Annual Report 2012

Investigation Body
for Railway Accidents and Incidents

Federal Public Service
Mobility and Transport

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The investigation body is an organisation created to carry out safety investigations following a railway accident or incident. The IB is functionally independent of the Safety Authority, of any regulatory body for the railways or any other authority whose interests could conflict with its investigatory duties.

This report provides an overview of the work of the investigation body for railway accidents and incidents between 1 January 2012 and 31 December 2012, in accordance with the requirements of Article 54 of the Law of 19 December 2006.

Contents

1. Preface

The Investigation Body (IB) makes every effort to fulfil its duties in the best possible way, while developing its capacities, structuring investigations, following the action plan according to the recommendations of the Buizingen Parliamentary Commission.

The decision to carry out an investigation is made independently according to different criteria, the circumstances being particularly important, or because it presents a possibility for improving safety.

The investigations are lead by IB investigators with the support of external experts according to the skills required.
The investigations are as transparent as possible, therefore the actors involved in safety are informed from the start of the investigation, so as to allow them to take immediate measures or to plan measures if that proves necessary.

To effectively lead its investigations, the IB should be able to access all elements, evidence and useful information, even in ongoing legal cases. A major change in attitudes must continue to take place.
Even if major improvements have been made, to be done in giving the IB's investigation the recognition deserved. These investigations are not intended to attribute or determine judicial responsibility: its findings cannot be interpreted in this way.

Its independence allows the IB to draw conclusions and formulate recommendations to those in a position to take action.

The human element is a major element in the majority of accidents. In the aftermath of an accident, a feeling of insecurity appears; it is tempting to take measures to compensate for first line errors. In order to be relevant, an in-depth analysis of accidents must allow first line errors to not only be revealed, but also the possible latent errors in design, strategy for use or regulations.

Despite knowing the rules, even the most motivated employees can have moments of weakness, commit offences or make mistakes. This is an aspect of human behaviour.

Real safety consists of putting into place different and multiple defences so as to reduce the risk of human error or to reduce the consequences to a maximum degree.

Investigations by the IB play a preponderant role in bringing latent errors into line. The "human and organisational factors" approach used in this context allows a better understanding of what conditions human activity and by consequence allows actors to act on the conception of situations for work and organisation, to better identify the risks linked to a situation and take concrete measures to improve safety.

2. The investigation body

2.1 Legal basis

The creation of an independent body responsible for investigating railway accidents and incidents aimed at improving safety is provided for by the European Directive 2004/49.

This Directive has been transposed into Belgian law with one law and two implementing decrees:

Law of 19 December 2006:

law on railway operational safety, amended by the law of 28 December 2011, in particular chapter VII.

Royal Decree of 16 January 2007:

amended by the Royal Decree of 25 June 2010 setting certain rules for investigations into railway accidents and incidents.

Royal Decree of 22 June 2011:

designating the investigation body for railway accidents and incidents and repealing the Royal Decree of 16 January 2007.

No change to legislation on the investigation body has occurred during 2012.

2.2 Organisation and means

2.2.1 Budget

The creation of an organic budgetary fund by Article 4 of the programme act of 23 December 2009 is intended to guarantee the financial independence of the investigation body for railway accidents.
The fund is made up of contributions from the infrastructure manager and railway undertakings towards the functioning of the investigation body for railway accidents.
Aside from general expenses (staff, offices, operations, equipment), there are also specific operational expenses allowing the investigation body for railway accidents and incidents to guarantee fulfilment of its duties: regular external expertise and consulting, individual safety equipment, participation in specialised training and conferences (etc.).

2.2.2 Staff requirements

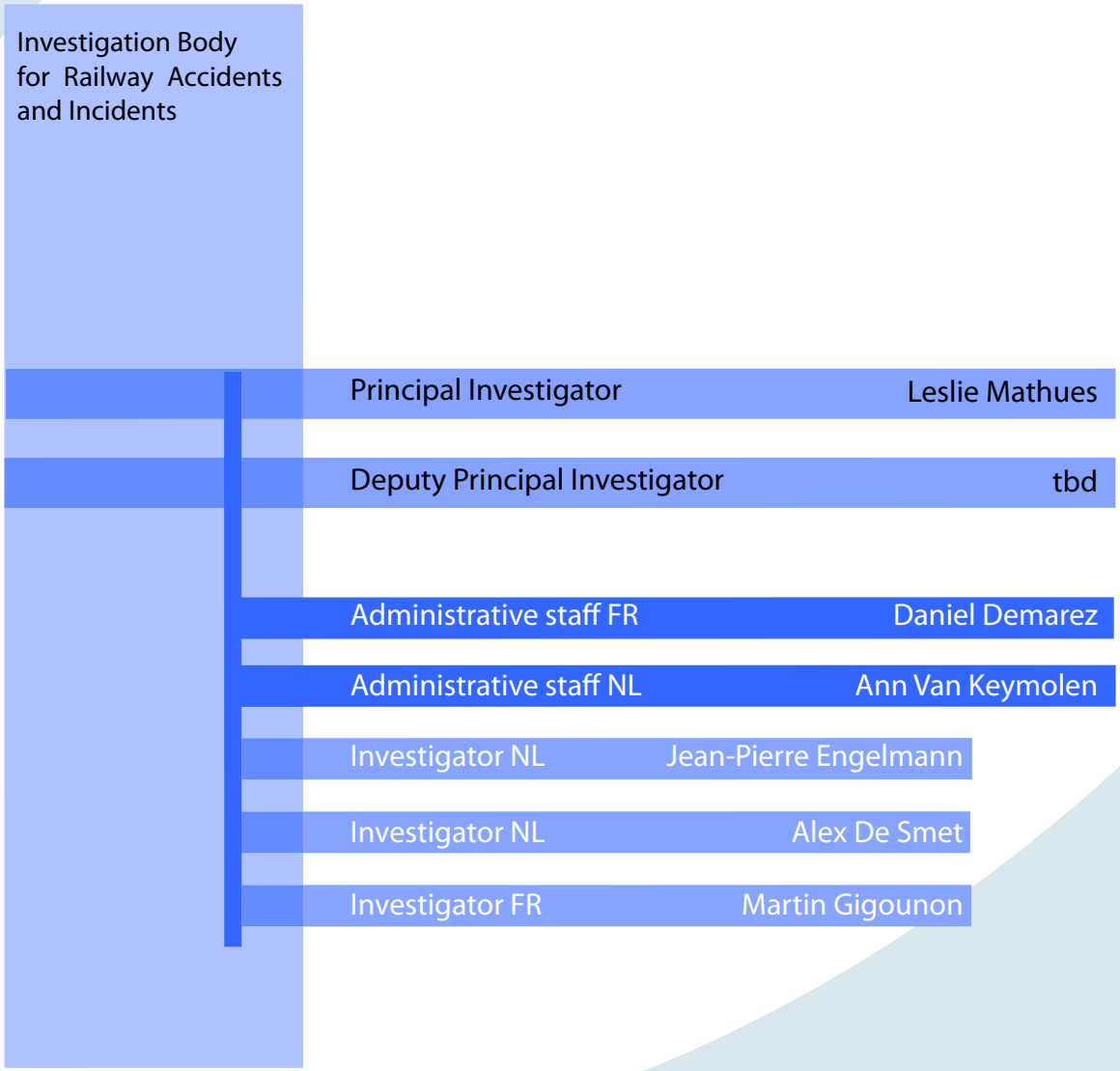
A third investigator and a secretary joined the team from 1 February 2012.
The IB is presently made up of three permanent investigators.
The goal is to arrive at 7 full-time equivalents as planned in the action plan following the recommendations from the Buizingen Commission.

Investigations are led by permanent investigators with the support of experts chosen according to the skills considered necessary. The Investigation Body identifies and mobilises experts completely independently.

2.2.3 Location

The offices of the IB are in Brussels, rue du Progrès 56, near to the north station in the offices of the Federal Public Service (FPS) Mobility and Transport.

2.2.4 Organisation chart



2.3 Duties of the investigation body

2.3.1 Investigations

The principal mission of the investigation body is to investigate operational accidents deemed serious, occurring on the Belgian railway network.

As well as serious accidents, the IB is equipped to investigate other accidents and incidents with consequences for railway safety.
The safety investigations carried out aim to determine the circumstances and causes of the event and not to apportion blame.
They are based on multiple aspects: infrastructure, operations, rolling stock, staff training, regulations, etc.
They are separate from the legal enquiry, which takes place in parallel.

The results of the investigations are analysed, evaluated and summarised in the investigation report.
The investigation report is not a formal decision. It may contain safety recommendations for the authorities, railway undertakings, railway infrastructure managers, etc.
The aim of the recommendations is to reduce the risk of similar accidents occurring in the future, but also to reduce their repercussions.

2.3.2 Database

The investigation body brings together elements collected in a single database for the purposes of archiving, trend analysis and confirming shortcomings in safety.

All events reported on a daily basis by the infrastructure manager and by railway undertakings are included in the IB database.
This allows similar events to be identified in the case of incident or accident.

The database also allows access to the common safety indicators foreseen by European Directives and transposed into Belgian law.
The database is available to the National Safety Authority.

2.3.3 European consultation

The investigation body takes part in the network activities of the national investigation bodies (NIB), which take place under the aegis of the European Railway Agency (ERA), with the intention of drawing upon the experiences of other investigation bodies and to collaborate in the European harmonisation of regulations and investigation procedures.

2.3.4 Communication

When the IB investigates an accident, its objective is to determine what happened, why, and to uncover the underlying causes.
The reports are made public for information to parties concerned, the general public, industry, regulatory bodies, etc.

The IB website allows access to the published reports. These reports present the facts, analysis, the causes identified, the measures taken by the actors and recommendations made.

NIB= National Investigation Body

3. Notification of events

To monitor events linked to safety, the investigation body receives information :

By telephone

The railway infrastructure manager immediately telephones the investigator on duty to inform them of serious accidents and incidents as well as all collisions and derailments on the main line.
The practical formalities are sent by post to the infrastructure manager.
The investigation body can be reached 24 hours a day, 7 days a week.

By email within 24 hours

The railway infrastructure manager sends a daily email to the IB with a short summary of the events that have taken place over the course of the previous twenty four hours.

By email within 3 days

Within three days, the infrastructure manager and the railway undertakings concerned send a report of the facts with a minimum of information concerning all the events which initially appear to be an accident or incident concerning operational safety or which has repercussions for operational safety.

The accidents and incidents are sorted in the database according to the elements provided by the railway undertaking and the infrastructure manager, according to 3 levels of seriousness:

"Serious" accident/incident level 1

Any type of accident resulting :

- in the death of at least one person, or
- serious injuries to five or more persons, or
- extensive damage to rolling stock, infrastructure or the environment. «Extensive damage» means damage that the investigation body can immediately estimate at a value of least EUR 2 million in total.

"Significant" accident/incident level 2

Any type of accident resulting :

- in serious injuries to at least one person,
- in damage assessed to be worth at least EUR 150 000,
- suspension of rail traffic for over 2 hours.

"Other" accident/incident level 3

Accidents and incidents that do not fall into the other two categories.

Based on this information, which may be supplemented by a preliminary enquiry, the investigation body decides to open a safety investigation.

Accident: an unwanted event or unintended and unforeseen, or a particular chain of events of this kind, having detrimental effects; accidents are valued separately according to the types below: collisions, derailments, accidents at level crossings, casualties involving rolling stock in motion, fire and others.

Incident: any event other than an accident or serious incident, linked to the operation of trains and impacting on operational safety.

4. Investigations

Since its creation in 2007 and until January 2010, the investigation body called upon the technical, material and operational expertise of the safety and environmental service of SNCB/NMBS Holding to conduct investigations and produce the corresponding reports, under the supervision of the lead investigator of the FPS investigation body. Investigations that have not been completed by SNCB/NMBS Holding are examined step by step by the investigation body. Cases made available to them are studied. Further investigations are necessary for a good understanding.

The investigation reports serve as a reminder as well as an archive, but also allow the lessons learned following accidents and incidents to be recognised.

The goal is to encourage the circulation of knowledge acquired in the course of different analyses.

Since the beginning of May 2012, the report on the Buizingen investigation has been finalised, it can be accessed via the FPS Mobility and Transport website at the following address:

http://www.mobilit.belgium.be/fr/traficferroviaire/organisme_enquete/

At the end of 2012, three other investigation reports were being finalised, namely, the investigations on accidents that took place in Dinant (2009), Charleroi (2011) and Feluy (2011).
The drafts have been sent for the second time to the different actors directly concerned for their comments.

According to the procedures developed by the IB, the drafts are generally sent twice so that they are familiar with the analysis and can comment on the reports. The goal is not to alter the content of the report but to add the necessary details. The changes accepted by the IB are integrated into the reports, the others are discussed.
Further investigations are sometimes necessary to remove possible ambiguities or to verify new elements made available to the IB. The conclusions and recommendations are a part of the draft final report sent to actors. The investigation body has set the goal of completing a large number of reports in the course of 2013, at the same time as continuing newly opened investigations.

The table below gives an overview of open and closed investigations since 2007 when the investigation body was created and closed by 31 December 2012.

N°	Accident date	Type	Place	Death	Article	Status	Date of completion
1	26/04/07	Collision	Izegem	0	Art 45	Closed	02/09/07
2	19/06/07	Collision	Genk Goederen	1	Art 44	Closed	23/07/08
3	02/09/07	Derailment	Genval	0	Art 45	Closed	08/10/08
4	29/11/07	Staff hit by train	La Hulpe	2	Art 44	Closed	01/04/09
5	14/12/07	Person hit by train	Morstel	1	Art 44	Closed	27/04/09
6	17/12/07	Person hit by train	Ede	1	Art 44	Closed	26/05/08
1	03/03/08	Level crossing accident	Gembloux	0	Art 45	Closed	02/2010
2	03/07/08	Collision	Hermalle sous Huy	1	Art 44	Closed	02/10/09
3	25/10/08	Staff hit by train	Walcourt	1	Art 44	Closed	02/10/09
4	14/11/08	Collision	Diegem	0	Art 44	Open	
1	23/05/09	Boarding incident	Dinant *	0	Art 45	Open	
2	15/11/09	Staff hit by train	Jemelle	1	Art 44	Open	
3	19/11/09	Derailment	Mons	1	Art 44	Open	
1	15/02/10	Collision	Buizingen	19	Art 44	Closed	May 2012
2	15/09/10	Side-swipe collision	Arlon	0	Art 45	Open	
1	28/01/11	Derailment	Pepinster	0	Art 45	Open	
2	04/07/11	Nose to nose between two trains	Charleroi *	0	Art 45	Open	
3	08/09/11	Train hitting the catch points	Feluy *	0	Art 45	Open	
1	25/01/12	Derailment	Remersdael	0	Art 45	Open	
2	12/04/12	Derailment	Melsele	0	Art 45	Open	

3	4/05/12	Collision	Tintigny	0	Art 45	Open	
4	11/05/12	Collision	Godinne	0	Art 44	Open	
5	14/06/12	Person hit by train	Duffel	1	Art 44	Open	

The investigation body has started 5 investigations in 2012.

** being completed*

Art 44: The accident fits the definition of serious accident, there has been at least one death or serious injuries or damage to stock worth more than EUR 2 million.
Art 45: This accident does not fit the definition of a serious accident. It is an accident that in slightly different circumstance would have lead to a serious accident.

4.1 Remersdael - 25 January 2012: Derailment of a freight train

Wednesday 25 January at approximately 20:46, while travelling on track B of line 24 from Montzen in the direction of Visé with 3 minutes delay, the driver of the freight train E47544 (Osnabruck – Kortenberg-Goederen; 28 wagons - 974T – 645m ; electric locomotive 2813; P100 braking system; no dangerous goods) of the Cobra subsidiary of the railway undertaking B-Logistics noticed an emptying of the main automatic brake pipe by Remersdael.

Following inspection of the train, the driver noticed the third carriage had derailed (No 21 80 2464 038-3 in charge of car parts) with a risk of obstruction of the neighbouring track A.

The marks from the derailment found indicate the third carriage of the train E47544 started to derail from its last axle at KP (kilometre post) 33,575, going on to then completely derail by the Remersdael track equipment (points 1B and 2B). In this area, the aforementioned carriage was sloping towards the space between the tracks by resting on its two right-hand wheels and its load was found between the tracks as well as on track A.

The train E47544 had travelled a distance of around 1.5 km with its third derailed carriage. The circulation of trains on the line was completely stopped.

This accident does not fit the definition of serious accident, but it does fit that of significant accident. The accident caused material damage. Under these circumstances, ie a derailment in the middle of the track, the investigation body decided to open an enquiry.

4.2 Melsele - 12 April 2012: Derailment of a freight train

Thursday 12 April 2012 at approximately 16:18, the freight train E31283, composed of 29 carriages and pulled by the electric locomotive 2017, of a length of 561 metres and a total mass of 1627 tonnes left the port of Zeebrugge towards Antwerp DS Angola. All carriages were loaded with containers.
From Ghent, the freight train was travelling on track B of line L59 in the direction of Antwerp. After Sint-Niklaas, the train E31283 was closely following the passenger train LE2688, delayed by 4 minutes.

At 18:12, during the return of the diverging track VII towards track B, carriages 10 to 16 derailed.

At 18:13 the train driver started a GSM-R alarm to signal the derailment.

During the derailment, a break in the coupling occurred between carriages 9 and 10. The head of the train stopped at kilometre 13130 of Melsele.
Following derailment, tracks A and B of line 59 as well as the diverging track VII were completely obstructed by the rolling stock and containers which were overturned.
Tracks A and B were seriously damaged, the diverging track was partially destroyed.

The train was not transporting dangerous materials, there was neither injury nor fatality, but material damage was significant.
At the same time the train E3018 from Antwerpen-Centraal to Gent Sint Pieters was travelling on track A of line 59 via the Kennedy tunnel towards Sint Niklaas.
At 18:18 the passenger train E3018 stopped at the C3 signal at danger, or 130 m before the locomotive of the train E31283.

The derailment does not fit the definition of a serious accident but it does fit that of significant accident. In slightly different circumstances, the derailment could have caused a serious accident. The IB decided to open an investigation.

4.3 Tintigny - 4 May 2012: Collision between 2 freight trains

On Friday 4 May 2012, two freight trains collided coming out of the Lahage tunnel, on the territory of the town of Tintigny at KP 106300 on the line 165.

The freight train EE36282 left Athus, the starting station, with a delay of 4 minutes and travelled on track B of line 165 in the direction of Antwerpen Berendrecht.
The freight train EE44883 from Aubange to Antwerpen Noord was travelling on the same track B of the line 165 with a delay of 13 minutes. Around 9:54, the train EE44883 crashed into the train EE36282 that was ahead of it, the train driver initiated a GSM-R alarm.

At the moment of the collision, the train EE44883 was travelling at a reduced speed whilst the train EE36282 was stationary. The drivers were not injured. Several carriages derailed.

The train EE44883 was transporting Caterpillar engines and tankers which contained toxic products that had not been degassed.
Train travel was stopped between Virton and St-Vincent-Bellefontaine.
Buses were made available to passengers between Florenville and Virton.
The driver of train EE44883 signalled an odour of gas in the tunnel to Traffic Control.

The disaster and emergency services went to the scene and confirmed that there was no leak of dangerous materials but that the level of toxicity in the air was 10 times greater than normal. Traffic Control contacted the Solvic fire service who went to the scene at approximately 20:15.
During the impact, the emptying tubes and the valves for the product had been ripped off. Product residue found in the pipes had caused a release of gas. The Solvic fire service ventilated the tunnel.

The collision does not fit the definition of serious accident, but it does fit that of a significant accident. In slightly different circumstances, the collision could have caused a serious accident. The IB decided to open an investigation.

4.4 Godinne - 11 May 2012: Collision between 2 freight trains

The accident took place on Friday 11 May 2012 at 11:32 on the line 154, at kilometre 77,898, in the village of Godinne, on the edge of the Meuse.

On Friday 11 May at approximately 11:30, the driver of train EE44883 travelling on track B of line 154 applied an emergency brake ahead of signal B779 at KP 77898 after having crossed a warning signal. The train stopped between the level crossings 107 and 108, by the platforms at Godinne station.
The train driver carried out the procedures following application of the emergency brake and started off again at 11:32.

When moving off, the driver felt an impact within their convoy; noting damage to the catenary, they started a GSM-R alarm and stopped the train.
At 11:33, the Namur distribution board recorded the disengaging of catenaries.
The driver suspected having been hit by a preceding train.

The freight train E48785 had violently struck the rear of the freight train EE44883 by the signal B779.

Following the accident, the two tracks on line 154 were obstructed and the derailment of wagons caused damage to the catenary. The electricity supply was cut. Certain wagons of train EE44883 contained dangerous materials subject to RID and were damaged during the collision: leaks were suspected.

Traffic Control requested that Solvay intervene and phase 2 of the emergency plan was declared by the civil authorities.
An evacuation of inhabitants within a safety perimeter of 800m was initiated.

This accident fits the definition of serious accident considering the major damage made to rolling stock and to infrastructure according to initial estimations made by the IB.
The IB decided to open an investigation.

4.5 Duffel - 14 June 2012: Casualty caused by the arm of a crane

On 14 June 2012 at 14:48 the international train (Benelux E9233) from Brussels Midi in the direction of Amsterdam collided with the arm of a digger working close to the track in service.
The train was operating on the normal track, track A of the line 25.
The collision happened at platform I (kilometre 28900) at Duffel station.

The train applied an emergency brake at the kilometre post 29900, or 1km after impact.

The train driver immediately initiated an alarm via the GSM-R system to warn Traffic Control to carry out the necessary to halt circulation of trains on tracks A and B of lines 25 and 27.

During the collision with the digger, the arm of the crane moved to the left and struck a worker who died at the scene.

The driver of the digger suffered an injured foot and was transported in a state of shock to the hospital in Duffel.

The type 2802 locomotive was damaged at the front in the area of the impact with the arm of the crane.
The passengers of the train E9233 were evacuated and brought to Duffel station.

This accident fits the definition of serious accident: there was one fatality.
The IB opened an investigation.

5. Recommendations

5.1 General points

The recommendations in the area of safety are proposals that the investigation body makes in order to improve safety on the railway system.
The recommendations are centred around accident prevention with the aim of minimising the number of potential accidents or limiting the consequences of an accident, to reduce the seriousness of damage caused.

If the necessary measures have been taken in the course of the investigation to improve safety, the recommendations do not need to be made in the report. The measures taken are mentioned in the ad hoc chapter of the report.
The recommendations are discussed to ensure comprehension by the actors concerned. They are otherwise included in the final draft of the report sent for comments. The final decision falls to the investigation body. The recommendations can subsequently by accepted, refused or altered by the actors.

The law specifies that the addressees of the recommendations inform the IB, at least once per year, of the consequences of the recommendations.
The IB is not responsible for supervising the operational consequences of the recommendations made. The monitoring of this implementation falls to the National Safety Authority for the railways, according to Directive 2004/49/EC.
The consequences of the report on the Buizingen enquiry are outlined in chapters 5.2 below.

5.2 Monitoring of Buizingen recommendations

The actors concerned have taken measures to respond to each of the recommendations made by the investigation body. All actions have been initiated, some have been completed, other actions taken in the long term are subject to a regular monitoring by companies.

R1.1 The IB recommends that Infrabel and SNCB/NMBS provide the belgian NSA with a detailed action plan to respond to the IB's various recommendations within a maximum of 3 months including the time estimated for realisation.

SNCB/NMBS

A detailed action plan has been provided to the NSA on 01/08/2012 including an estimation of dates for realisation by the SNCB/NMBS.

Infrabel

A detailed action plan has been provided to the NSA on 31/08/2012 including an estimation of dates for realisation by Infrabel.

R1.2 The IB recommends that the NSA verifies the need to extend recommendations to other railway undertakings.

NSA

During consultation meetings, the NSA reminded railway undertakings of the importance of installation of the TBL1+ system allowing the risk of collision to be reduced and while awaiting installation of the ETCS system.

NSA : National Safety Authorities (= SSICF/DVIS in Belgium)

R2.1 The investigation body recommends that SNCB/NMBS and Infrabel take concrete steps to prevent collisions resulting from the passing of signals at danger and to reduce the consequences of collisions between trains.

R2.2 The investigation body recommends that the SNCB/NMBS and Infrabel take concrete measures to reduce the number of signals overrun at danger and the short and long-term consequences in a systematic way.

SNCB/NMBS

The action plan drawn up by SNCB/NMBS covers different domains:

- installation of the TBL1+ function on all of its fleet. This will be equipped by the end of 2013.

- the increase in the number of signals passed at danger is being closely monitored by the SNCB/NMBS Management Board. A study of every signal passed at danger is carried out using the key indicators.

- a monitoring system for driver working periods has been put in place to take account of the risk linked to fatigue in the preparation of driver timetables. The risks linked to tiredness are the subject of regular feedback from staff.

- a study of human factors has been carried out by an independent service in the context of signals passed at danger. Recommendations have been formulated in the final report which have been studied and progressively implemented.

The migration strategy towards the ETCS system has been prepared and validated by the SNCB/NMBS Management Board. The strategy has been formalised into a timetable taking into account organisational, operational and financial impacts. The document identifies the internal and external risks, defines the necessary human and material means, the timetable foresees the entire SNCB/NMBS fleet being equipped with ETCS by 2023.

Infrabel

The action plan prepared by Infrabel is divided into 4 sections:

- awareness-raising via different working groups, communication campaigns and analysis of circumstances in each case of passing a signal at danger

- risk management via different risk analysis

- the ETCS Master Plan prepared by Infrabel contains the timetable for implementation of TBL1+ as well as a strategy for ETCS system installation.

- other initiatives such as the establishment of new planning rules for the installation of new signals.

The implementation of this recommendation is monitored via reports three times per year on the global action plan for safety.

R3 The investigation body recommends that the NSA, in coordination with the service or services concerned within FPS Mobility and Transport, ensures monitoring of ETCS deployment with a global vision of the development of the safety level, with a view to verifying that the deployment stages are being respected, and at the same time to check that the transition, and in particular the deactivation of existing systems, is not done to the detriment of safety.

NSA

NSA regularly receives updates on the deployment of ETCS.
A working group «change desk» has been put in place during the course of which changes occurring on the network are communicated to the actors concerned.

R4 The investigation body recommends that Infrabel and SNCB/NMBS submit a review of their manuals for Safety Management Systems to the NSA to positively develop and take the appropriate measures to compensate for the insufficiencies identified in the investigation report.

SNCB/NMBS

The SNCB/NMBS receives its safety management system in the context of the renewal of its certificate A:
- *better transparency of decision-making procedures,*
- *new risk management system.*

The the investigators have received training in investigation techniques and on accident analysis.

Infrabel

Infrabel has entirely revised its safety management system in the context of its request for renewal of its safety certificate.

R5 The investigation body recommends that Infrabel and SNCB/NMBS remind its personnel to respect the instructions for access to an accident site, to remind personnel that the taking of measures, or carrying out repairs is forbidden without prior authorisation from the judicial authority and/or the investigation body, that access should be strictly limited to the emergency services and to the investigators.

SNCB/NMBS

A revision of the SNCB/NMBS intervention plan has entered into force.
The associated local instructions have been finalised.
An audit is planned in the course of the second half of 2013 with the aim of ensuring a good understanding by the personnel and to ensure application of the latest version of the plan by the persons concerned.

Infrabel

In the course of revision of the intervention plan planned for the end of June 2013, Infrabel will integrate access rules for an accident site and rules concerning the taking of measures.

R6 The investigation body recommends that the infrastructure manager and SNCB/NMBS adjust their emergency plans for the evacuation of the injured, passengers, etc. according to the lessons learned from this accident.

SNCB/NMBS

The SNCB/NMBS intervention plan has been revised. The aim of the SNCB/NMBS is to organise exercises on a regular basis so as to identify potential inaccuracies in the new intervention plan.

Infrabel

In the context of the evacuation of casualties, Infrabel has planned a more in-depth revision of the internal intervention plan to take experience into account.

R7 The Law of 19 December 2006 requires the infrastructure manager to immediately inform the investigation body. The IB recommends that Infrabel revises its priorities for information to participants to allow each person to carry out their obligations.

Infrabel

The priority for information from the different participants has been altered in the context of the revision of the internal intervention plan.

R8. It is recommended that Infrabel suggest modifications to its management manual for safety to the NSA to ensure compliance with regular maintenance of signalling and its traceability in an unambiguous way.

Infrabel

A planned approach has been established by Infrabel to ensure a better monitoring of maintenance activities with the use of a new work card.

R9 The IB recommends that Infrabel, in the conception of new installations or for major redevelopment of existing installations, limits, in consultation with operators, the risk that an authorised and travelled route may be crossed or result in a face to face situation in the case of the passing of a signal by any other movement.

Infrabel

The additional directives for installation have been prepared. A new option will allow signal boxes to stop trains using an emergency signal via the GSM-R system. A benchmarking study is underway concerning the issue of conflict during the journey.

6. Statistics

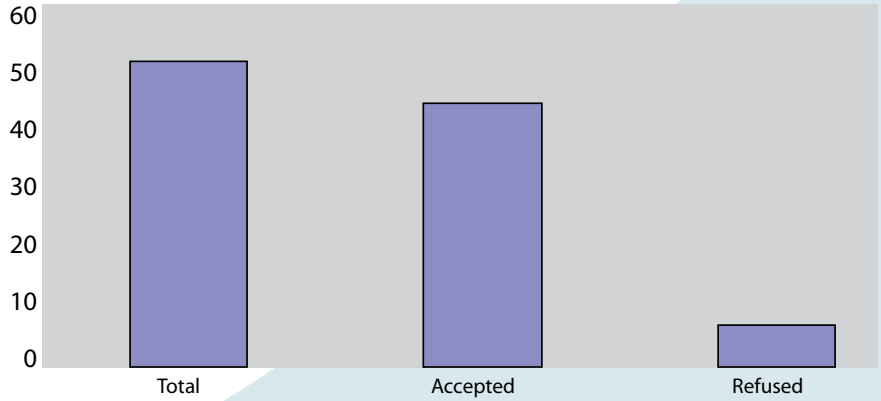
6.1 Statistics on recommendations

	Number	Accepted	Refused	No response	Altered
Izegem	5	5			
Genk-Goederen	4	4			
Genval	4	4			
Ede	2		2*		
La Hulpe	13	13			
Berchem Mortsel	4		4**		
Hermalle-sous-Huy	3	2	1***		
Walcourt	3	3			
Gembloux	4	4			
Buizingen	9	9			
Totaal	**51**	**44**	**7**		

** The recommendations involved the removal of external handles close to the doors and the actions to be taken to avoid the problem of «train surfing».*

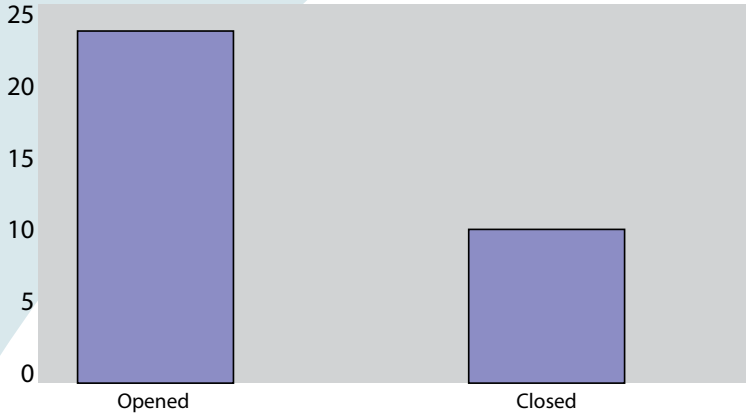
*** The 4 recommendations involved amendments to be made to rolling stock due to it being possible to open emergency doors whilst the train is in motion without an alarm sounding.*

**** The recommendation was on the implementation of a technical measure to verify the back-up electrical feeder before switching over to it.*

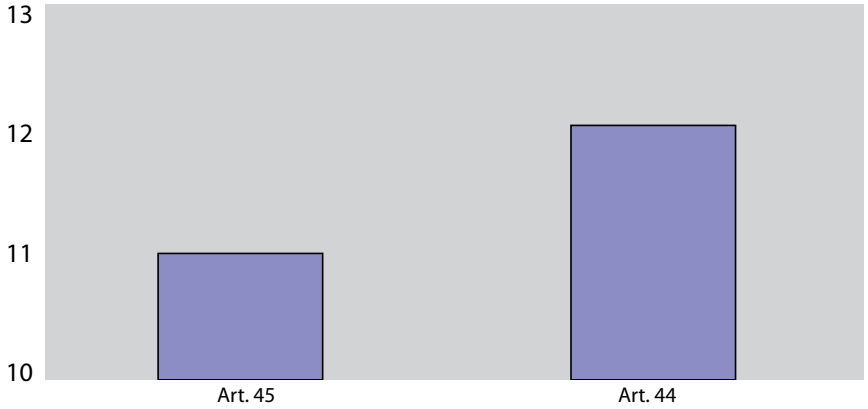


6.2 Investigation statistics

Investigations opened and closed since 2007



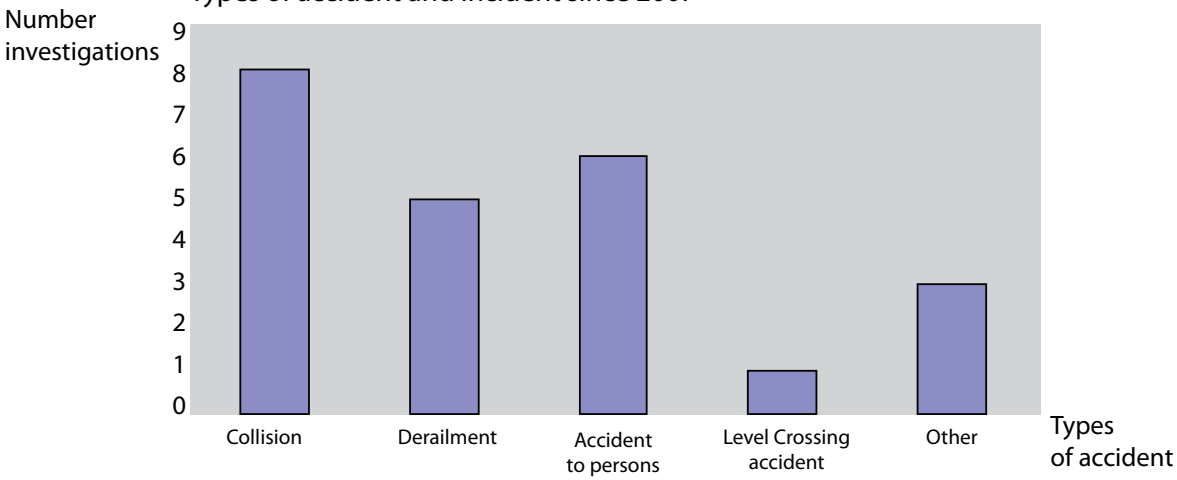
Investigations according to classification



Art. 44 *The accident fits the definition of serious accident, there has been at least one fatality or 5 serious injuries or material damage of more than EUR 2 million.*

Art. 45 *The accident does not fit the definition of a serious accident. This is an accident which in slightly different circumstances would have resulted in a serious accident.*

Types of accident and incident since 2007



Investigation Body
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