

Passenger trapped in doors and dragged at Wood Street station, north-east London, 14 January 2022

Important safety messages

This incident demonstrates the importance of staff responsible for dispatching trains:

- being aware of the potential hazards if a train moves when people are in close proximity
- carrying out a thorough final safety check and not relying on the interlock system as proof that it is safe to move a train - these systems are not always capable of detecting objects trapped in closed and locked doors.

Summary of the incident

At around 08:22 hrs, a passenger became trapped in the doors of a train which was about to leave platform one at Wood Street station. The train then started to depart from the platform, forcing the passenger to run alongside it.

The train involved in the incident, reporting number 2T25, was the 08:14 hrs Arriva Rail London (ARL) service from Chingford to London Liverpool Street. It was formed of two class 710 Avenra electric multiple units, each of four cars. Passengers cannot pass between the front and rear four-car units without leaving the train.

Platform CCTV from Wood Street station shows that the passenger involved in the incident had initially got out of the rear door of the fifth car after the train arrived at Wood Street station. She then attempted to board the train again using the rear doors of the fourth car, after the door closing sequence had begun. As she attempted to board the train, the passenger placed her hand between the closing doors. After the doors closed, the passenger was left standing next to the train, with her hand trapped between the closed doors. The train then started to depart from the platform with the passenger's hand still trapped in the doors.

The train stopped after it had travelled for around 20 metres along the platform, having reached a maximum speed of 7.6 mph (12 km/h). After the train stopped, the passenger was able to free her hand from the doors. It was reported to RAIB that the passenger did not sustain any injuries and that she left the station after speaking to the train driver.



CCTV showing the train and platform involved (courtesy of Arriva Rail London)

Cause of the incident

This incident occurred because the driver did not appreciate that the passenger was in an unsafe position when he made the decision that it was safe to start the train. The driver stated that, although he had seen that the passenger was close to the side of the train before starting the train, he was unaware that she was trapped in the doors and believed that she was pressing the 'door open' button to try and board the train.

The station platforms at Wood Street are not staffed and drivers are responsible for dispatching trains from this station. Class 710 electric multiple units have bodyside-mounted cameras and two in-cab CCTV monitors, which allow drivers to observe the platform and doors during the dispatch process. These monitors display nine images and remain active until the train reaches a speed of 6 km/h (4 mph).



Reconstruction of the driver's in-cab screen using images from the incident CCTV at the moment that door interlock was obtained (the passenger's image has been obscured for publication)

It is not possible for the driver of a class 710 train to apply traction power if the door interlock, an electrical circuit which confirms that all doors are fully closed and locked, has not been obtained. The driver will receive an indication that the interlock has been achieved via an indicator light in the driving cab.

The passenger doors on the class 710 have an obstacle detection system which is designed to detect the presence of an obstruction when the doors are closing or closed. Objects are detected by monitoring the door motor current and by door position sensors. The doors will automatically reopen if objects which are at least 30 mm thick are detected. Objects which are thinner than 30 mm, such as fingers, or which are non-rigid in nature, such as bag straps, will not necessarily be detected by this system and may still become trapped in closed and locked doors.

For this reason, drivers are warned in ARL's dispatch instructions that obtaining a door interlock only indicates that the doors have completed the closure sequence and not that it is safe to depart.

The doors and interlock system of the train involved were tested after the incident and were found to comply with the applicable ARL standards.

Train drivers at ARL are trained to follow the principles of the train dispatch rules contained in Rule Book module SS1, 'Station duties and train dispatch'. As part of this process, drivers are required to carry out a train safety check after they have closed the train's doors to ensure that the doors are properly closed, that nobody is trapped in the doors, and that nobody is in contact with the train. This module also warns against relying on the interlock as an indication that it is safe to start the train.

ARL's dispatch process requires drivers to observe the dispatch corridor (the area consisting of the platform immediately alongside the train, the gap between the platform and the train and the full height of the doors) during the dispatch process, and reminds drivers of the importance of the train safety check, stating '*When the door interlock light is illuminated... check once more that the dispatch corridor is clear, that nothing is trapped in the door, the platform edge and gap appear clear and it is safe for the train to depart.*'

During this incident, the train driver reported that, after the doors closed, he checked that he had obtained door interlock. He then looked at his in-cab CCTV monitors and saw that a passenger was close to the side of the train. The driver believed that this passenger was pressing the 'door open' button to try and board the train. The driver then started the train. Once he observed on the monitors that the passenger was continuing to move alongside the train, he brought the train to a stand. The driver stated that an emergency egress device was activated on a door on the opposite side of the train to the platform as he did this.

The driver later stated that he did not believe that the passenger could have been trapped in the doors when he started the train, because he had obtained door interlock. This suggests that the driver was, in these circumstances, using the interlock to indicate whether it was safe to start the train.

Research by RSSB (T1102 'Optimising door closure arrangements to improve boarding and alighting', 2017) has shown that some passengers believe train doors that are closing can be reopened like lift doors, by placing a hand between them. However, as this incident shows, a hand placed in the doors may not always activate obstacle detection systems or prevent door interlock circuits from being completed.

Previous similar occurrences

A number of 'trap and drag' incidents have previously been investigated by RAIB. Incidents with similarities to the incident at Wood Street include:

- At Newcastle Central station, on 5 June 2013 ([RAIB report 19/2014](#)), a passenger was dragged along the platform after their wrist became trapped in a closing door. The investigation found that the conductor had not carried out a safety check before signalling to the driver that the train could depart.



Rail Accident Investigation Branch

- At Hayes & Harlington station on 25 July 2015 ([RAIB report 12/2016](#)), a passenger was dragged by a train when the driver did not identify that their hand was trapped in the closed and locked doors. The investigation found that the door detection system did not detect the passenger's hand in the closed door, and that the train driver and other train company staff believed the door interlock system would detect the presence of an object such as a hand.
- At Bushey station on 26 March 2018 ([RAIB Safety digest 07/2018](#)), a passenger was dragged when their wrist became trapped in the closed and locked doors of the departing train. The guard incorrectly believed that the door interlock could be relied on to determine whether anyone was trapped in the closed doors.
- At Elstree and Borehamwood on 7 September 2018 ([RAIB report 03/2019](#)), a dog's lead became trapped in the closing doors of a departing train, which dragged the dog off the platform and led to its death. The investigation noted that the obstruction detection system did not detect the dog's lead, and that the driver did not observe that the dog's owner was in close proximity to the closing doors when starting the train.