Translation of an excerpt of the investigation report

"Train derailment Köln Eifeltor 05/09/2020"

Status as of 30/01/2024, version 1.0.

Note:

In accordance with Article 3 of Implementing Regulation (EU) 2020/572, points 1, 5 and 6 of Annex I of an investigation report shall be written in a second official European language. This translation should be available no later than three months after the delivery of the report.

The following English translation is a corresponding excerpt of the investigation report. The German language version is authoritative.

Excerpt translation:

1 Summary

The first section contains a brief description of the event, as well as information on the consequences, primary causes and safety recommendations provided in the individual case.

1.1 Brief description of the event

On 05/09/2020 at around 01:25, the freight train GS 60711 derailed on the journey from Oberhausen West to Andernach when travelling through the station Köln Eifeltor with coach 23 at points 12.

1.2 Consequences

There were no injuries or fatalities. As a result of the derailment, there was considerable damage to the coach involved as well as those directly in front of it and behind it. The track system and the signalling and safety equipment were severely damaged as a result. The material damage incurred was estimated at 1,140,000 euros.

1.3 Causes

The event was caused by a bogie on coach 23 which had a restricted range of motion. The line routing, the condition of the track system in terms of compliance with regulations, and the forces caused by the automatic train stop that acted on the bogie when crossing points 12 were identified as contributing factors.

1.4 Safety recommendations

No safety recommendations were made.

5 Conclusions

The following section contains a summary of the identified causal, contributing and systemic factors behind the event. In addition, two further subsections are provided containing information about measures already taken, and additional comments.

5.1 Summary and conclusion

The event was caused by a material change to the bogie pivot components, presumably caused by a passage of current. This was accompanied by a huge, localised heat input. This caused the components of the bogie pivot to fuse together. Despite this obstruction, which prevented the bogie from rotating, the vehicle was still able to travel on straight tracks and in larger curve radii without any impact thanks to the play in the undercarriage.

The derailment was facilitated by the permissible line routing, which consisted of curves and countercurves, plus the set tolerance values in the area of the frog/check rail of points 12, which were still in the permissible negative range. Due to the bogie on coach 23 having a restricted range of motion and the altered striking angle resulting from this, the constraints on the wheel, check rail and track once again increased considerably at this point as the train passed through.

The automatic train stop at the 500 Hz solenoid on track 11 also contributed to the event as the coach could no longer absorb the forces caused by the automatic train stop at points 12 due to the obstruction in the bogie.

The combination of these three factors at the check rail of points 12 ultimately caused coach 23 to derail.

In the case of this event, the Federal Authority for Railway Accident Investigation did not identify any opportunities for improving the safety management system processes of the railway company involved based on the findings obtained. As the ECM, DB Cargo AG has a maintenance plan in place for the coaches in the class Sahmms-t, model 710.1. Evidence of an existing maintenance management plan was provided for the coach affected. The planned inspections were performed, most recently on 09/05/2019. The massive energy input, presumably caused by the effect of electricity, occurred in the time span between that service and the date of the event; the exact date could not be pinpointed.

5.2 Measures taken since the event

The event was passed on internally at DB to the committee responsible for developing topics for technical training to highlight the correlation between effects on the signals and train journeys on a national level.

On the part of DB Cargo AG, the event was classified as an isolated case. No similar patterns of damage to bogie pivot components have been identified by DB Cargo AG in the recent past.

5.3 Additional observations

The investigations conducted did not provide any contribution on this point.

6 Safety recommendations

No safety recommendations were made by the Federal Authority for Railway Accident Investigation following this train derailment on 05/09/2020 at Köln Eifeltor station.