

# RAIB Bulletin 05/2012

## Train derailment near Letterston Junction, between Clarbeston Road and Fishguard, 12 July 2012

### Description of the accident

- 1 At about 18:40 hrs on Thursday 12 July 2012, train 1B67, the 14:35 hrs service from Gloucester to Fishguard Harbour, struck several cows near Letterston Junction on the single line between Clarbeston Road and Fishguard & Goodwick stations in Pembrokeshire (figure 1).

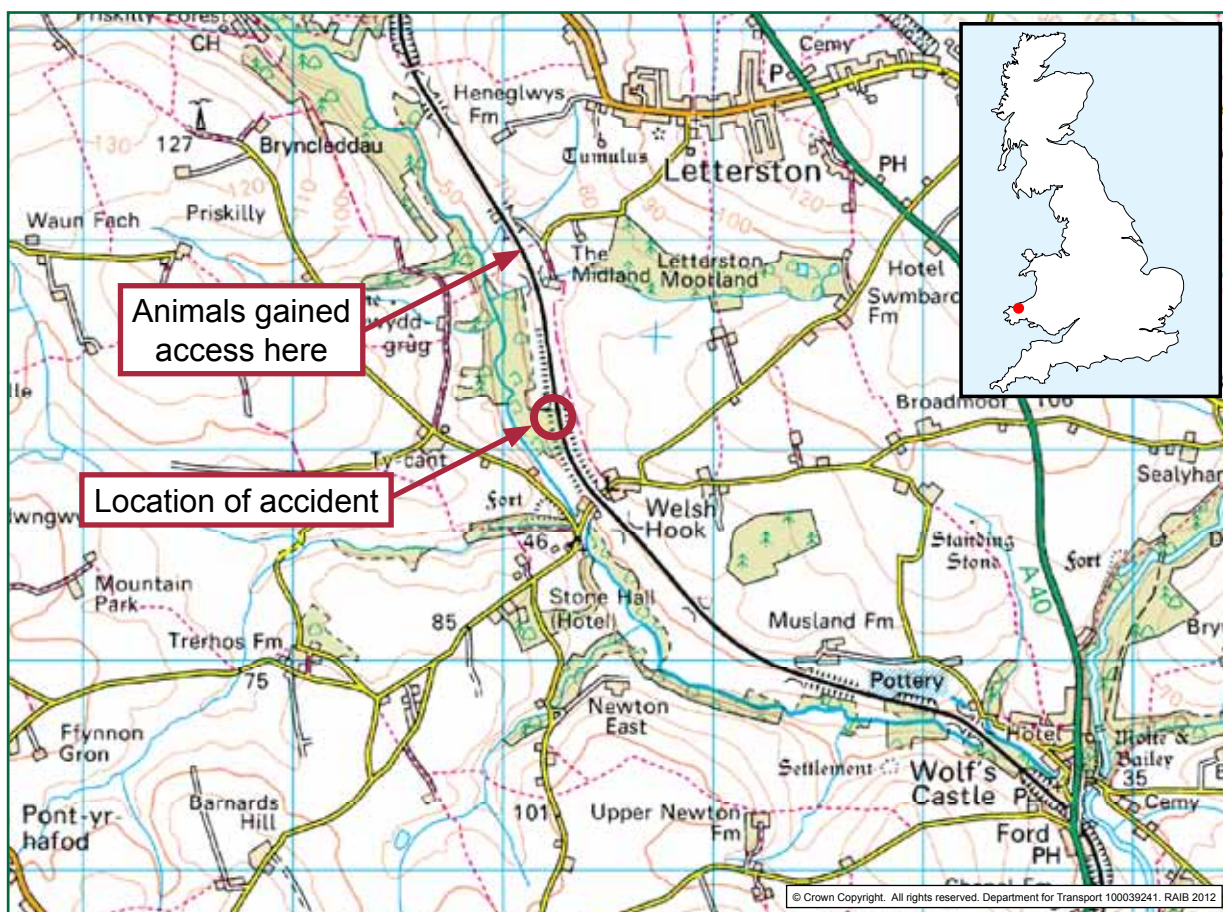


Figure 1: Extract from OS map showing location of accident

- 2 The train, which was formed of a two-car class 150 diesel multiple unit, was travelling at about 52 mph (84 km/h) when the cattle came into sight round a curve. The driver applied the emergency brake, but the speed of the train had only been slightly reduced when it struck several animals. All wheels of the first coach were derailed to the left, but the second coach remained on the track. The train came to a stop about 190 metres from the point where the driver first saw the cows and applied the emergency brake, and about 60 metres from the point of derailment, near milepost 279.
- 3 There were 28 passengers and two members of staff on the train. No-one was hurt. The emergency services were called immediately, but because the location was remote it took them about 39 minutes to reach the train, and it was 20:11 hrs before the passengers were evacuated from the train to a bus to complete their journeys.
- 4 Seven cows and a calf were killed in the accident or had to be destroyed afterwards.
- 5 There was substantial damage to 60 metres of track, and minor damage to the train.



Figure 2: The train after the accident (courtesy of Network Rail)

## Sequence of events

- 6 The previous train over the line, the 13:30 hrs service from Fishguard Harbour to Cheltenham, had passed Letterston Junction at around 13:43 hrs. There was then a period of almost five hours during which there were no trains in the area.
- 7 During the afternoon a herd of about twenty-five cows gained access to the railway from the down side at Midland Farm footpath crossing, at 279 miles 33 chains. They wandered along the line towards Clarboston Road for almost half a mile (0.8 km) until some of them were struck by 1B67, the next westbound train. The area is entirely rural, and no-one was in a position to see that the cows were on the line.

## RAIB investigation

- 8 The findings of the RAIB's investigation are:
  - Midland Farm footpath crossing is on a public footpath which gives access from the village of Letterston to a small river.
  - The crossing is equipped with gates on both sides. The gate on the down (south-west) side is a 'kissing' gate and leads directly into a field, while the gate on the up side leads to a path running between hedgerows.
  - For at least the last three years, the crossing had been inspected every six months by Network Rail's level crossing inspection team, in accordance with the company's standards<sup>1</sup>. In December 2011 the hanging post of the down side gate was identified as being in poor condition, and in need of replacement. A work order was raised for this to be done, along with repairs to the adjacent post-and-wire fencing. A further, additional inspection in March 2012 identified that this work had not been done. It was eventually carried out on 13 June 2012.
  - The new hanging post for the kissing gate was a piece of 75 mm square timber, which was concreted into the ground, and probably sunk to a depth of about 400 mm. The relevant standard used by Network Rail, BS 1722-2:2006 'Specification for Strained Wire and Wire Mesh Netting Fences', requires timber posts used in this situation to be 100 mm square, so the post used to carry out this repair was smaller than it should have been. Network Rail has identified deficiencies in the training and supply of appropriate materials to its Off Track Maintenance team which carried out the work, and has taken action to address this.
  - The gate post also functioned as a straining post for the section of fencing. Network Rail's company standard NR/L2/TRK/5100 'Management of fencing and other boundary measures' requires straining posts to be either driven (to a depth of 1 metre) or concreted into the ground, depending on local circumstances.

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<sup>1</sup> Network Rail standard NR/L2/SIG/19608 Level Crossing Infrastructure Inspection and Maintenance.

- Witness evidence indicates that the herd of cows that gained access to the track had been temporarily placed in the field which had previously been heavily grazed, without provision of alternative feed. It is likely that they pushed against the gate post while attempting to reach grass within the railway boundary, and that the post broke off at or just below ground level.
- The accident occurred on a bend in the line. The cows came into the train driver's view about seven seconds before the impact, and although the driver made an emergency brake application, there was only about 4 seconds for the brakes to have any effect in slowing the train before the impact took place.
- The derailment occurred because the train rode over the body of at least one cow, which lifted the wheels of the leading bogie off the line.
- Following the derailment the train decelerated rapidly. However, there was no disruption or damage in the passenger accommodation, and no injuries to the people on board.

## Analysis

- 9 Collisions between trains and animals on the line are not uncommon. There were 117 collisions between trains and cows, horses or other large boned animals (which are believed to have the potential to derail a train), recorded by Network Rail in the period between 1 January and 12 July 2012. The majority of these involved deer. However, it is rare for a train to be derailed as a result. The only known previous such event to result in loss of life was the accident at Polmont, Scotland, on 30 July 1984, in which 13 people were killed and 61 injured when a train travelling at 85 mph (137 km/h) struck a cow which had got on to the line. This occurred at a point where a footpath crossing had once existed, and where the fencing that had replaced the crossing gates had been broken down by vandals.
- 10 Following the accident at Polmont, the railway industry developed designs of obstacle deflector that could reduce the likelihood of derailment following collision with obstructions on the track. New trains built to Railway Group Standards have been fitted with obstacle deflectors since 1994, but the standard did not require retrospective modification of existing trains. The Class 150 DMUs, which were built between 1984 and 1987, have a maximum speed of 75 mph (121 km/h) and are exempted from any requirement to have full-strength obstacle deflectors (which applied to rolling stock operating at speeds of 90 mph (145 km/h) or higher). However, following their original build, the Class 150 fleet was retro-fitted around 1993 by British Rail with a device to deflect minor obstacles, such as shopping trolleys. These 'minor obstacle deflectors' were based on a design of snow plough originally fitted to Class 156 DMUs and would not be able to cope with the more stringent requirements for full-strength obstacle deflectors specified in the current relevant standard (BS EN 15227:2008). Nevertheless in this collision, the minor obstacle deflector was only slightly distorted which suggests that most of the impact loading was taken above the level of the deflector, by the coupler and headstock of the train.

- 11 The RAIB has examined the evidence relating to the derailment, and has concluded that, because of the lack of damage to the minor obstacle deflector, it is not possible to say whether a full-strength obstacle deflector would have performed any better in preventing derailment, in view of the number of animals involved and the consequent size of the obstruction to the train.

### Learning Point

- 12 The RAIB has decided not to conduct a full investigation because it does not believe that this would identify any significant new lessons relating to railway safety. However, the occurrence of this accident demonstrates the importance of preventing livestock from getting onto the railway line. Railway infrastructure managers should ensure that they have adequate arrangements in place to inspect, repair and renew lineside fences and gates, and that their fences and gates are built and installed to a standard which is appropriate for the location and is, where necessary, stock proof.

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