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.

Co-ordinated by Greg Morse, RSSB

Contents: (click to navigate)

UK: Freight train derailment near Barrow upon Soar, 27 December 2012

Australia: SPAD by freight train at Junee, NSW, 20 August 2013

Czech Republic: Passenger train derailment at Odry station, 31 March 2013

Key issues in this edition:

- Earthwork stability
- Earthwork risk assessment and maintenance procedures
- Driver distraction
- Degraded mode working
- Adverse weather conditions (effect of snow on sprung points)
For the full report, click [here](#).

At around 04:50, a freight train derailed about a mile north of Barrow upon Soar in Leicestershire. One of the rails had dipped due to the failure of the supporting embankment.

The investigation found that the embankment failed under the train’s weight as water within the earth had become unstable and none of Network Rail’s processes had identified the problem. RAIB notes that an evaluation of the embankment might have identified the reduced stability, but the circumstances for triggering an evaluation were unclear, and there was no defined process for reporting trigger events.

RAIB also observed that the evaluation process did not make use of rainfall data, or data that showed how the geometry of the track on the embankment was changing over time. An additional inspection during flooding may have identified the issue, but none was required at this location, as Network Rail did not consider how the embankment was constructed when assessing the risk from an earthwork failure due to water. It is also possible that the embankment’s reduced stability could have been identified by a routine examination, but none was due. A basic visual track inspection had been planned for three days before the accident, but it was not completed. This planned inspection may have found a track defect which could have led to the discovery of the embankment’s reduced stability.

**Action taken**

Network Rail investigated the cause of the embankment failure in order to understand what had happened and to find out how it could be repaired. Network Rail duly repaired the embankment by removing the ash material where it had slipped and by cutting steps into the clay. The embankment was then rebuilt using stone. Network Rail also installed new drainage at its foot.

The Route geotechnical team within Network Rail’s East Midlands Route is continuing its work using its Washout and Earthflow Risk Mapping system (WERM) to identify those earthworks that are likely to be flooded and then assess the risk to each of these earthworks from flooding. The output of this work will be used to populate the flood warning database for the East Midlands Route. Once these earthworks are included in the database, Network Rail can take some form of action to check them upon receipt of a flood warning that affects said Route.

The Network Rail management team responsible for track inspection and maintenance in the Leicester maintenance depot area carried out a series of checks during February 2013. These aimed to identify if there were other instances of staff signing off paperwork to show a basic visual inspection as complete when some or all of it had not been done. The checks included track walks, reviewing the paperwork completed for inspections, analysing voice recordings and reviewing CCTV footage from passing trains. No instances of inspections not being done were found. Senior managers also carried out spot checks over a two week period and in each case found staff carrying out their track inspection activities where they should be.

Network Rail has since undertaken further verification work and self-assurance checks. It is satisfied that the track inspection regime for the Leicester area is compliant and has not found any evidence of a widespread problem with missed inspections at Leicester maintenance depot.

Network Rail also issued a Safety Bulletin on 29 December 2012 about the actions to be taken by maintenance staff after flooding at an embankment. The bulletin called for maintenance staff to request that the Route geotechnical team carry out a special examination of an embankment if it has been flooded or recently flooded and one or more of the following circumstances has occurred:

- A rough ride has been reported;
- A loss of ballast from the track has been identified; or
- A track geometry fault has been found.
Once Network Rail became aware that some of the track faults found by the track geometry recording run on 5 November 2012 had been missed, it checked that there were no other such instances. Staff in the route asset management team responsible for track on the East Midlands Route checked that all the track faults found by the last track geometry recording runs over every line on the East Midlands Route had been signed off as repaired. No other instances of track faults being missed were found. The section manager at Leicester maintenance depot has since introduced local checks to prevent a recurrence.

**Recommendations**

- Network Rail should amend its company standards so that track maintenance staff are required to notify the Route Geotechnical Team if the foot of an embankment is saturated, flooded or has recently been flooded, and a track geometry defect or loss of ballast is found on top of the embankment.

- Network Rail should amend its processes so that, when assessing whether an embankment should be included in the flood warning database, the assessment should include additional factors which are relevant to its stability such as how the embankment was constructed (as far as can reasonably be determined) to understand the effect of water on any planes between different types of materials, and the history of flooding or ponding at the foot of the embankment.

- Network Rail should amend its company standards so that when an earthwork evaluation is carried out on an embankment, the evaluation should consider how the geometry of the track on top of an embankment has changed over time, using data recorded by Network Rail’s track geometry recording trains. If the evaluation has been triggered by a change in track quality, flooding or the ponding of water, and includes an assessment of the embankment’s susceptibility to flooding or water action, the levels of recent rainfall onto the top of the embankment should be considered as part of the assessment.

---

**Published 18 December**

*Australia: SPAD by freight train at Junee, NSW, 20 August 2013*

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

At 03:46 (local time) on 20 August 2013, a double-headed freight train left Moss Vale for Narrandera, NSW. There were several worksites on the Down Main line between Bethungra and Junee, on which the train was to travel. Consequently, both Up and Down trains were required to use the Up Main. As the area was not signalled for bi-directional movements, pilot staff working was in operation. The limit of authority for traffic travelling under pilot working in the Down direction was marked by a Stop Board just before Junee, with a Warning Board placed 2000 metres in advance. Train crews were advised of the implementation and details of pilot staff working via a ‘SAFE Notice’.

While travelling towards Junee, the crew’s attention was drawn to engineering work under way on the Down Main line. Consequently, they did not notice the Warning Board. At about 09:55, while approaching Junee at approximately 50 km/h, the crew saw the Stop Board and immediately applied the emergency brake. The train passed over the three detonators placed at the Stop Board and came to a stand approximately 75 metres past the limit of authority.

The signaller at Junee was advised of the incident and the train crew were relieved.

The Australian Transport Safety Bureau (ATSB) concluded that the crew had been distracted by the engineering work, and – as a result – they did not see the Warning Board. It is likely that, had they noticed it, they would have taken appropriate action to pull up ahead of the Stop Board.
Action taken

The operator – Pacific National – has advised the ATSB that it has started holding targeted safety briefings for crews working between Cootamundra and Junee. Furthermore, Cootamundra depot personnel were briefed by the regional manager on the circumstances surrounding the incident.

Declared to ERA 30 December

Czech Republic: Passenger train derailment at Odry station, 31 March 2013

For the full report, click here (includes summary in English).

At 15:27 (local time) on 31 March 2013, a passenger train derailed on a set of sprung points at Odry station. There were no reported injuries.

The investigation found the immediate cause to be snow, which had prevented the points from returning to the correct position. However, it also revealed that the infrastructure manager did not have any procedures in place to ensure that pointwork was checked for – and cleared of – any such obstruction.

Recommendations

- The infrastructure manager should amend its procedures to ensure that check that self-acting points are kept free from obstruction.