twin-cable cable cars, etc.). Reassessing their evacuation plans would demand work that the professionals involved (operators, Prefectural training departments and supervisory services) do not have the resources to provide. Taking these observations into account, it thus seems necessary to focus primarily on the sensitive facilities. After consulting the Domaines Skiables de France during July 2014, and also in liaison with the ski lift manufacturers' association, STRMTG has decided to start a procedure for identifying the facilities at risk (based on the criteria set out above) and for the assessment of the evacuation plans for those facilities at risk, incorporating the following topics: - The reliability of the evacuation method - The time it takes to mobilise teams - Evacuation times Based on that assessment, it will be possible to work to improve the plans deemed inadequate, by working with the operators involved in planning exercises in tricky conditions to corroborate the relevance of the changes deemed necessary. The target schedule was initially as follows: I Reassessment 1) Formalizing the procedure by a STRMTG recommendation by the end of the month of September 2014. Everyone will be reminded in that recommendation that the operation of a facility is subject to the operator's ability to implement the User Evacuation Plan under the conditions specified (as the BEA-TT report restates). 2) Revision of the User Evacuation Plans involved by the end of 2015. II Good practice guide Furthermore, in order to improve operators' collective capacity to properly handle the evacuation of all the equipment transported, STRMTG has decided to start drafting a guide to the application of part B of STRMTG guide RM1 on cable car evacuation at the beginning of 2015. That application guide, drafted with professional participation, and that of operators in particular, will be intended to specify good practice with regard to the design, execution and maintenance of evacuation plans. In particular it will enable a practical context to be specified for handling evacuation exercises, which stresses the need to perform exercises regularly on the various kinds of facilities installed at each location, especially on facilities at risk, including in difficult conditions. For reasons of load plan, these different works have not yet been implemented. They remain within the objectives of the STRMTG and will be reprogrammed soon after the release of the report of the September 2016 incident of the PMB based on the resulting recommendations, some of which should also concern this issue of evacuation.	EC

Recommendations issued in 2014 - continued

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Technical investigation report on the fall of a skier from the "Fontaines-de Cotch" chair lift that occurred on 22 December 2012 on the skiable area at Gourette in Eaux-Bonnes (64)	2012-017-R1	Increase the safety of boarding of users onto the "Fontaines-de Cotch" chair lift by any appropriate technical or organisational means that will either physically limit the risks of a fall or significantly extend the area that can be effectively supervised.	EPSA			NC
	2012-017-R2	Ask all chair lift operators to ensure that their boarding area layout, their working conditions, the amount and nature of their use, the methods for supervision and their equipment form a cohesive unit that guarantees safe boarding of users and optimal supervision when they take their places in their seats. Coordinate the resulting upgrade campaign and support the efforts of builders and operators in the development, implementation and evaluation of additional fall prevention and monitoring assistive technology.	STRMTG	12/09/14 (response to draft report)	We initially planned to implement this recommendation through an approach aimed at defining a methodological framework enabling operators to analyze their chairlifts with respect to their exposure to the risk of passengers falling off and to define developments, organization and equipment in a coherent manner vis-à-vis the main identified risk factors. A schedule could then be established to allow operators to make the necessary changes. During a meeting in September 2015, DSF indicated to STRMTG that they had started working on an equivalent approach, with the elaboration of an internal guide on the difficulty of operating fixed-grip chairlifts. DSF thus regretted seeing an initiative taken by the operators at best supported by STRMTG, at worst abandoned for the benefit of a different framework. STRMTG, pointed out at the time that on the one hand they had already announced the action (cableways commission) and on the other, that the DSF guide was for the moment only an experimental framework, limited it to TSF and left it to the initiative of the operators. After discussions, it was then agreed that DSF would restart its project and expand it to all chairlifts, coming closer to the spirit of the desired approach, and would present it to STRMTG as the basis of a discussion to define a solution passing through a voluntary approach of the operators. This presentation finally took place in December 2017 and was followed by exchanges and experimentation on the field in early January 2018 in order to verify the relevance of the provisions of this guide. After the DSF RM commission validated its content and the associated scoring grid to identify the devices requiring improvement of their facilities, DSF finally renounced disseminating the guide in a prescriptive form, stating that this was not the role of an operator association. STRMTG is therefore expected to disseminate this guide in 2018 by means of recommendation formalizing the application process of this DSF guide.	EC
	2012-017-R3	In the technical guides relating to the design and operation of cable-ways, specify, adjust and ensure the overall consistency of the requirements for safe boarding on chairlifts so that their application ensures optimum prevention of user falls in the development, equipment and operating conditions of the installations concerned.	STRMTG	12/09/14 (response to draft report)	The decree of 7 August 2009 and the RM1 and RM2 guides were amended (for the resp. version guides rev3 and rev2 on 18/05/2016) in a manner that integrates the changes in rules for developing loading and unloading areas in accordance with this recommendation R3, in order to clarify and improve the coherence of provisions relating to the loading of chairlifts, by articulating the rules on the development of areas (RM2) and those relating to their monitoring (RM1). Article 15 of the decree of 07/08/2009 was amended in a manner that better reflects the safety objectives relating to the development of departure terminals in particular: facilitating loading operations, allowing the supervision of these operations, and if necessary, the implementation of corrective actions and preventing damage to passengers. A general paragraph was added as an introduction to § A4-15 of the RM2 guide, making the connection between the development, equipping and organization of the supervision of chairlifts loading and unloading areas. A paragraph from the experience of operators was introduced (A4-15.2 RM2) to improve the design of chairlifts waiting lines, loading areas and zones. A definition of the loading zone, which appeared in the schematic diagram but was not included in the text, was provided. The distance between the ground and the chairs was slightly modified to facilitate the loading of children (§A5.5.6.1.7 RM2): distance of between 39 and 51 c (rather than the 41- 51 cm previously provided for). The RM1 guide specifies in §A1.3. the missions of the loading supervisors, especially by indicating that their supervision is carried out in the loading zone at the end of which they must be able to react if they detect improper loading. The schematic diagram of the loading areas included in the preamble of the RM1 guide and was modified to show the materialization of an end of the loading zone, intended for the operating personnel, to indicate the end of the zone beyond which their supervision is normally no longer required.	EC
	2012-017-R4	For each of the chairlifts that serves the Gourette skiing area, define the automatic actions that the staff in charge of supervising operations must adopt when they detect a user in difficulty after boarding, and train staff in their implementation. Extend that initiative to the Pierre-Saint-Martin area.	EPSA			NS

Recommendations issued in 2014 - continued

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Technical investigation report on the fall of a car from the Bosses cable car that occurred on 2 February 2013 on the skiable area at Gourette in Eaux-Bonnes (64)	2013-002-R1	Take action with the European Standards Committee so that standard NF EN 13223 relating to the security requirements applicable to cable facilities transporting persons specify the requirements it formulates as regards the dimensions of the balance beams fitted to the pylons in such facilities and in this field provide for account to be taken of all the lateral stresses that these parts may be subjected to during operation. With this in mind, add to the provisions of the technical guidelines entitled Ski lifts - RM2 - General design and amendments to cable-ways" in order to ensure that these lateral stresses are taken suitably into account during the design of new cable car or chair lift facilities or during the repair of existing facilities.	STRMTG	17.07.14	The analyses performed after the accident under STRMTG coordination (and in particular restrictive measures on balance-beams fitted by the POMA manufacturer) have in fact revealed the existence of horizontal dynamic stresses on the balance beams that the current balance beam design rules do not cover. Since 2015, the STRMTG has launched a study aimed both at carrying out stress measurements on the structures of a sample of pendulums and aircraft representative of the French fleet and secondly in analyzing the results of these measurements for possible define a method for evaluating the fatigue sensitivity of the French park balance wheels. At the end of 2017, five measurement campaigns were carried out on different equipment balances and builders. A 6th measurement campaign is planned for May 2018 and the final analysis should be completed by the end of 2018. Depending on the results of this study, STRMTG will act within the European Standards Committee (CEN) in order to make a proposed amendment to standard NF EN 13223 intended to introduce practical rules to justify fatigue under dynamic horizontal loading on balance beams of single cable cable ways. In practice, this kind of proposal may only take place during the next revision of the standard NF EN 13223. Pending this, a change to STRMTG guide RM2 to incorporate additional design arrangements for balance beams is difficult to envisage insofar as it would constitute a breach of the European rules for the free circulation of EC marked components.	EC
	2013-002-R2	Ensure that the operators of these cable cars and chair lift facilities establish and implement precise and verifiable visual supervision procedures for the state of balance beam bogies fitted to their pylons, which will enable any developing cracks to be detected.	STRMTG	17.07.14	Detailed specific visual checking procedures may be required when the level of risk involved in a situation demands special monitoring whilst awaiting the set-up of a permanent safety measure. Accordingly, if actions to make changes to balance beams identified as being at risk of fatigue generated by horizontal stresses (see outcomes of recommendations R1 and R3) were to be spread over a period requiring interim operation using balance beams in their pre-existing state, precise visual checking procedures could be necessary and, if appropriate, STRMTG will ensure that such procedures are duly documented and implemented.	EC
	2013-002-R3	Provide new chair lift and cable car facilities with safety devices that enable their operation to be stopped automatically in the case of total or partial breakage of a bogie on their balance beams and define the arrangements to be put in place to reach that goal on facilities currently in operation in accordance with their technical features and their operating conditions.	STRMTG	17.07.14	Fitting a breakage detector to part of the balance beam is intended to deal with the consequences of a structural failure of the balance beam but will not allow the appearance of such a failure to be prevented in the absence of action on its primary cause. Based on rules defining the justification of fatigue under dynamic horizontal loads on balance beams (see outcomes of recommendation R1) , it will be possible to carry out a survey of the sensitivity of the various kinds of balance beams present across all single cable cable ways in service to this fatigue phenomenon and thus to identify the designs that present weaknesses and need reviewing. STRMTG thus envisages setting up that initiative by defining an action programme that enables the kinds of balance beams identified as being at risk from the "horizontal" fatigue phenomenon to be dealt with. This programme may combine replacing balance beam structures with improved design structures, non-destructive testing, or even fitting them with balance beam part breakage detection for cases where replacement is not possible. That survey including recent generations of balance beams will thus enable checking good design of such balance beams with regard to the phenomenon of fatigue connected with horizontal stresses and suitable steps to be taken if this is not the case, pending the relevant update to standard NF EN 13223. This strategy will enable action on the phenomenon identified as the initial cause of the accident at Gourette and thus significantly reduce the probability of such a breakage occurring again. Furthermore that was the strategy that was selected for defining actions to be undertaken on balance beams whose type had been implicated after that accident. In this way the main action involved replacing the bogies of two of the 420 POMA balance beams with bogies whose resistance to fatigue was improved following strain measurements on various bogies.	EC

Recommendations issued in 2015

Completed recommendation: R
Amended recommendation: RM
Recommendation in progress: EC
Rejected recommendation: NR
Unknown outcome: NC
Outcome not monitored by STRMTG: NS

Investigation title	Recommendation no.	Recommendation item	Recipient(s)	Reply date	Outcomes specified and progress status (Literal and Encoded)	
					Literal	Encoding
Train derailment on “Le Panoramique des Dômes” rack and pinion railway that occurred on the 28 October 2012 in Orcines (63)	R1	Prepare a full study on the risks involved in the accidental tailgating of various track apparatus on the “Panoramique des Dômes” rack and pinion railway, and set up suitable measures to limit its impact, if justified.	TC Dôme		Following the derailment, the REX was noted by the operator and it decided to install Active and Automatic Supervision (SAA) monitoring at the crossing area. This system forces the driver to limit speed in the crossing area and to check the position of the points before crossing them with the lug end.	
	R2	Amend legislation to extend the application of regulations on track-guided transport to rack and pinion trains located in mountainous areas instead of that which applies to ski lifts. At least, if such a change of regulations were not to take place, strengthen the terms for approving the main contractors involved, by applying article R. 342-4 of the Tourism Code to rack and pinion trains so that they guarantee in-depth knowledge and experience on their part on the technologies and modes of operation of this kind of railway.	DGITM		A draft decree *that is being considered* provides for creating a specific class devoted to rack and pinion railways within the approvals system for mountain lifts, which will enable the specific features of such equipment to be better acknowledged. *A "design and operation of rack and pinion trains" guide was published on 21/12/2016, and it provides elements on the design of rack and pinion trains and essential requirements for their use.*	

Recommendations issued in 2017

Completed Recommendation: R
Amended Recommendation: RM
Recommendation in Progress: EC
Rejected Recommendation: NR
Unknown Outcome: NC
Outcome Not Monitored by STRMTG: NS

Investigation title	Date sent	Recommendation No.	Recommendation item	Addressee(s)	Reply Date	Outcomes specified and progress status (literal and encoded)	
						Literal	Encoding
The fall of a chair of the "Les Granges" chairlift at the Ménuires ski area at Saint-Martin de Belleville in Savoie	07/07/17	R1	Specify concrete measures to be taken in case of the activation of the strong wind alarm and state, without ambiguity, the measures to be taken when the wind speed reaches the maximum provided for in the equipment design, in this case 20 m/s. Include the measures to be taken in case of the unavailability of one or several anemometers. Provide traceability and registration rules to ensure the proper application of these measures.	SEVABEL	02/10/17	Cf. SEVABEL mail of 02/10/2017: General operation procedure updated to specify the instructions in case of an unfavourable development of wind and the unavailability of a wind speed measurement.	**R**
		R2	Specify the regulatory requirements regarding devices that measure wind speed and alarm, especially with regard to the following: ➢ the determination of the number and position of anemometers which should be based on prior consideration of the aerological peculiarities of the site and on the visibility of the line from the control room; ➢ the recording of anemometric measurements; ➢ the ergonomics of display and alarms with regard to the tasks of the operator; ➢ the materialization of maximum wind speed during operation by a specific alarm or an automatic shut-down device.	STRMTG	02/10/17	Organisation of a meeting with industry professionals on 19/09/2017 to define the overall strategy. Concerning the determination of the number and position of anemometers, STRMTG plans to amend the RM2 guide in 2018 to clarify paragraph A5-5.1.1 on the Authorisation of the Use of a specific note detailing the analysis of anemometric conditions at the new installation site and justifying the numbers, positions and types of anemometers to be installed. This specific analysis will be established by comparing: - the source of the data: operator feedback, wind data available from weather stations or anemometers, etc.; - the different zones of the device according to their wind exposure, the orientation of the strongest wind, the existence of the Venturi effect, the existence of specific zones that hinder or aggravate the effect of wind (forest, a particular landform, etc.); - the identification of zones visible from the installation's permanent work stations (end terminals); - the exposure of different zones to ice. Concerning the logging of wind data and the corresponding operating conditions, the same paragraph of the RM2 guide should specify that the data will be provided for a minimum period of one week, a duration that is deemed sufficient to allow them to be used in case of a particular event (an accident for example) or for an internal control carried out by the operator. Concerning the alarm or stop functions relating to wind measurement, the RM2 guide will be amended to specify the following rules: 1) It is necessary to define, using an anemometer, the wind thresholds, potential variables based on the direction of the wind, according to the design of each device and especially the available templates. 2) The first wind threshold will be an alarm threshold, creating an alarm that can be heard in the control room and at the work station of the personnel in the drive station as well as an automatic slowdown of the installation. 3) The second threshold will be a "dimensioning" threshold, above which the normal operation of an installation is no longer possible and thus creates a safe stoppage of the installation. This stoppage is followed by an analysis of the situation by the operator, specifically allowing the operator to define the conditions under which it is possible to start transporting passengers again. 4) These rules will henceforth be applicable for all devices, regardless of the speed of operation. A work group was set up by STRMTG to more specifically implement the follow-up to recommendations R2 and R4, and met for the first time on 16/04/2018. A second meeting is set for 23/05. A project for writing articles concerning the wind for the RM2 guide was organised. The aim is to amend the RM2 guide at the end of 2018 to finalize the processing of this recommendation. For devices that were new in 2018, the measurements will be requested in anticipation at least for the bubble chairlifts.	**EC**

Recommendations issued in 2017– - continued

Completed Recommendation: R
Amended Recommendation: RM
Recommendation in Progress: EC
Rejected Recommendation: NR
Unknown Outcome: NC
Outcome Not Monitored by STRMTG: NS

Investigation title	Date sent	Recommendation No.	Recommendation item	Addressee(s)	Reply Date	Outcomes specified and progress status (literal and encoded)	
						Literal	Encoding
The fall of a chair of the "Les Granges" chairlift at the Ménuires ski area at Saint-Martin de Belleville in Savoie	07/02/14	R3	Set up in collaboration with the manufacturer Leitner, a training course on the operation, adjustment and verification of the actuating devices for chairlift bubbles. Make participation in this course a mandatory condition for assigning any agent to work on the maintenance of these devices. Organise a hierarchical control to periodically ensure that the maintenance procedures prepared by the manufacturer and the special instructions determined by the operator are correctly applied.	SEVABEL	02/10/17	SEVABEL's mail of 02/10/2017 announced the implementation of a training programme before the 2017/2018 season. During the control conducted on 05/04/2018, the operator informed STRMTG/BS of the postponement of this training programme to spring. The operator must provide STRMTG/BS with the corresponding training certificate. SEVABEL also announced the implementation of a control to ensure the proper application of maintenance procedures by sector heads at the start and end of vehicle maintenance. Finally, LEITNER established the ST 881 028 30 4 ind B notice regarding the operation and maintenance of SA4H-SA6H-CD6H bubbles operating devices	**EC**
		R4	To develop the RM2 technical guide and contribute to the evolution of the NF EN 12929-1 European standard, in order to better prevent risks related to the oscillation of chairs under the effect of the wind, specifically: ➢ for the calculation of clearance template, provide for the prior determination, through calculations or tests, of the maximum amplitude of longitudinal oscillations taking into consideration the characteristics of the chair and the permissible wind speed during operation; ➢ for the calculation of clearance template, take into account the superposition of the longitudinal and transversal oscillations; ➢ in specific cases where clearance template calculated with new rules cannot be completely determined, plan on using devices that have a limited risk of collision.	STRMTG	02/10/17	Organisation of a meeting with industry professionals on 19/09/2017 to define the overall strategy. The first reflections on this recommendation R4 led STRMTG to plan to work along the following axes: - The following can already be maintained: For chairlifts with chairs fitted with bubbles, the longitudinal template to be respect will be defined for each device based on oscillations created by the maximum anticipated wind while in operation (taking into account the relative wind regarding the movement of the installation), determined by calculations or by tests. The definition of the transversal template provided by the RM2 guide is not exclusive and takes into account real wind conditions. The rule will thus be conserved. - The following should still be analyzed in detail: A detailed study is necessary in order to evaluate the feasibility of the development of template rules: * Rule for defining the longitudinal template: Besides bubble chairlifts, which are already explained above, the template to be respected for other types of installations can be considered differently according to the maximum wind considered while in operation: - If the wind pressure is below 250 Pa: the inclusive rate of 0.34 rad can be used without any particular justification. - If the wind pressure is greater than 250 Pa: it will be necessary to verify with calculations or tests that the selected template is compatible with the oscillations created by such wind pressure. * Superposition of longitudinal and transversal oscillations This superposition has never been applied in the successive French regulations and is not adopted by European standards. Before retaining a combination rule for transversal and longitudinal templates, the consequences that result from this accumulation must be evaluated. In 2018, STRMTG therefore plans to carry out, in partnership with industry professionals and specifically with manufacturers, a feasibility study based on different hypotheses of oscillation combinations, allowing for the evaluation of their possible consequences. Such a study should allow STRMTG to position itself in 2019 regarding this part of recommendation R4 of the BEA-TT. A work group was set up by STRMTG to more specifically implement the follow-up to recommendations R2 and R4, and met for the first time on 16/04/2018. The second meeting is planned for 23/05/2018 to work more specifically on the concept of accumulation.	**EC**
		R5	Amend the technical document attached to the "EC" declaration of conformity of chair SA6H in order to specify the maximum amplitudes of oscillations corresponding to its area of use.	LEITNER	?	The chair model originally fitted to the TSD of the Granges is an old model, known as "vehicle SA6H", whose EC conformity was established by STRMTG-ON, formalized by the EC examination certificate No. 10, referring to the technical documentation DD 00078. It is this latter documentation that is covered by recommendation R5. This chair model no longer corresponds to the construction standard for new devices and is now only used in the SAV or for modification operations of existing devices. Taking advantage of a flow increase by adding seats on the TSD of the Granges, carried out at the end of 2017, LEITNER reworked its technical documentation in collaboration with STRMTG-ON in 2017. For the moment, considering the need to modify the indications on the template (taking into consideration the BEA-TT recommendation) and since they are mainly interfaced with the adjustment of line walkways, the manufacturer chose to create a new vehicle subsystem, dedicated to the TSD of Granges. This subsystem received the EC certificate of conformity No. 578, referring to the technical documentation D10216262. Though the design of this new subsystem is very similar to that of the former, the technical documentation was mainly amended to specify the oscillations reached with different wind values. Certain data used to calculate the templates, in particular the coefficient of form Cx, are from the seat operation file integrated in the subsystem. This chair and its EC documentation were evaluated by another notified organisation besides STRMTG-ON. The template calculations and plans for the Granges TSD established by LEITNER and taken into consideration by STRMTG-ON support the wind pressure data (300 Oa, that is a pressure compatible with a limit of 20 m/s of wind, increased by the relative speed of movement at 5 m/s) and the templates cited in paragraph §3.3.2.4 interfaces with the infrastructure. Concerning the original Certificate No. 10, whose supporting technical documentation was not updated, it should be noted that the entry into force of the European Regulation 2016/424 by replacing Directive 2000/9/EC renders it null and void as from 21/04/2018, in the same manner as all the subsystem certificates of conformity issued previously. At this date, Certificate No. 10 is therefore no longer valid.	R

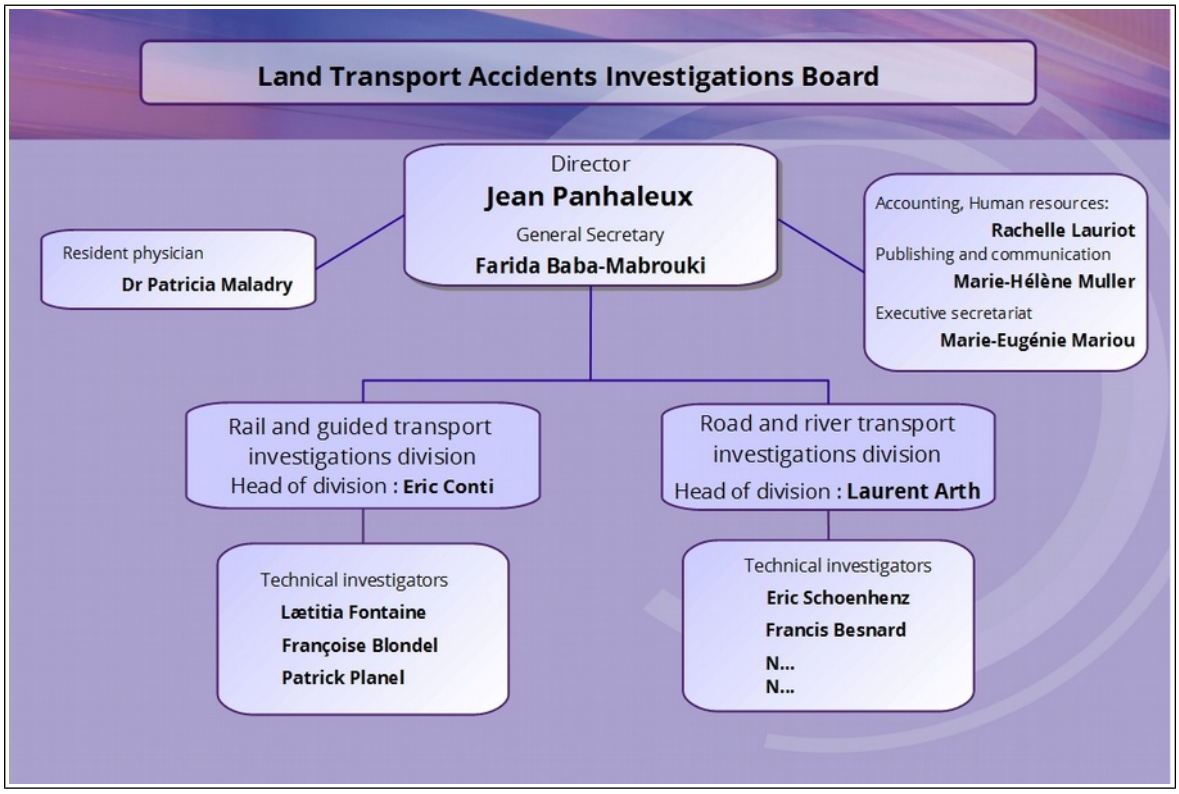
Recommendations issued in 2017– - continued

Completed Recommendation: R
Amended Recommendation: RM
Recommendation in Progress: EC
Rejected Recommendation: NR
Unknown Outcome: NC
Outcome Not Monitored by STRMTG: NS

Investigation Title	Date Sent	Recommendation N°	Recommendation Item	Addressee(s)	Reply Date	Outcomes Specified and Progress Status (Literal and Encoded)	
						Literal	Encoding
the derailing of the Telemetro which occurred on 12 January 2017 in La Plagne (73)	09/11/17	R1	Conclude the current operations to reconsider the design of the cable supports and the Telemetro vehicle cars and bring them into conformity with the current regulations.	SAP	12/02/18	The SAP mandated the manufacturer BMP to modify the Telemetro starting in May 2018. The principle retained was to remove the brakes on the vehicle cars, with the provision of new cars and hangers, allowing for the replacement of the line and terminal clamps by clamps that surround the carrying cables in more complete manner. The cables will also be replaced at this time. The machinery will also be modified, but to a lesser extent, in order to respect the integrity justification criteria for the cable loop monotractor. On the one hand, this wrapping is favourable to the stability of the cable carriers and on the other, the car/clamp connection will be improved, the new design allowing for the improvement of the available clearance template. The modification was the subject of a Work Execution Authorization file, approved by the Savoie Prefect in 2018. The modified device should be in service starting in the fall of 2018, thus, for the next season of operation.	**EC**
		R2	Carry out a risk analysis for all the chairlifts concerned by the STRMTG circular letter No. 86-229, evaluating for each of them the risk factor and the efficiency of stops and measures adopted by the operators, to guard against the consequences of the icing of supports. Launch processing actions for critical situations.	STRMTG	31/01/18	Organisation of a meeting with industry professionals on 22/01/2018 to define the processing strategy. In order to respond to this recommendation, STRMTG launched a survey by means of recommendation on 12/03/2018 among the operators of bi-cable cableways with a least one line tower, specifically including 3S devices (that is a larger park than that intended by circular 86-229). This survey aims to identify the characteristics of the bi-cable installations with regard to their conditions of carrying cable support on the line towers, for the design of supports as well as for operation practices and conditions, notably in the presence of snow. There is also a request to note the feedback with all the events/incidents involving the carrying cable supports. The feedback of operators is expected by 04/06/2018; it will allow for more precise familiarity, for each device, on the one hand with specificities in terms of supports design and on the other, with feedback and associated operation instructions. These two themes will be jointly analyzed in order to evaluate if they cover all the risk situations with regard to the icing of supports, as well as the associated potential consequences. The exploitation of this survey by STRMTG, in collaboration with DSF and IARM, will provide an overview of the compatibility of design elements and associated operational rules, especially in the presence of snow. It will eventually determine whether there are connections between all of the design and operational elements that are favourable or disadvantageous to the presence of ice on the clamps and the potential derailment of a cable-car connection. Depending on this evaluation, case-by-case adaptations of support conditions for carrying cables of certain bi-cable cableways or their operation conditions can thus be discussed with the operators.	**EC**
		R3	Establish specific instructions for the Telemetro indicating the detailed verifications to carry out before safety shunting and the compensatory measures to be taken afterward. Integrate the corresponding learning into the training courses.	SAP	12/02/18	SAP has established operating procedures firstly concerning the specific monitoring of the device (MO145) and snow monitoring and removal (MO93) conditions of Telemetro supports in case of snowy weather and secondly concerning the cross-linking conditions (MO97) of the device's monitoring functions. A training course for the operating personnel was therefore organized on 17/12/2018 to prepare them to use the device's control-command electrical architecture.	R

Appendix 4

BEA-TT organisational chart as on 1/01/2018



Institutional texts

European Directives No 2004/49/EC of 29 April 2004 and No 2016/798 of 11 May 2016

French Transport Code: articles L. 1621-1 to L. 1622-2 and Articles R. 1621-1 to R. 1621-26

French Tourism Code: article L. 342-8 making the following applicable to ski lifts: Articles L. 1621-1 to L. 1622-2 of the Transport Code.

Appendix 5: Glossary

- **DGEC**: Directorate general for energy and climate
- **DGITM**: Directorate general for infrastructure, transport and the sea
- **DSR**: Road safety and traffic delegation
- **EPSF**: National rail safety authority
- **FNTV**: Nation federation of passengers transports
- **LC**: Level Crossing
- **RFF**: French rail network, the body managing the national rail network until 31 December 2014
- **RFN**: national rail network
- **SANEF**: North and east France motorways company
- **SNCF**: French national railways company, a rail operator and, until 31 December 2014, delegated body in charge of managing the national rail network
- **SNCF Mobilités**: rail company in the SNCF group
- **SNCF Réseau**: body in charge of managing the national rail network
- **STRMTG**: Ski lift and guided transport technical department
- **TER**: Regional express train
- **TGV**: High-speed train
- **UNECE**: United Nations Economic Commission for Europe

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