

RAIL ACCIDENT REPORT – TRAIN TRAVELLING WITH DOORS OPEN ON THE JUBILEE LINE – 1 SEPTEMBER 2018

by John Hawkins

A 53-page report into this incident by the Rail Accident Investigation Branch (RAIB) of the Department for Transport was published on 10 July 2019.

They found that shortly after 09.00 on Saturday 1 September 2018, a Jubilee Line train travelled between Finchley Road and West Hampstead stations with doors open at ten passenger doorways. The train, with approximately 30 passengers on board, reached a maximum speed of 62 km/h during the 56 second journey between the two stations. No-one fell from the train and nobody was injured.

When the train stopped at Finchley Road station in automatic train operation (ATO) mode, some of the doors opened without being commanded by the train operator, since the operator's controls did not allow him to open any doors, nor close any doors. It is likely that this was caused by control system overload caused by faults elsewhere on the train. While dealing with the door issue, the train operator used a switch bypassing the door interlock circuit that was intended to prevent the train departing with doors open. He did not notice that some doors remained open when departing from Finchley Road station and travelling to West Hampstead. The report provides photos and details of door operating procedures.

The train operator's actions were probably influenced by a sudden increase in workload from the low level associated with automatic train operation, fatigue from his sleeping pattern, and/or low blood-sugar levels from a prolonged period without food. He stated that he had had his usual six hours sleep before this shift and had not eaten for 13 hours at the time of the incident, in accordance with his usual routine.

The train operator had been working on the Jubilee Line since December 2007. I was surprised at the close monitoring of staff performance these days. Back when I was young, an LU driver keeping a low profile could complete his driving career with nothing after his original training and qualification. This man had six-monthly driving assessments, and a routine performance and management review in February 2018. He had last received training on faults and failures procedures, including door faults, in January 2018.

On the day concerned he booked on at Wembley Park at 06.59 and had worked to Stratford, before arriving at Finchley Road at 08.55. He became aware that a passenger was standing on the platform at an unopened door and tried the door open buttons again before opening the cab door and standing on the platform. It became obvious that several doors had not opened but reusing the door buttons had no effect. Under pressure of the ATO station dwell timer, he announced that he would further investigate this problem at the next station and the train departed in automatic mode. The train operator was dealing with a problem of doors not opening and did not realise that there was also a problem of doors not closing. CCTV images showed that some doorways had opened normally, whilst others opened when passengers used the internal or external buttons provided by each doorway. Although the door-open buttons at doorways were no longer intended for use, they had not been disconnected, but some were defective.

CCTV showed the doors which remained open were the leading single door on the second car, and various single and double doorways on the third to seventh cars. At West Hampstead the platform is on the opposite side of the train, and all doorways operated normally. The train operator noticed that he must have operated the Train Doors Interlock Cutout (TDIC) switch at Finchley Road and reset it to its normal position. A passenger reported doors open on the opposite side of the train. Following trains were cautioned to look for persons on the track, and the incident train was removed from service for testing.

It is likely that the unusual behaviour of the doors at Finchley Road station resulted from a loss of communication between items of train control equipment, coupled with defects in some of the door-open buttons provided at passenger doorways. It is probable that communication was lost when part, or parts, of the train management system rebooted (restarted) after being overloaded by multiple fault messages generated by defective ventilation fan equipment and defective passenger information systems.

The large number of fault messages relating to defective ventilation fans and passenger information systems had been recorded by on-board equipment for two days before the incident, but LUL was unaware of this as there was no process for routinely downloading and reviewing fault records. LUL stated that it is considering options to resource a programme for the automated downloading and analysis of train management system data on Jubilee Line trains to identify indications that maintenance is required to prevent equipment failure.

The train operator did not follow LUL procedures and bypassed the door interlock circuit, which is intended to prevent trains departing with some doors open and passengers on board. LUL had not identified that 1996 Tube Stock trains did not comply with LUL requirements for warnings related to use of the TDIC switch. The train operator received no audible warning that the TDIC switch had been operated and was able to start the train in ATO mode as usual.

The absence of an audible warning when starting a train in manual mode with the TDIC operated and doors open was a factor in a similar incident at Warren Street on the Victoria line in 2011. LUL modified the train management software on the 2009 Tube Stock trains used on that line, so that the train operator receives an audible warning when an attempt to start a train is made with the TDIC switch operated. However, LUL did not review its other trains to see if this modification was needed on any of them. A table shows inconsistency between train types.

The train operator stated that his intention was to open the doors using the Emergency Saloon Door Control (ESDC) switch, which would have been consistent with the defect guide instructions for all train doors failing to open. It is uncertain, due to the train defect experienced at the time, whether correct application of this procedure would have resulted in all doors opening, and then all doors closing. The LUL procedures for using the ESDC switch do not require the train operator to contact control if doors then open and close as expected. Although the train operator stated that he intended to operate the ESDC switch, which is concealed behind a cover, he actually operated the TDIC switch nearby by breaking a seal and did not follow appropriate procedures.

An underlying factor was that, unlike some other LU trains and contrary to LU standards, the type of train involved in the incident could be driven with the door interlock circuit bypassed without an audible warning being provided to the train operator. A possible underlying factor was that the training of train operators did not adequately prepare them to manage the sudden increase in workload caused by the need to deal with faults, under time pressure, on trains operating in automatic mode.

The RAIB made four recommendations addressed to LU. These include improvements to door control systems on Jubilee Line trains; better training to help train operators respond correctly when sudden increases in workload occur while operating trains in automatic mode; raising train operator awareness of the adverse effects on safety from insufficient sleep and inappropriate eating patterns; and improved management of train faults.

The investigation also identified three learning points relating to the incident. These concern making sure that training, rules and procedures highlight the safety implications of operating sealed switches; understanding careful checking that the correct switch has been operated when attempting to rectify technical faults is more important than timekeeping; and the importance of staff managing their work/life balance so that safety performance is not adversely affected.

Simon French, Chief Inspector of Rail Accidents said: "The rise of automatic operation has greatly improved the reliability of train services, but it has reduced the amount of engagement the train operator has with the on-train systems and equipment, which have become ever more complex. It is rare that an operator has to deal with a technical problem in service and understandable that, as in this case, they may sometimes be unsure of what steps to take. It is therefore important that operators are given the best possible training, and that the effectiveness of their response to problems is assessed as part of the company's competence management system. We are recommending that LU improves the training given to operators, and we think it is particularly important that they get the chance to practice responding to technical faults in a simulated train cab environment".

<https://www.gov.uk/government/news/report-062019-train-travelling-with-doors-open-on-the-jubilee-line>