



HOW TO IMPROVE RAILWAY SAFETY AND PREVENT ACCIDENTS

The Railway Safety Directive (EU) 2016/798 emphasizes the importance of cooperation and information exchange between the investigation bodies of each Member State.

These bodies actively collaborate to develop common investigation methods, with the aim of implementing safety recommendations and adapting to technological and scientific progress.

The role of National Investigation Bodies (NIBs) is crucial in guiding the entire railway system toward safer and more sustainable performance, ensuring efficient collaboration and continuous adaptation.

The final reports produced by these bodies serve as concrete evidence of efforts to investigate and understand events. However, they represent only a part of the impact of independent investigation.

The purpose of this newsletter is to support the NIB by providing a detailed and comprehensive overview of the accidents/incidents that have occurred in the past six months.

Strengthening Railway
Safety: Insights and
Collaboration for National
Investigation Bodies

NIB Reports During the
Period October 2023 –
March 2024

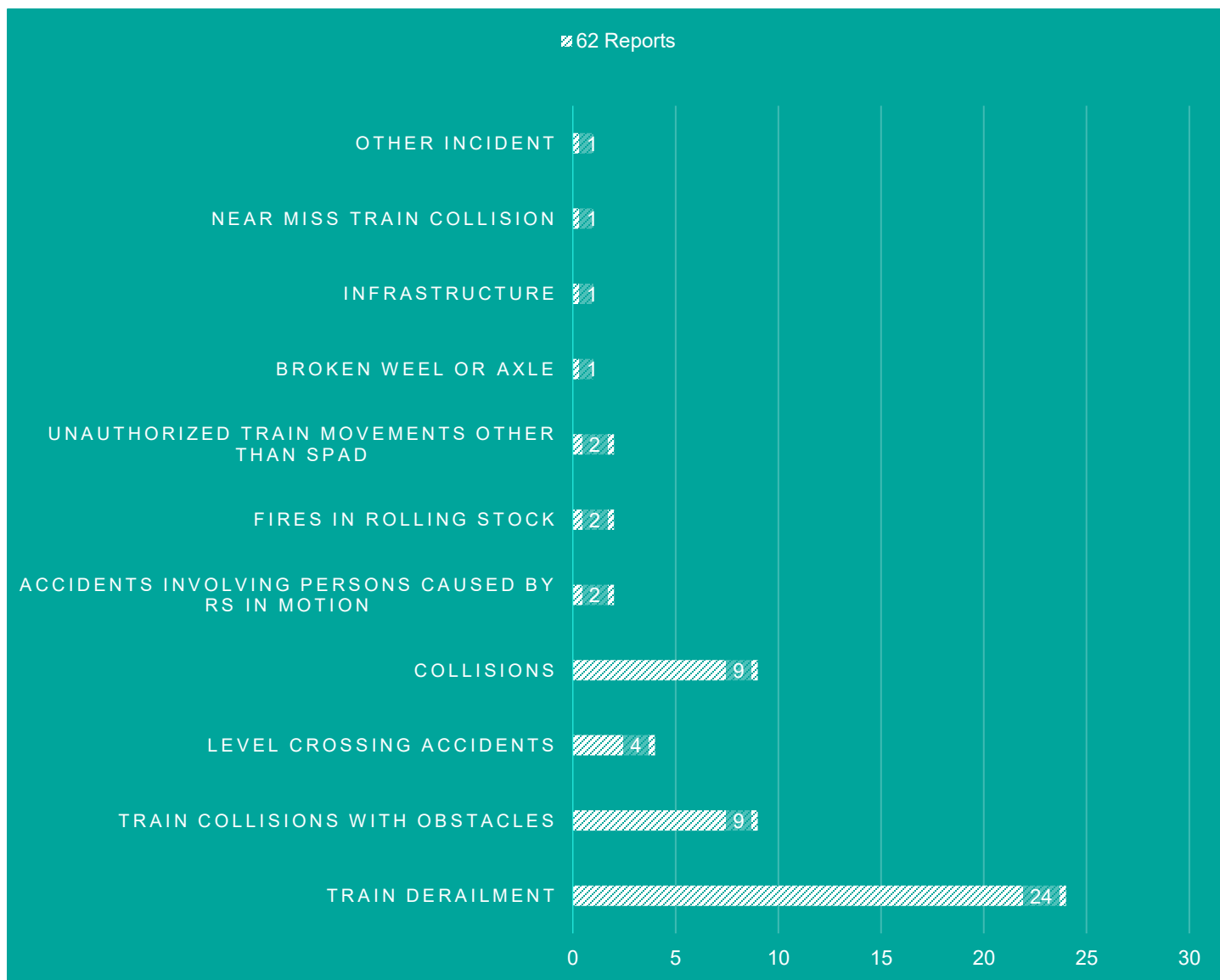
The Summary of Three
Different Accidents

Ideas for Railway
Improvement



NIB REPORTS DURING THE PERIOD OCTOBER 2023 – MARCH 2024

The chart below provides an overview of railway accidents during this period based on investigations opened. It reflects data from 62 final reports prepared by the NIB.



The information shown in this graph is based on final reports prepared by the NIB, available at the link below :
<https://www.era.europa.eu/era-folder/accident-investigation>

MAJOR TRAIN DERAILMENT AT NARVIK STATION



On March 12, 2023, a fully loaded freight train from LKAB Malmtrafik AB derailed at track switch 4 at Narvik station on the Ofoten line. The train, 746 meters long and weighing 8,461.5 tons, was transporting iron ore from Kiruna to the terminal at Narvik Harbour. Traveling at a speed of 30–35 km/h, 24 of its 68 wagons derailed, causing significant damage to both the wagons and railway infrastructure. Direct repair costs are estimated at NOK 16–20 million, excluding the economic impact of the line’s closure.

The derailment happened in an area with known track problems caused by poor ground conditions. Previous attempts to fix these issues with temporary measures failed. The problem was made worse when a major reconstruction project at Narvik station, which could have improved the ground conditions, was stopped in February 2024 due to lack of funds.

How to prevent future derailments:

1. **Invest in infrastructure:** Spend more on fixing and upgrading railway tracks. Projects like the reconstruction of Narvik station should be prioritized to ensure safety.
2. **Use better technology:** Tools like drones and artificial intelligence can help detect track problems early, allowing for quick repairs.
3. **Do regular risk checks:** Regularly assess the tracks for hazards and take steps to fix potential problems.
4. **Improve maintenance:** Don’t just patch issues temporarily; address root causes like unstable ground and track defects.

[Click on the report to view it in full](#)



TRAIN ON FIRE: MEASURES OF IMMEDIATE SAFETY



On December 1, 2023, at 7:32 a.m., a fire broke out on train IFT No. 464, operated by BDZ-Passenger Services EOOD. The train, which included two coaches and a locomotive, was traveling from Dimitrograd to Gorna Oryahovitsa.

The train, slightly delayed, stopped briefly at Zmeyovo station due to repair work on the tracks. Shortly after leaving the station, a malfunction occurred in the locomotive's MAS system, forcing the train to stop between Zmeyovo and Tulovo stations. The driver noticed thick smoke coming from the locomotive and tried to extinguish the fire, but the effort failed. The onboard fire suppression system also did not activate.

The driver immediately alerted the station manager at Tulovo, who contacted emergency services and the train dispatcher. Power to the railway was cut, and firefighters from Kazanlak and Stara Zagora arrived quickly to extinguish the fire. Fortunately, there were

no injuries, and the damage was contained. Train services resumed after the fire was dealt with.

How to prevent future fires:

1. **Replace critical components:** Use dry-type capacitors to minimize risks associated with overheating and environmental conditions.
2. **Add monitoring tools:** Install thermostats and other temperature control devices to prevent overheating of key parts.
3. **Ensure proper maintenance:** Regular renovation and thorough checks of locomotives can help detect and fix issues before they escalate.
4. **Improve fire response systems:** Upgrade fire suppression systems to ensure they activate during emergencies.

[Click on the report to view it in full](#)



FREIGHT TRAIN DERAILMENT ON SØRLANDBANEN



On November 4, 2022, a CargoNet AS freight train derailed at Heskestad on the Sørlandsbanen Line after colliding with a landslide triggered by heavy rainfall. The train and tracks sustained significant damage, and the line was closed for over five days. The driver was unharmed.

The area lacked automatic warning systems, and the landslide, which included a large rock, went undetected. Heavy localized rainfall and large distances between weather stations made monitoring difficult. Bane NOR SF had mapped the area, but their method did not identify all potential risks.

The Norwegian Safety Investigation Authority (NSIA) found gaps in weather response procedures and risk monitoring. The NSIA recommends improving severe weather response measures and enhancing methods for monitoring landslide risks.

How to prevent landslide-related derailments:

1. **Map and monitor terrain:** Use sensors and real-time monitoring systems to detect potential landslides before they occur.
2. **Improve drainage systems:** Enhance railway drainage infrastructure to manage heavy rainfall and reduce soil instability.
3. **Use drones for inspections:** Drones can provide aerial views of areas prone to landslides, ensuring quick identification of risks.
4. **Invest in slope stabilization:** Strengthen areas with unstable terrain by implementing slope reinforcement and vegetation strategies.

[Click on the report to view it in full](#)



IDEAS FOR RAILWAY IMPROVEMENT

Railways are essential for connecting people and goods, but they face challenges such as derailments, fires, and collisions with obstacles, etc. To make railways safer and more efficient, we need to embrace new technologies and strategies. By focusing on innovation and modernization, we can address these risks and build a stronger railway system. Here are some forward-thinking ideas to improve safety and reliability in the industry:

1. Preventing Derailments

Derailments, like the one caused by a landslide on the Sørlandsbanen line, show how important it is to keep tracks stable and safe:

- **Use Drones for Monitoring:** Drones with cameras and sensors can check for landslides, track damage, or unstable areas, especially where it's hard for people to go.
- **Modernize Infrastructure:** Upgrading tracks and using stronger materials can stop derailments caused by poor ground conditions or bad weather.

2. Preventing Fires

Fires, like the locomotive fire on train IFT No. 464, highlight the need for better equipment and systems:

- **AI in Control Systems:** Artificial Intelligence can predict when trains need maintenance, helping to fix issues before they cause problems.
- **Upgrade Safety Equipment:** Replacing old parts and adding better cooling systems can reduce the risk of overheating and fires.

3. Preventing Collisions with Obstacles

Collisions with rocks or other debris, like the landslide on Sørlandsbanen, remind us to stay alert to environmental hazards:

- **Real-Time Monitoring:** Drones and advanced technologies can spot dangers, such as fallen rocks, and warn trains in time.
- **Promote Safety Culture:** Encourage railway workers to report hazards or risks without hesitation. This helps fix problems before they lead to accidents.

Extra Steps to Keep Everyone Safe

- **Training for Railway Workers:** Regular training ensures employees know the latest safety rules and how to handle emergencies.
- **Create a Safety-First Mindset:** When employees feel safe reporting issues, problems can be solved faster, preventing accidents.