



Translation of an excerpt of the investigation report

“Train collision Riedlingen – Rechtenstein on 27/07/2025”

Status as of 03/08/2026, 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 text presented here was translated fully automatically and without human review by the European Commission's eTranslation service.

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 27.07.2025 around 6:08 p.m. the passenger train RE 3227 on the journey from Sigmaringen to Ulm at the height of the village Riedlingen-Zell collided with deposits of a hillslope debris flow and derailed with almost all axes.

1.2 Consequences

The leading vehicle slid uphill to the left in the direction of travel and was destroyed by another collision with trees standing there. Three people were killed, five were seriously injured and 31 were slightly injured. Damage to the vehicles and infrastructure amounted to approximately €10 million.

1.3 Causes

In the course of the investigation of the event, the following acts, omissions, incidents or circumstances were identified as safety-critical factors. These are differentiated into causal or contributing factors and systemic factors in accordance with Implementing Regulation 2020/572.

For better clarity of the factors, a classification with markings in square brackets is used.

A detailed evaluation of the event under classification as safety-critical factors is given in the following chapters.

Done at: date/time, and Action / omission / circumstance / incident	More causal factor	Contributor factor	Systemic factor
Incident: 5 p.m. – 6 p.m. Surface water entry into the web embankment	Heavy rain event [F1]	-	-
Incident: Approx. 5:30 p.m. to 6:00 p.m. Sludge and debris deposits in the track area	Hillslope debris flow [F2]	-	-
Incident: 6:08 p.m. Collision RE 3227 with deposits in the track area	Loss of lane guidance [F3]	-	-

Table1: Summary of influencing factors

1.4 Safety recommendations

No safety recommendation has been made.

5 Conclusions

The following section contains a summary of the identified causal, contributing and systemic factors. 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 the loss of the RE 3227 [F3] track guidance following a collision with a debris flow [F2] that fell into the track area and was triggered by a heavy rain event [F1].

The causal factor ‘heavy rain event’ [F1]

According to the German Weather Service, the regionally limited short-term heavy rain event was not an extremely unusual event. Rainfall at a similar level and duration has been recorded repeatedly in the area since 2001 and therefore cannot be classified as exceptional. Accordingly, the projected values for the operational control centres of the infrastructure manager and the railway undertaking did not give rise to the imposition of measures under Directive 420. The limits of intervention set within each company were not exceeded.

The local signalers had perceived the thunderstorm front as disturbing, but had not yet seen any reason to take protective measures under Directive 408.0541 on their own responsibility. The conflict between safety and punctuality described in chapter 4.3.1 may have influenced the decision-making of local personnel. Point 4.2.1 of Annex II to Regulation (EU) 2018/762 requires the competence management system of the organisation to ensure that staff with safety-related tasks are qualified to perform the safety-related tasks under its responsibility.

DB InfraGO AG's resilience strategy is intended to develop further specifications in order to relieve operating employees of the burden of assessing dangerous circumstances.

The causal factor ‘hillslope debris flow’ [F2]

The event site was identified as a potentially risky site in both the hazard mapping of the German Centre for Rail Research (DZSF) and the heavy rain scenarios of the city of Riedlingen, albeit with a ‘small’ hazard potential. It could be assumed that these theoretically determined risks were neither known nor made known to the plant managers of DB InfraGO AG. In this respect, no increased attention was paid to the embankment area covered by the hillslope debris flow. As part of the resilience strategy, risks will be mapped by means of simulation-theoretical approaches in the future in order to be able to take preventive measures with the

involvement of the local plant authorities to improve the safety of rail operations. The ongoing and planned research projects of the DZSF are intended to identify problem areas even better in the future and to develop suitable potential remedial measures.

The condition of the municipal road drainage systems above the railway embankment was not suitable for effectively draining the resulting water flows before the event.

The causal factor ‘Loss of lane guidance’ [F3]

The debris flow in the track caused by the mud drain were sufficient in the present constellation to interrupt the safe track guidance of the leading vehicle of the RE3227. It is very likely that the high speed of the tilting train in combination with the rounded design of the lower front aprons during the collision with the debris flow favoured the lifting of the leading bogie and triggered the derailment. The existing design of the track clearer was not suitable for draining viscous sludge and soil in front of the bogie. The technical requirements for levellers have already been further developed.

The dismantling of the high kinetic energy of the train formation caused the massive destruction of the leading vehicle during the subsequent impact on the trees next to the track. A lower speed would have, with a certain probability, either prevented the derailment process or at least mitigated its consequences. From the point of view of safe operation, a preventive step-by-step reduction of the maximum permissible speeds of trains, if necessary, could also reduce the risk of similar events in certain series in the event of heavy rain or other severe weather conditions.

conclusion

The departure of the debris flow was not foreseeable for the directly involved operating personnel. The higher-level operations control centres of the IM and the RU did not identify any need for action with regard to preventive measures to ensure operational safety after the announced weather events. IM plant managers also had no indication of the instability of the slope. At the same time, the embankment was already classified as potentially risky in simulation-theoretical considerations. These findings have not yet been fully incorporated into the railway undertakings’ resilience strategy. There are already more detailed instructions for mitigating risks in the event of a storm. Further instructions for action to avert dangers from other climate-related weather influences are still in the planning and implementation phase. The measures outlined in the IM’s resilience strategy represent an already strategic

approach to preventative risk reduction and need to be continued intensively. Ongoing and intended research projects can support this necessary process.

Due to the extensively included activities of the IM and accompanying bodies with the aim of preventing similar events in the future, the BEU currently does not provide for any further recommendations to improve safety.

5.2 Measures taken since the event

In addition to the repair of the damaged railway facilities and drainage components, the upper and deep drainage in the relevant section of the line was upgraded by DB InfraGO AG. Together with the city of Riedlingen, protective measures were taken for the permanent hydraulic separation of the railway body from draining surface water. These include, among other things, a concrete latch above the web incision on both sides of the bridge in order to keep surface water from the incision and a controlled discharge of this surface water outside the railway facilities. In addition, slope and erosion protection measures were carried out to stabilize the embankment on both sides of the road bridge.

The resilience strategy of DB InfraGO AG, which is already explained in chapter 4.4, serves, among other things, the longer-term control of hazards from severe weather events and is constantly being further developed. A Policy Department for Natural Hazard Management has been established.

The DZSF is planning further research projects in the report on the Research Strategy 2026 – 2030 in continuation of previous and ongoing research projects on the impact of climate-related changes in natural hazards and their impact on the safety of railway operations. On the basis of these results, appropriate prevention measures can be developed.

5.3 Additional observations

none

6 Safety recommendations

A safety recommendation pursuant to § 6 EUV and Article 26(2) of Directive (EU) 2016/798 is not issued.