

### Occurrence Summary

What		Location	
Date of occurrence	27-11-17	Location name	Morlanwelz
Local time	19:45	Latitude	
Event type	Railway vehicle movement events Accident to persons caused by RS in motion	Longitude	

**Description**

Le 27/11/2017, suite à une collision avec une voiture sur le passage à niveau 1 (PN 1) de la ligne 112 à Morlanwelz, un incendie détruit le poste de conduite de l'automotrice de tête d'un train composé de 2 automotrices électriques.  
Après l'accident, les voies sont mises hors service pour permettre l'évacuation du train en détresse et pour effectuer des réparations à l'infrastructure.

A 19:43, lors de l'évacuation des 2 automotrices par un train de relevage vers la gare de Piéton, l'automotrice accidentée s'échappe et dévale, en roue libre et sans personnel, la voie en pente direction La Louvière-Sud.

Lors de son passage à Morlanwelz, l'automotrice heurte des agents Infrabel effectuant les réparations à l'infrastructure à hauteur du PN 1.

Le même convoi poursuit son échappée, passe divers aiguillages et traverse la gare de La Louvière avant de heurter l'arrière de l'automotrice du train E940, circulant sur la voie A de la ligne 118 à Braquegnies.

**Direct Cause descrip**

The intermediary and unstable position of internal parts of the coupler of railcar n°442 lead to a coupling failure : during the journey towards Piéton, the damaged railcar (n°449) at the rear of the convoy became uncoupled from the other railcar (n°442). The damaged railcar (n°449), with no brakes and travelling on a slope, started rolling back towards Morlanwelz, causing 2 accidents (Infrabel agents hit in Morlanwelz, followed by a collision with an SNCB/NMBS-train in Braquegnies)

<b>Final Report</b>							<b>Other Attachments</b>						
Nam	Desc	Type	Size	Last	Orga	Repo	Nam	Desc	Type	Size	Last	Orga	Repo

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résumé	Résumé	PDF	3454	11/2
Morlanwez	du rapport	File	579	7/20
PN.pdf	d'enquête - Collision sur PN			18
				10:4
				1:02
				AM
Morlanwez_rapport.pdf	Rapport d'enquête - Heurt d'ouvriers et collision suite à l'échappement	PDF	2345	11/2
		File	0059	7/20
				18
				10:4
				3:46
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Reporting Body

BE  
Service Public Fédéral  
Mobilité et Transports-NIB

ID

BE-5514

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Reporting Body

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**What**

Title Accident to persons caused by RS in motion, 27-11-17, Morlanwelz (Belgium)

Occurrence type Railway vehicle movement events  
Accident to persons caused by RS in motion Occurrence Class Serious accident

Date of occurrence 27-11-17 Local time 19:45

Events Railway vehicle movement events - Accident to persons caused by RS in motion  
Railway vehicle movement events - Trains collision - Trains collision  
Railway vehicle movement events - Level crossing event - Level crossing accident

## Descriptions

Language French Translation provider Original version

Description

Le 27/11/2017, suite à une collision avec une voiture sur le passage à niveau 1 (PN 1) de la ligne 112 à Morlanwelz, un incendie détruit le poste de conduite de l'automotrice de tête d'un train composé de 2 automotrices électriques.  
Après l'accident, les voies sont mises hors service pour permettre l'évacuation du train en détresse et pour effectuer des réparations à l'infrastructure.

A 19:43, lors de l'évacuation des 2 automotrices par un train de relevage vers la gare de Piéton, l'automotrice accidentée s'échappe et dévale, en roue libre et sans personnel, la voie en pente direction La Louvière-Sud.

Lors de son passage à Morlanwelz, l'automotrice heurte des agents Infrabel effectuant les réparations à l'infrastructure à hauteur du PN 1.

Le même convoi poursuit son échappée, passe divers aiguillages et traverse la gare de La Louvière avant de heurter l'arrière de l'automotrice du train E940, circulant sur la voie A de la ligne 118 à Braquegnies.

Language English Translation provider ERA translation

Description

On 27/11/2017, following a collision with a vehicle on level crossing 1 (PN 1) on line 112 in Morlanwelz, a fire destroyed the driving cabin of the railcar at the head of a train made up of 2 electrical railcars.

After the accident, the rail tracks had been suspended in order to allow the evacuation of the train in distress and to perform repairs to the infrastructure.

At 19:43, during the evacuation of the 2 railcars by a technical train towards the railway station of Piéton, the damaged railcar escaped and raced, in freewheeling mode and without any staff, on the inclined rail track to the direction of La Louvière-Sud.

During its passage through Morlanwelz, the railcar ran on some agents of Infrabel who were performing repairs to the infrastructure at PN 1.

The same convoy continued its escapade, passing through different points and drove through the railway station of La Louvière before clashing on the rear part of the railcar of train E940, and which was circulating on rail track A of line 118 in Braquegnies.

Location name	Morlanwelz		
Railway System type	Railway	Country	Belgium
Location type	Line	Border Country	
Line type	Double track	Line number	
Allowed line speed		Km number	
Latitude		Longitude	
Location description			
Additional location in			
Location type details		Fixed installations	

#### Occurrence details

##### Railway vehicles

Movement type	Other	Train number	
RU	Belgium Nationale Maatschappij de Belgische Spoorwegen	Wagons overturned	
Train speed at mom		Passengers onboard	
Vehicle description	2 electrical AM96 - train evacuated after a level-crossing accident in the morning		

Movement type	Regional passenger train	Train number	940
RU	Belgium Nationale Maatschappij de Belgische Spoorwegen	Wagons overturned	
Train speed at mom		Passengers onboard	

Vehicle description

Other objects involved in the occurrence

Other objects

Parties involved

IM Involved	Belgium - Infrabel	RU
		Belgium - Nationale Maatschappij de Belgische Spoorwegen
		Belgium - Nationale Maatschappij de Belgische Spoorwegen

	Fatalities	Serious injuries	Minor injuries
Passengers	0	2	5
Staff	2	1	
Level crossing users	0	0	
Unauthorised persons	0	0	
Others	0	0	
Total	2	3	5

Material consequences

Material Damage	Infrastructure Rolling stock	Estimated total mate	150 000 - 2 000 000 €
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Damage description

Images

Name	Description	Type	Size	Last modified	Organization	Repository
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Causation

Causes

Language	English	Translation provider	Original version
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Direct Cause description

The intermediary and unstable position of internal parts of the coupler of railcar n°442 lead to a coupling failure : during the journey towards Piéton, the damaged railcar (n°449) at the rear of the convoy became uncoupled from the other railcar (n°442). The damaged railcar (n°449), with no brakes and travelling on a slope, started rolling back towards Morlanwelz, causing 2 accidents (Infrabel agents hit in Morlanwelz, followed by a collision with an SNCB/NMBS-train in Bracquegnies)

Underlying and root causes description

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**INDIRECT FACTOR : DESIGN**

When two of these AM96 railcars are coupled, the rubber diaphragms compress against one another, thereby forming a seal. It is a specificity of this type of railcar that allows passengers and staff to pass from one railcar to the other.

The disadvantage of the presence of these rubber diaphragms pressed against one another is that they do not allow access to the manual uncoupling mechanism located on the couplers.

Therefore, AM96 railcars feature a manual uncoupling command system in the driver's cabin: it is a hand crank used to transmit the effort to the mechanism through a cable and its sheath. This manual uncoupling procedure is a "last resort" procedure (used, e.g. when there is no electrical voltage) and is not part of the practices generally implemented by drivers who, in most cases, use the automatic procedure.

The procedures require the cranks to be operated simultaneously in both drivers' cabins, to cumulate the forces applied.

On the day of the accident, a first attempt at manual uncoupling using the crank in the driver's cabin of the railcar n°442 was performed.

The presence of rubber diaphragms pressed against one another generates a mechanical strain in the coupling mechanism: during normal operations, the automatic uncoupling procedure is initiated by opening a solenoid valve to slightly deflate the rubber diaphragms.

On the day of the accident, without electrical voltage, this automatic deflating was not possible.

Against the mechanical strain, the foot is used by some train driver to apply greater force on the crank: this inappropriate use of the crank causes irreversible damage to the sheath of the cable connecting the crank to the manual uncoupling system.

On the day of the accident, the crank in the driver's cabin of the railcar n°442 was performed either with hands either with foot.

The damage caused to the cable sheath is only visible during workshop maintenance operations. Once the "sheath + cable" system is damaged, rotating the crank no longer drives the correct motion of the internal parts of the coupler, bringing them to an intermediary and unstable position.

In normal operating conditions, indicator lights inform on the coupling state of the railcar (coupled/uncoupled).

In the absence of electrical voltage powering the railcars after the accident, these indicator lights were non-operational. The driver and the first foreman attempted to confirm this state visually, but the rubber diaphragms forming the connection seal between both railcars did not provide access to the couplers connecting the two railcars. There is no other indicator informing on the coupling state of a railcar.

**INDIRECT FACTOR : PROCEDURES**

The manual uncoupling procedure is a "last resort" procedure and is not part of the practices generally implemented by drivers who, in most cases, use the automatic procedure.

Manual decoupling manoeuvres are explained during training, but according to the documents provided to the IB, it seems that practical exercises are not systematically organised. A sticker next to the crank in the driver's cabin informs that the crank should only be used manually.

**ROOT FACTOR : COMPETENCE MANAGEMENT**

In the past, the SNCB/NMBS identified a problem with the manual uncoupling system of the AM96: damages were detected to the sheath of the cable connecting the lever of the coupler to the crank. The analysis that was then carried out by the SNCB/NMBS rightly concluded that damage appears when drivers use their foot to apply greater force on the crank.

The risks of improper use of the crank have been identified by the railway undertaking and measures had been taken in the workshop during servicing of the rolling stock. However, it seems that the measures taken by the

SNCB/NMBS were insufficient to get the driving personnel to use the crank the procedures. Wednesday, August 21, 2019  
ERAIL-REP PUBLIC 8

practical exercises on the procedure of manually uncoupling AM96 are not systematically integrated in the drivers' training;

the sticker placed next to the crank in the driver's cabin reminds that the crank must be used manually, but does not mention the simultaneous manoeuvre in both driver's cabins;

the SNCB/NMBS documentation did not allow to efficiently draw the attention of the driving personnel on the issue.

**ROOT FACTOR : RISK ASSESSMENT**

Several cases of runaway railway vehicles are analysed or have already been the subject of a finalised investigation by the IB. Each time, the circumstances are different and the analyses of these different cases allow to detect that the causes reveal both technical aspects and operational, even organisational, aspects.

The risks of a runaway railway vehicle have been analysed, but the measures taken by the railway industry do



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Causation classification

Railway vehicle movement events - Accident to persons caused by RS in motion

Railway vehicle movement events - Trains collision - Trains collision

Railway vehicle movement events - Level crossing event - Level crossing accident

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Recommendations

Recommendation

Issuing information

Recommendation title Risk of runaway vehicles

Recommendation ID REC-000884

End implementer

IM

Status

Addressee

RU

NSA

Issue date

23-11-18

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Recommendation texts

Language

Translation provider

Recommendations text

Several cases of runaway railway vehicles are analysed or have already been the subject of a finalised investigation by the IB. Each time, the circumstances are different and the analyses of these different cases allow to detect that the causes reveal both technical aspects and operational, even organisational, aspects.

The risks of a runaway railway vehicle have been analysed, but the measures taken by the railway industry do not appear to be adapted to the present railway situation.

The railway geography, the organisation of the sector, the numerous customisation and modernisation works and the evolution of the rolling stock have brought about important changes with respect to the analyses of the past and it seems right to review these risk analyses, in particular in terms of the elements highlighted in this investigation:

- a train with a non-braked vehicle at the rear of the convoy is authorised to travel to the closest station, although there is no emergency procedure that enables to stop a runaway vehicle for sure should this occur.
- certain measures taken to protect personnel working on the tracks (closing of the signals) do not protect from the risk of being hit by a runaway railway vehicle, whether this vehicle ran away from a "technical train" (re-railing train, work train) travelling by regulation on the obstructed track, or it ran away from a train located at the signals giving access to the obstructed section. In the case of such events of a runaway train, maintaining automatic signals giving access to the obstructed section or track closed does not protect the personnel (of the infrastructure manager and/or of the re-railing train) standing in the tracks.

The IB recommends that the railway undertakings and the infrastructure manager jointly verify the risk analyses and the technical, regulatory and procedural measures to provide an adequate response to the risk of runaway vehicles.

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Implementation information

Implementation status

Implementation date

NSA Response

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NIB Comment

**Recommendation**

Issuing information

Recommendation title Training procedures

Recommendation ID REC-000885

End implementer

RU

Status

Addressee

NSA

Issue date 23-11-18

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Recommendation texts

Language

Translation provider

Recommendations text

In the past, the SNCB/NMBS identified a problem with the manual uncoupling system of the AM96: damages were detected to the sheath of the cable connecting the lever of the coupler to the crank. The analysis that was then carried out by the SNCB/NMBS rightly concluded that damage appears when drivers use their foot to apply greater force on the crank.

The risks of improper use of the crank have been identified by the railway undertaking and measures had been taken in the workshop during servicing of the rolling stock. However, it seems that the measures taken by the SNCB/NMBS were insufficient to get the driving personnel to use the crank the procedures:

- practical exercises on the procedure of manually uncoupling AM96 are not systematically integrated in the drivers' training;
- the sticker placed next to the crank in the driver's cabin reminds that the crank must be used manually, but does not mention the simultaneous manoeuvre in both driver's cabins;
- the SNCB/NMBS documentation did not allow to efficiently draw the attention of the driving personnel on the issue.

Based on these elements, the IB recommends that SNCB/NMBS analyses its training procedure so as to raise awareness of staff in terms of the risks identified.

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Implementation information

Implementation status

Implementation date

NSA Response

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Reporting Body	BE Service Public Fédéral Mobilité et Transports-NIB	ID	BE-5514
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NIB Comment

#### Causation links

Railway vehicle movement events - Accident to persons caused by RS in motion  
 Railway vehicle movement events - Trains collision - Trains collision  
 Railway vehicle movement events - Level crossing event - Level crossing accident

#### Investigation details

Legal Basis National rules imposed by implementing of the Safety Directive 2004/49/EC - in light of Article 19, §1 of SD

Other reason descrip

ID	BE-5514	Reporting Body	Service Public Fédéral Mobilité et Transports-NIB
National investigatio		Investigator in charge	MGIGOUNON
Occurrence creation	30-11-17 14:14:24		
Decision to investigate	27-11-17		
Declaration date	28-11-17		
Date of IM/RU notific	28-11-17		

Report Type	Final report	Workflow Status	Validated
Report Version	2	Investigation Status	Closed

Other Attachments	Name	Descriptio	Type	Size	Last	Organizati	Repositor
				0			

Final Report	Name	Descriptio	Type	Size	Last	Organizati	Repositor
	rapport Morlanwel z PN.pdf	Rapport d'enquête - Collision sur PN	PDF File	10008845	11/27/201 8 10:40:17 AM		
	résumé Morlanwel z PN.pdf	Résumé du rapport d'enquête - Collision sur PN	PDF File	3454579	11/27/201 8 10:41:02 AM		

Morianwel z_resume. pdf	Résumé du rapport d'enquête - Heurt d'ouvriers et collision suite à l'échappe ment	PDF File	3891633	11/27/201 8 10:44:25 AM
samenvatt ing Morianwel z PN.pdf	Samenvat ting onderzoek verslag - Aanrijding van een voertuig op een overweg	PDF File	3611802	11/27/201 8 10:48:42 AM

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summary Morlanwel z.pdf	Summary of the investigati on report - Morlanwel z	PDF File	3891612	12/5/2018 9:50:15 AM
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