



SAFETY OUR PRIORITY

While European railway systems maintain a high level of safety, occasional accidents still occur. Learning from these incidents is essential to further enhance safety. This year, the NIB network held two key meetings addressing major issues in railway accidents.

The discussions were based on the presentation of investigations into the most recent accidents, leading to a sharing of best practices, identification of existing gaps, and proposals of concrete solutions to prevent similar incidents and accidents in the future. It was also highlighted the importance of collaboration among member states, regulatory authorities, and railway operators to create a safety and more efficient railway system.

These actions demonstrate a strong commitment to continuously improving railway safety across Europe.

NIB'S NETWORK 2024

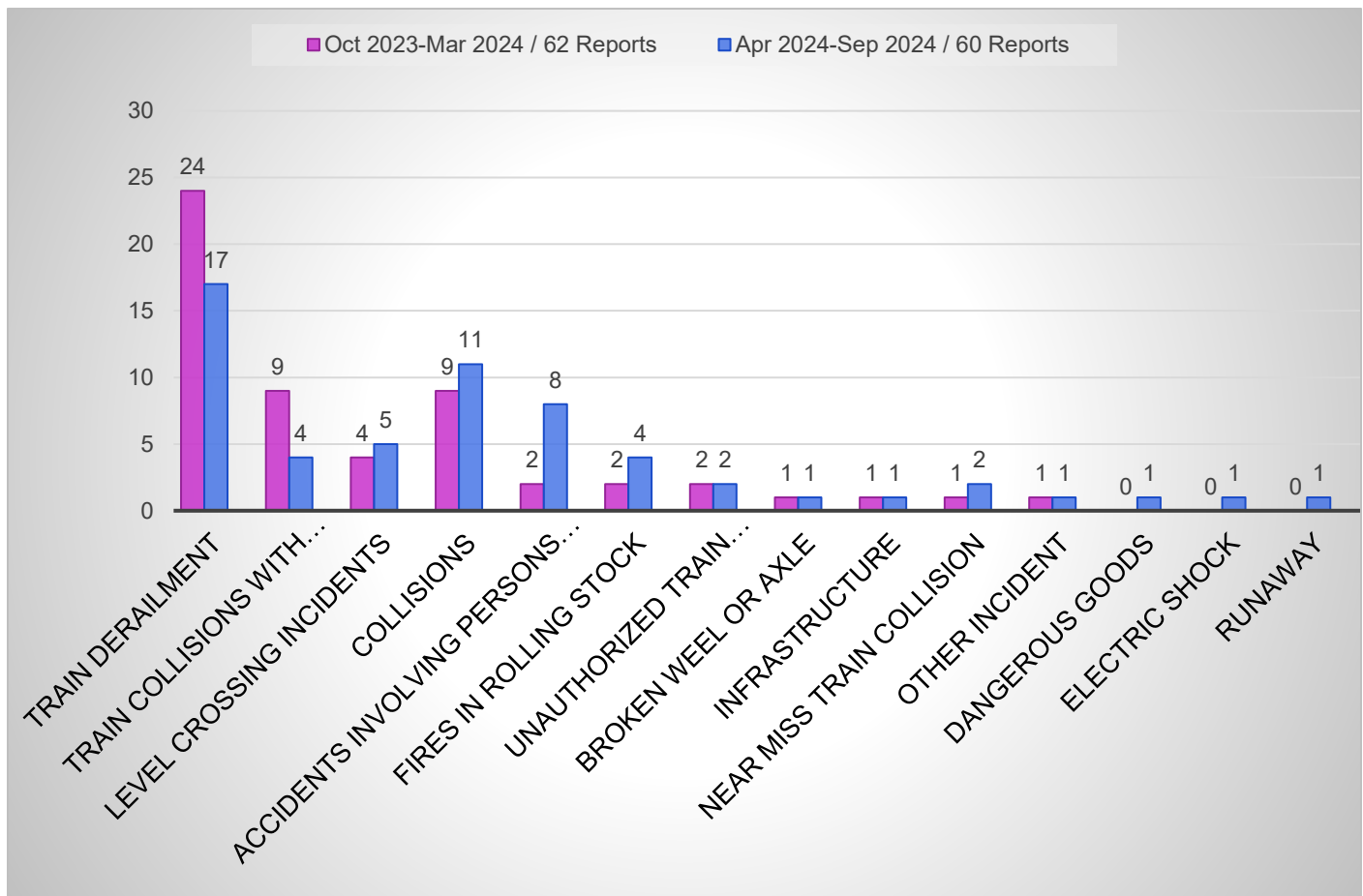
NIB FINAL REPORTS
BETWEEN OCTOBER 2023-
SEPTEMBER 2024

THE SUMMARY OF FOUR
DIFFERENT ACCIDENTS

INVESTIGATING SMS
TRAINING



NIB FINAL REPORT BETWEEN OCTOBER 2023- SEPTEMBER 2024



Analyzing the chart that reflect railway incidents, several relevant conclusions can be drawn regarding the trends and variations in types of accidents. These observations are essential for gaining a better understanding of safety issues and implementing corrective measures where necessary.

The chart reveal a slight increase in the total number of incidents but, more importantly, a diversification in the types of risks facing the European railway industry. This underscores the need for continuous adaptation of safety measures and constant monitoring to prevent serious accidents and improve railway safety.

INVESTIGATING LESS COMMON INCIDENTS TO PREVENT FUTURE RAILWAY ACCIDENTS

The European Union Agency for Railways (ERA) promotes transparency by making all incident reports accessible on its website, thereby ensuring accountability and trust in Europe's railway systems. Although the four types of incidents discussed are rare, they highlight the professionalism and efficiency of the National Investigation Body (NIB) in fulfilling its mandate to enhance the safety and operational efficiency of railways.

It is crucial to emphasize that the NIB approaches all events with equal rigor, not only major accidents, demonstrating an integrated vision of railway safety. Investigating low-impact incidents is equally important, as these cases can provide valuable insights into potential risks and systemic deficiencies. Through this approach, the NIB aims to identify and address issues before they escalate into serious accidents, thereby contributing to the strengthening of public confidence in rail transport safety.



This meticulous attention to detail not only supports a continuous improvement of safety standards but also ensures that all aspects related to railway operations are thoroughly analysed and optimized.

This proactive strategy is essential for maintaining a safe and efficient railway system that is well-adapted to contemporary challenges.

WHEEL FAILURE ON FREIGHT WAGON AT EJBY

Shortly before freight train 42702 was about to pass Ejby Station, part of a wheel on one of the wagons fractured. The train was brought to a stand in Ejby and subsequent investigation revealed that around 40% of the circumference of the wheel in question was missing. The incident did not lead to any derailment and the damage was limited to the vehicle's wheel, brakes, bogie and wagon floor. AIB concluded that, under slightly different circumstances, the incident could have led to a serious accident and therefore decided to instigate an investigation into the incident. The investigation, which was conducted in collaboration with the parties involved, has revealed safety deficiencies in the maintenance system underlying the wagon concerned. Special stricter safety requirements concerning the minimum dimensions of the wheel type involved had not been complied with, and the monitoring and checks carried out by the entities in charge of maintenance were not sufficient to identify this. Vehicle inspections during day-to-day operations and repairs carried out by the mobile repair service were also unable to identify one or more cracks which had developed in the wheel before the failure occurred while the train was travelling at a speed of 99 km/h near Ejby.



The investigation revealed that a wheel of type BA004 was deformed and developed cracks as a result of one or more thermal overload events. Despite this, the visible sign of thermal overload (burnt paint in the transition zone between wheel plate and wheel rim) was significantly below the limit where a closer examination of the wheel should be carried out. AIB has transferred this knowledge to the working group "JNS Broken Wheels", where, by agreement, it will be included in the group's further work with safety-promoting measures.

DEATH BY ELECTROCUTION OF A PRIVATE TREE PRUNER

On July 10, a tree pruner was electrocuted while working near a railway line in Quévy. The accident occurred when the upper part of a tree he cut fell onto a feeder powered by a 25 kV line, creating an electric arc that caused his death.

Prior to the accident, the tree's owner had informed Infrabel about the dangerous proximity of the trees to the railway catenary. Infrabel had scheduled a power shutdown for July 20, 2023, for the pruning work, but the pruner began the job on July 10 without notifying Infrabel. During the work, a branch likely came too close to an energized wire, causing damage to the railway infrastructure and triggering a circuit breaker. Infrabel agents arrived at the scene, halted the pruning work, and inspected the site. Despite their presence, a tree top later made contact with the feeder, leading to the fatal electrocution of the pruner.



The investigation revealed failures in communication and coordination between the pruner, the property owner, and Infrabel. While safety measures were implemented, the pruner may have mistakenly believed the area was de-energized. It was also determined that the risks related to falling tree sections were not adequately managed. The report highlighted the need for better awareness of safety risks when working near high-voltage power lines and recommended improved communication and preventive measures for similar situations in the future.

SIGNALING FAILURE IN LES BORGES DEL CAMP (TARRAGONA)

On May 18, at 19:00, RENFE Mercancías train 55115 approached the Borges del Camp station, where it was directed to track 1 and notified that the level crossing at kilometer 567+603 was unprotected. Upon seeing that the signal sequence was incorrect and there was insufficient braking distance between the entry (E1) and exit (S1/1) signals, the driver activated the emergency brake. An investigation confirmed the signals did not match the current Series A Directive.

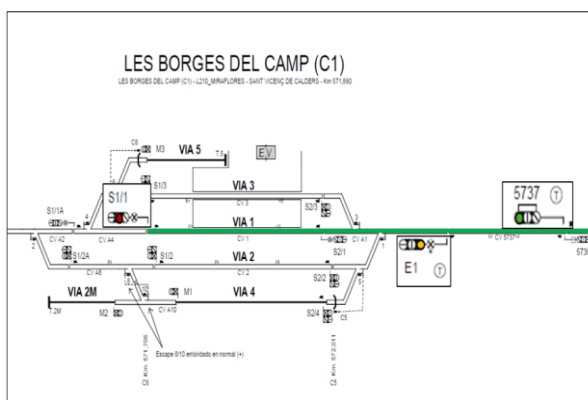
A February 27, 2023, update that centralized the Reus-Mora Blockages in various stations introduced a software fault that caused incorrect signaling sequences. Fortunately, no injuries or fatalities occurred.



Conclusion:

The incident's causal factors were incorrect software assumptions and the failure to verify them. Contributing factors included the lack of necessary testing and poor project boundary definition.

The Railway Accident Investigation Commission (CIAF) initiated a formal investigation after a preliminary study, per Royal Decree 623/2014. The investigation team, led by a Coordinating Investigator, conducted interviews with ADIF and Alstom personnel and analyzed the project development. Despite receiving reports from ADIF and Alstom, RENFE Mercancías had not submitted their report by the investigation's conclusion.



THE DANGEROUS GOODS INCIDENTS

Two dangerous goods incidents involving the leakage of hydrochloric acid from tank wagons have sparked concerns over safety in Swiss rail transport. The incidents occurred in Basel and Lüsslingen, raising questions about the effectiveness of inspections and the condition of protective linings in the wagons.

On October 19, at 21:02, a technical inspector at Basel SBB RB marshalling yard discovered liquid dripping and evaporating from the front of a tank wagon filled with hydrochloric acid. While inspecting the leak, the inspector inhaled the fumes and sustained injuries. Emergency services were promptly called to contain the leak, safely removing the hazardous substance from the wagon.



A similar incident occurred on July at 07:36, when a train driver spotted blue steam emitting from a train being shunted from Solothurn to Arch. After stopping the train in Lüsslingen, the driver identified a small leak in the wall of a tank wagon, also filled with hydrochloric acid. Once again, emergency teams managed to contain the situation, removing the acid from the wagon.



In both cases, the leaking hydrochloric acid posed serious risks, but quick action prevented further harm. The leaks were attributed to failures in the internal protective lining of the wagons, which had not been detected during mandatory inspections by various testing centers.

The tank wagons involved were operated by Ermewa and inspected by several international companies, including Bureau Veritas and Technická Inšpekcia. Despite these inspections, defects in the manufacture of the protective linings went unnoticed, leading to the dangerous leaks.

These incidents highlight the importance of stricter controls and inspections to ensure the safety of hazardous materials transported by rail. While no fatalities occurred, the injuries sustained and potential environmental risks underline the need for improvements in tank wagon safety standards.

As the investigation concludes, the rail industry is expected to review and enhance its protocols to prevent similar incidents in the future.

INVESTIGATING SMS TRAINING

The quality and thoroughness of incident and accident investigations play a crucial role in fostering a learning environment and cultivating a safety culture within an organization or an entire industry.

In response to this need, the Agency has developed a training program that provides a systematic approach to analyzing occurrences. This program will enable participants to connect the findings from incidents with the Safety Management System (SMS), thereby enhancing organizational learning.

The training will introduce the SMS concept within the railway context, elucidating its benefits and limitations for sustainable safety management, as well as clarifying the roles and responsibilities of all stakeholders involved. Participants will gain insights into how accident models shape the questions posed during investigations and the subsequent lessons learned. They will also learn the fundamental steps to assess the capability of managing activities safely, including understanding the impact of Human and Organisational Factors (HOF) on performance, and how to develop recommendations for SMS improvement.



The training can be conducted online, featuring participants from various organizations, or it can be tailored to meet the specific needs of an organization with a dedicated team of analysts. The target audience includes accident investigators and event analysis practitioners with basic experience.

Training objectives and a detailed agenda are available below.

Investigating SMS Training Objectives and Agenda
- December 2023

❖ [View document](#)