Worldwide FI Summary

April 2012

This is a collation of some of the world’s railway formal inquiry reports. It includes a brief incident synopsis, along with the main causes and recommendations from each investigation. Readers may find some of the actions and recommendations useful to their own operations.

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Key issues in this edition:

- Overspeeding
- Worksite supervision
- Wagon maintenance
- Dangerous goods transit
- Signaller error
- Level crossing user error
- Level crossing signage
- Possession planning, communication and procedure
Germany: Collision between and engineering train and stationary rolling stock between Neustrelitz and Krateburg, 28 November 2010

At 02:52 (local time) on 28 November 2010, an engineers’ train collided with a stationery train as it switched tracks in a possession between Neustrelitz and Krateburg. One locomotive was overturned. Several wagons were also derailed, causing considerable damage.

There were no reported injuries.

The investigation concluded that the accident was caused by a combination of the engineering train being driven too fast and inadequate supervision of the work site.

Recommendations

- None declared.

Declared to ERA 3 April

Italy: Freight train derailment and subsequent explosion at Viareggio, 29 June 2009

For the full report (in Italian), click here: [LINK](link)

At 23:48 (local time) on 29 June 2009, a 14-wagon freight train carrying butane gas derailed as it approached Viareggio station.

The first wagon derailed and struck the platform; the rest of the consist continued forward, stopping about 200 metres beyond the station.

The first five tank wagons in the rake overturned, the sixth and seventh derailed, but remained upright; the last seven wagons remained on the track.

After a few minutes, there was a powerful explosion, which caused serious damage to nearby houses, the track, the catenary and signalling equipment.

Five people were killed when their houses collapsed. In total 32 were killed and 126 were seriously injured.

The investigation found the immediate cause of the derailment to be the structural fatigue fracture of the axle on the leading tank wagon in the consist.

Recommendations (verbatim)

- 1: To establish supranational laws for the maintenance and monitoring activities aimed at the safe transport of railway wagons carrying dangerous goods, individuating “mandatory” operational procedures to apply to maintenance activities on rolling stock and components as well as for reassembly activities performed within the European Union and also in the territories of non-EU member states belonging to COTIF and having the scope and validity to ensure their effects on all wagons circulating in the European Union territories. Those “mandatory” procedures must be a complement to the best practices already adopted for maintenance in the rail sector, avoiding redundancies and duplications. For this purpose it is recommended that:
  - the European Railway Agency in its position of a board for the trend orientation of the NSAs
2: To constitute, within the organization with the maximum international partnership, a single register (European and/or international Data-Base) of rolling stock carrying dangerous goods, circulating on the railway networks of the territories referred to Recommendation 1. This register shall include computer data suitable for the identification of the rolling stocks carrying dangerous goods, in terms of: technical and homologation data, date of construction and/or reassembly, maintenance history of their major components for safety, mileage of wagons and of their components.

3: To establish a general rule of application of sanctions against the subjects involved in various processes that have behaved in a different manner from those provided by the rules and regulations that could be defined in consequence of the Recommendations 2–10. These sanctions have to be imposed by the national organizations responsible for safety with regard to the territory under their jurisdiction, without prejudice to the right of each Member State to adopt measures restricting the circulation.

4: To introduce in the rules the prediction of maintenance interventions for safety purposes that have to be carried out with “temporal” frequency and with “fixed distances”. These methodologies have to be used in combination and in correlation. This need arises from the increased use of the wagons and important components for the rail safety resulting from the modification of the legal arrangement and organizational architecture of the sector in Europe. That forecast must also include the principle of intensification of the frequency of the checks in function of the progress of the age of wagons carrying dangerous goods.

5: To establish an obligation requirement of certification of the authorized personal that performs maintenance aimed at the safety of transport, on rolling stocks transporting dangerous goods circulating within the European Union. The certification must be set under the control of the member states and it must exclude any hypothesis of self-certification.

6: To establish a rule that defines a limited service life of important components for rail safety. In order to prevent train accidents is necessary to introduce a maximum time limit for the use of components related to safety (axles, wheels, bushings, suspension, etc.), taking into account the concept of cyclic fatigue, to which certain mechanical components are subjected to during their operational life.

7: To introduce a requirement for full traceability of all axels and components that a specific working group has to study to highlight as “fundamental” for safety and for the dynamic stability of the wagons, with particular regard to components subjected to cyclic efforts. At the time of the activity of maintenance and/or reassembly, the subject responsible must:

- Uniquely identify the components of the rolling stock on which maintenance is performed by punching an identification code (if not already punched). This code must be affixed already by the manufacturers at the time of production according to procedures to be defined.
- Insert in the Data-Base described in Recommendation 2, the evidence of transactions on the component, which must be identified as described in the previous paragraph, all its structural and geometrical data collected, the maintenance work performed, the execution date and the date scheduled for further maintenance. This Database will be accessible - for inspection - by entities that are responsible for controls and - for the operation – by all the certified and notified responsible for the maintenance.
All test results of a sensitive nature (Non Destructive Testing, ultrasound tests, Magnetoscopic checks, work sheets, etc.) performed on the components which are important for safety of rail transport will be placed in the same Database in hidden or clear format but not manipulable, in order to verify at a later time the state of the component or the evolution of any defects or anomalies detected during the entire life of the component itself.

- **8:** To establish a requirement for the destruction of components important for safe transport, for which it isn't possible to reconstruct the history of maintenance and operational through a continuous tracking. If the history of the component is not completely clear, it is necessary to require its destruction, giving the proof this to the safety organizations. This condition must be realized since the first useful opportunity in correspondence to a normal maintenance carried out according to the maintenance plan expected. The first phase of application of the rule needs a short period of transition to the new protocol for the components already in circulation. Beyond this period they must be destroyed anyway.

- **9:** To define, on the basis of legal requirements to be introduced in consequence of the previous recommendations, a procedure for conducting inspections on those responsible for the maintenance of wagons carrying dangerous goods or their components. These inspections must be made by Railway Undertakings (RU) as a part of its Safety Management System (SMS) to ensure safe operation of its part of the system. The supervisory role of NSAs on RUs remains unchanged. Therefore, Railway Undertakings must include in their Safety Management System adequate check procedures on the staff responsible for maintenance of the rolling stock that RUs haul.

- **10:** To impose the use of Detectors of Derailment Devices (DDD) for all wagons carrying dangerous goods, starting from the older ones. The application of such devices must make possible to activate automatic actions of brakes, needing an evolution of the detection techniques as much as possible free from false alarms. These devices should also be installed necessarily on the wagons carrying normal freights when they are in composition with those carrying dangerous goods. To provide for the production of new wagons, the obligation to adopt such devices taking into account possible technological developments towards more advanced solutions, also in terms of selectivity and modulation of the braking reactions.

- **11:** To set up by the Italian Infrastructure Managers an analytical study on the current distribution on the territory of the Italian railway network of thermical bushings revelators, taking into account the topological layout of the railway network, including railway interconnections and the multiple paths that can be runned by trains. The study is intended to highlight the paths longer than 60 km that are not yet covered by the revelators and that have to be equipped immediately by automatic systems, in order to overcome the current procedure that admits a possible visual detection.

### Declared to ERA 11 April

**Germany:** Collision between freight train and stationary passenger train at Geldern, 7 August 2010

At 05:10 (local time) on 7 August 2010, an engineers’ train, travelling at 33 mph, collided with a passenger train standing in Geldern station.

The locomotive and first wagon of the freight train and the first three carriages of the passenger train were derailed. There were no reported injuries.

The investigation concluded that the accident had been caused by signaler error.

**Recommendations**
At 18:55 (local time) on 20 June 2011, a passenger train collided with a car at a protected level crossing between Bodrogkeresztur and Olaszliszka-Tolcsva stations.

The car driver and his passenger were killed instantaneously.

The investigation concluded that the immediate cause was crossing user error, but also commented on the adequacy of crossing signs and visibility.

**Recommendations**

- The structure of the incident crossing should be reassessed, with particular attention paid to ‘quantitative and qualitative requirements on road traffic signs and visibility conditions’.

### Published 20 April

**Australia: Collision between an XPT passenger train and a rail-mounted excavator bear Newbridge, NSW, 5 May 2010**

For the full report, click here: [LINK](#)

At around 11:16 (local time) on 5 May 2010, a collision occurred between an XPT passenger train and a track-mounted excavator near Newbridge, NSW. The operator of the excavator was fatally injured. During the course of the investigation, a similar incident occurred near Wards River, NSW (17 March 2011). Both incidents occurred despite the fact that the work parties had been authorised, under a Track Occupancy Authority (TOA), to occupy and work on the track.

The ATSB established that, for the accident at Newbridge, a TOA was an appropriate method of authorising the work to be performed. However, a combination of individual actions and systemic issues contributed to the collision. When requesting the TOA, neither the Protection Officer (PO) nor the Network Control Officer (NCO) positively identified the location and type of worksite. Their actions were influenced by a deficiency in the TOA form, in that no provision was provided to record this critical information. Consequently, both the PO and NCO incorrectly concluded that the train had already passed beyond the limits of the worksite. In addition, the workers accessed the danger zone before additional site protection measures (detonators and flags) had been put in place. The ATSB also found that the workers were relatively inexperienced and that their training had not specifically discussed the hazards and protections that were relevant when working under a TOA.

The scenario for the Wards River incident was similar in that the track access point for the work was about 16 kilometres into the section defined by the limits of the proposed TOA. In this case, the location of the work (Wards River) was communicated at about 07:35 when the TOA was first requested. Due to operational reasons the TOA was not issued until 08:40. Similar to the Newbridge event the PO did not clearly identify the location of the worksite and the NCO did not ensure the train had passed beyond the worksite or track access point.
Safety issue

The ARTC form ANRF-002 (Track Occupancy Authority) was deficient as there was no provision to record critical information regarding the location and type of worksite. Consequently, both the Protection Officer and Network Control Officer incorrectly concluded that the train had passed beyond the limits of the worksite.

Action taken by the Australian Rail Track Corporation

The ARTC issued a safety alert (no. 52) on 27 September 2011 to advise all stakeholders of improvements to the rules and procedures. The changes were effective from 13 November 2011 and included significant changes to the TOA form and instructions for completing the new form. The ATSB is satisfied that the action taken adequately addresses this safety issue.

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Safety issue

The track workers were not provided with sufficient training (competency based or structured on-job training) in relation to the hazards and required protections for working under the authority in place at Newbridge on 5 May 2010. The ATSB is satisfied that the action taken by the Australian Rail Track Corporation adequately addresses this safety issue.

Response from the Australian Rail Track Corporation

The ARTC will reinforce with its Protection Officers the requirements of Work Method Statement TRA-001 (Access to and working on or about track) and in particular the requirement to:

- Explain the requirements of the worksite protection plan
- Ensure the plan is understood by all staff, and
- Question staff on the protection in place and the location of safe places.

In addition, ARTC’s internal audit program has been redirected to safeworking with a focus on reviewing safeworking documentation for compliance with ARTC’s Network Rules and Procedures. The ATSB is satisfied that the ARTC has initiated action to address this safety issue.

Safety issue

The ARTC procedure ANPR-701 (Using a Track Occupancy Authority) was inconsistent in that it did not allow for a scenario that would otherwise be permitted, and intended, under rule ANWT-304 (Track Occupancy Authority).

Response from the Australian Rail Track Corporation

The ARTC has trained its employees in this particular scenario and will review the procedure to ensure that it is consistent with the training and the TOA Form.

ARTC managers develop rosters in accordance with the ARTC policies and procedures. Considering the ARTC’s advice that the fatigue policy and procedure is to be reviewed along with additional training and
awareness programs, the ATSB is satisfied that the Australian Rail Track Corporation has initiated action to address this safety issue.

**Safety message**

“It is essential that information critical to the safe implementation of a TOA be clearly communicated between the Protection Officer and the Network Control Officer. It is also essential that workers do not access the track until all levels of worksite protection have been fully implemented.”