



Rail Accident Investigation Branch

RAIB Bulletin 09/2010

Collision between a freight wagon door and signal in Kilsby Tunnel, 15 March 2010

Description of the incident

- 1 On 15 March 2010, an open wagon door on train 6T22, the 02:36 hrs DB Schenker service from Crewe Basford Hall to Lea Junction, struck signal KR 3334 in Kilsby Tunnel (south of Rugby) causing severe damage to the signal head.

The wagon

- 2 The wagon involved in the incident was an OCA type. It has six drop down doors; three on each side. The doors are hinged on their bottom edge and held closed in traffic by a spigot and securing pin arrangement located at the corner of each door (figure 1). When released, the door normally drops to the horizontal position. A design feature slows the opening speed of the door and reduces the effort required to close and secure it, effectively making it a one-person operation. The door has to be pushed down from the horizontal position to its 'vertical open' position against a spring, which otherwise holds the door in a horizontal position. When all six doors are vertically open, the four central pillars can be removed to give unrestricted access to the wagon.



Figure 1: the pin passing through the spigot, shown in the fully engaged position and securing the door

Sequence of events

- 3 The wagons comprising train 6T22 had originally arrived at the European Metal Recycling (EMR) yard in Crewe on 4 March 2010 for unloading. The wagon door security arrangements had been visually checked by contractors working for EMR and the wagons were authorised for movement to Basford Hall yard in Crewe. EMR staff faxed a train preparation form to Freightliner Heavy Haul which documented that the train preparation check had been completed. Once at Basford Hall, the wagons were moved again on two separate occasions within the yard. On 15 March 2010, the wagons were shunted to the southbound sidings to be prepared and authorised for departure by Freightliner Heavy Haul Limited staff for onward travel to Lea Junction as train 6T22. The train was operated by DB Schenker who provided the class 66 locomotive and employed the driver.
- 4 Train 6T22, comprising empty OCA, OBA and OAA type wagons, departed from Basford Hall and travelled south via Stafford and Birmingham International (figure 2). No incidents were reported, although unknown to the driver, a door on OCA wagon 112107 had dropped down between Crewe and Birmingham. The first known incidence of damage caused by the open door was on platform 4 at Birmingham International station, where it had collided with the north end of the platform ramp, although no-one observed or reported this at the time (figures 3 and 4).

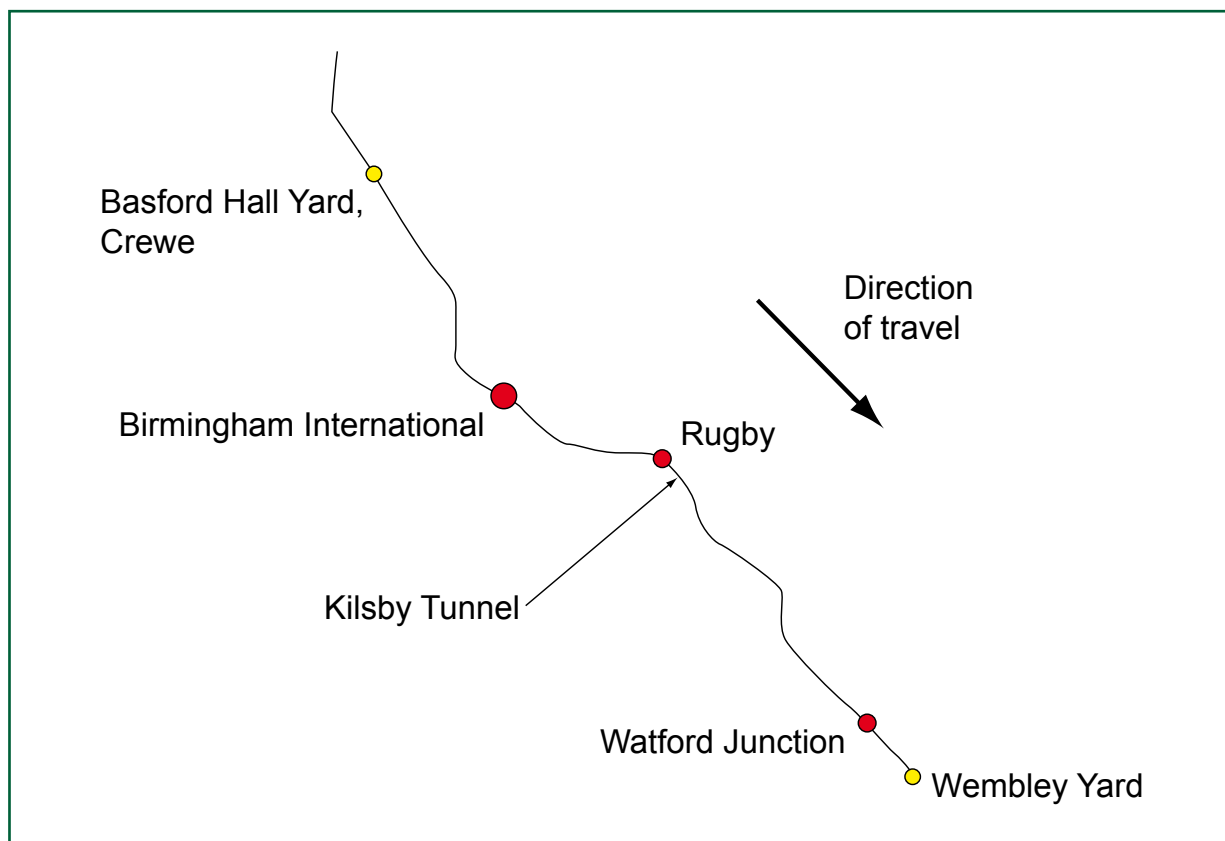


Figure 2: Map of the route taken by train 6T22 during the incident showing Crewe, Birmingham International, Rugby, Kilsby, Watford Junction and Wembley

- 5 The train stopped at Rugby between 03:36 hrs and 03:47 hrs and later entered Kilsby Tunnel where the open door on OCA wagon 112107 collided with signal KR 3334. Some damage to two trackside axle counters also occurred.



Figure 3 (left): initial impact mark and scrape marks on platform 4 at Birmingham International station.
 Figure 4 (right): wagon 112107 colliding with the up platform 4 at the same station. The wagon door had already fallen from the 90° to the 180° position.

- 6 The signalling centre at Rugby became aware of the failure of signalling equipment in this area and, assuming that a cable theft might have occurred, notified the British Transport Police to request their attendance. Network Rail incident response staff also attended the site and having seen the damage to the signal, asked the signaller to investigate recent train movements through the area. Train 6T22 was stopped at Wembley and the driver was requested to examine the train. The driver later reported that the 11th wagon had sustained damage to an open door on the left-hand side in the direction of travel (figure 5).

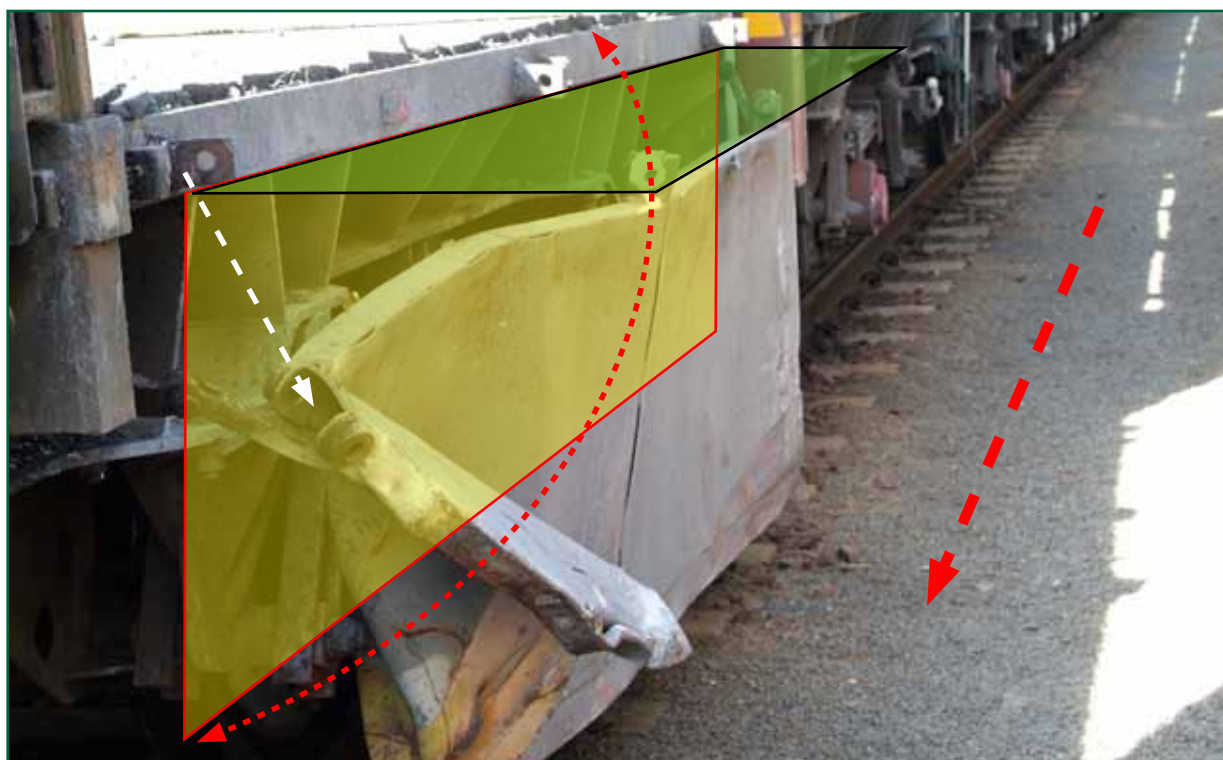


Figure 5: The damaged left-hand door of wagon 112107

- 7 After leaving Kilsby Tunnel the train had passed through several stations. CCTV from Watford Junction station showed the wagon door colliding with the platform wall and surface area (figure 6).



Figure 6: Wagon 112107 colliding with a platform at Watford Junction station

Findings of the Rail Accident Investigation Branch

- 8 The train was later examined by the RAIB. Three of the six pins on the incident wagon (left-hand side in the direction of travel) were hanging down and not engaged.
- 9 The RAIB's examination showed that the three pins on the incident wagon had not been recently engaged within the spigot and door mechanism. This could be deduced from the build-up of rust on the pin and the lack of recent contact mark with the spigot housing (figures 7 and 8).
- 10 Several other wagons doors were also tested. The interlocking between some doors and wagon frames was found to be deformed which made it difficult to engage and extract the pins from their position without using a hammer or another tool to assist in their release. Two pins on OCA wagon 112174 (right-hand side in the direction of travel) were found to be within the securing slot but were not engaged and therefore not providing any form of restraint. However, they may have given train preparation staff the impression that they were fully engaged and securing the door.



Figure 7: reference sample used to show contact marks after pin had been forcibly removed



Figure 8: one of the three disengaged incident wagon pins found hanging at the side of the open wagon door

Previous incidents of a similar kind

Basford Hall 2006 (RAIB report 06/2007)

- 11 On its journey from Basford Hall to Toton (near Nottingham) on 21 February 2006, train 6D51 conveyed a load of redundant track panels which had not been secured on the wagon, and could have moved during transit.
- 12 The RAIB's investigation identified that a causal factor was that the shunter at Basford Hall did not follow the correct process to check the train before departure and in particular he did not check the security of the load on train 6D51.
- 13 A recommendation was made to Freightliner Heavy Haul Limited regarding the writing, checking, authorising, briefing and issuing of methods of work at Basford Hall. The recommendation was accepted and implemented by Freightliner Heavy Haul Limited who re-briefed staff on the requirements of the rule book and issued all staff with radios and hand lamps to assist in their inspection of wagons.

Maidenhead 15 November 2008 (RAIB Bulletin 05/2009)

- 14 An engineer's train conveying OCA wagons was travelling from within an engineering possession on a four track railway. During the journey the door of a wagon fell open, fouled the adjacent line and was struck by a passenger train.

Basford Hall 19 March 2010

- 15 It was reported to the RAIB that train 6Y20 had arrived in the TMA yard at Crewe with an insecure door. The train was inspected and two pins on an OBA wagon were found to be missing. The pins were found on the load within the wagon (figure 9).



Figure 9: pin found on wagon of train 6Y20 on 19 March 2010

Actions taken following the incident

- 16 The industry parties (Freightliner Heavy Haul, DB Schenker and Network Rail) involved in this incident have issued safety bulletins to raise awareness of the circumstances.
- 17 DB Schenker reports that it has increased the inspection regime for securing pins and their chains. The pins and chains have been painted yellow on this type of wagon to assist staff in the operation and securing of the doors and to enable them to identify pins that are hanging down.
- 18 DB Schenker reports that it is currently in the process of reviewing other options and potential solutions for securing the doors with Network Rail.

Conclusion

- 19 This incident occurred because the wagon doors were not properly secured when train 6T22 left Basford Hall. The incident at Kilsby Tunnel and others referred to in the previous section have highlighted that the security of doors in this family of wagons depends on the actions of train preparation staff in physically checking that pins are not only in the appropriate spigot but also fully engaged and providing adequate restraint.
- 20 The wagon frame, door, spigot and pin may become damaged during routine operational activities, causing staff to use a tool or hammer to insert or extract the securing pin. This method may result in further damage to the pin and spigot occurring which prevents the pin from fully engaging through the spigot.

21 On the basis of the information collected during its preliminary examination of this incident, the RAIB has decided not to conduct a full investigation. This is because further investigation by the RAIB would be unlikely to result in recommendations for the improvement of safety¹. Nevertheless, the preliminary examination has highlighted a number of learning points which are described below.

Learning points

22 The learning points from this incident are:

- a) The general rustiness or colour of the door attachment mechanism can make it difficult for a train preparer to see if pins are fully engaged and this difficulty may be exacerbated when lighting conditions are poor. Staff involved in train preparation must be aware that they need to physically check that the pin is fully engaged through the spigot as the deformation that may occur between the door and the wagon frame may allow the pin to disengage if it is not fully inserted through the spigot.
- b) There is a need within maintenance and inspection regimes on wagons of this type to examine the drop-down doors and the condition of the pins, spigots and door latching components. Vehicle maintenance checks on the door mechanism should include an examination for visible damage and ensure that there is sufficient tolerance to allow the pin to be put in and taken out without further damage being caused.
- c) The position of the wagon locking arrangement creates a risk that the door will not be secured correctly, as it makes it difficult for staff standing on the adjacent ballast to insert the locking pin fully. This may result in the door dropping open in traffic and striking people, trackside structures and/or rolling stock on adjacent lines. Wagon owners should review the design of the securing arrangements on this type of wagon and consider the practicality of making it more obvious to staff involved in maintaining, inspecting and loading/unloading the wagons when the pin is not fully engaged.

23 The RAIB has written to the duty holders involved informing them of its decision not to undertake a full investigation and the conclusions of its preliminary examination and has brought the learning points to their attention.

¹ It should be noted that this does not affect the industry's obligation to comply with health and safety legislation by conducting its own investigation into the accident/incident and implementing appropriate measures to address this risk.

This bulletin is published by the Rail Accident Investigation Branch, Department for Transport.
© Crown copyright 2010

Any enquiries about this publication should be sent to:

RAIB	Telephone: 01332 253300
The Wharf	Fax: 01332 253301
Stores Road	Email: enquiries@raib.gov.uk
Derby UK	Website: www.raib.gov.uk
DE21 4BA	