

Near miss at Plain Moor user worked crossing, Barton-le-Willows, North Yorkshire, 7 July 2018

Important safety messages

This incident demonstrates the importance of:

- signallers carefully considering the information available, and allowing a safety margin, when determining whether there is sufficient time for a crossing user to cross the railway before the arrival of the next train
- local instructions being briefed to signallers, and available to be read in signal boxes, such that signallers are fully aware of all local instructions applicable to their role, particularly those relating to user worked crossings
- the industry finding ways of reducing the reliance on the judgement of signallers at user worked crossings; the risk of signaller error leading to a serious accident was highlighted by RAIB's investigation into the collision at Hockham Road user worked crossing in April 2016

Summary of the incident

At 09:37 hrs, a train narrowly avoided a collision with a car that was crossing the railway at Plain Moor user worked crossing, between York and Malton. The car driver had been given permission to cross by the signaller. The train was travelling at 61 mph (98 km/h) on approach to the crossing. A witness reported that the train passed the crossing 'seconds' after the car had cleared it.

The train involved, reporting number 1T85, was the 09:25 hrs TransPennine Express passenger service from York to Scarborough, formed of a 3-car class 185 diesel multiple unit. When it was about 400 metres from the crossing, the train driver saw a person on the crossing and sounded the horn. When it was about 200 metres from the crossing, the train driver saw a car passing over the crossing, and applied the train's emergency brake and sounded the horn again. The train came to a stand beyond the crossing.



Plain Moor user worked crossing

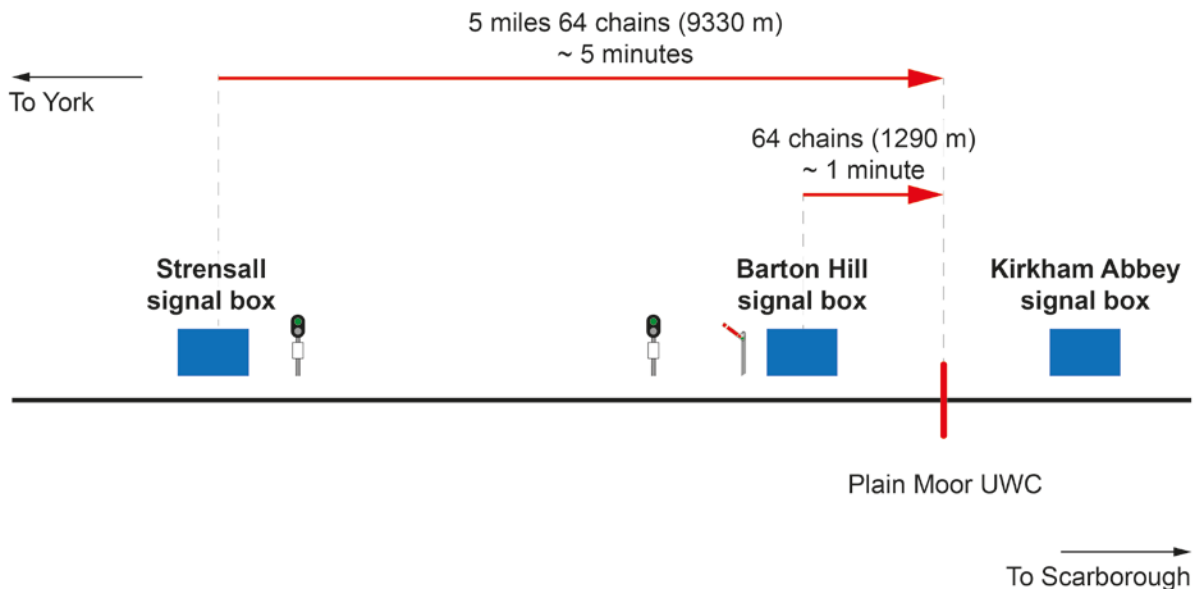
Cause of the incident

The crossing is equipped with a telephone and signs which instruct crossing users to call the signaller for permission to cross if they are crossing with vehicles or animals. The crossing telephone is connected to Kirkham Abbey signal box. The signal box manages nine user worked crossings with telephones.

Kirkham Abbey signal box operates semaphore signals under the absolute block system. When trains operate under this system there are usually no track circuits to detect the position of the train when travelling between two adjacent signal boxes. The adjacent signal boxes are Strensall and Barton Hill to the west and Malton to the east.

When a Scarborough-bound train passes the signal box at Strensall, the signaller there sends a bell-code to Barton Hill indicating that the train is entering the section. The signaller at Barton Hill then acknowledges the bell code and turns a switch on his block instrument to show 'Train On Line'. If the line ahead is clear he then offers the train to the signaller at Kirkham Abbey. At this time, a train is approximately five minutes away from Plain Moor user worked crossing.

When the train reaches the signal box at Barton Hill, the signaller sends a bell-code to Kirkham Abbey indicating that the train is entering the section. The signaller at Kirkham Abbey then acknowledges the bell code and turns a switch on his block instrument to show 'Train On Line'. At this time, a train is approximately one minute away from Plain Moor user worked crossing.



Simplified diagram of crossing location and signalling sequence

When a user wants to use the crossing with a vehicle, they are required to call the signaller to ask for permission to cross and indicate how much time they need. The signaller then needs to identify the location of any trains and make a decision whether or not to give permission to cross.

The only indications of train position that the Kirkham Abbey signaller receives for Scarborough bound trains are when he is offered the train and when the train enters the section from Barton Hill. For Plain Moor user worked crossing those indications occur approximately five minutes and one minute ahead of the train's arrival, although the five minute indication is dependent on prompt offering of the train by the Barton Hill signaller. Other crossings between Barton Hill and Kirkham Abbey signal boxes rely on the same indications, although the timings of the train's arrival will vary depending on the crossing location.

During the incident, the Kirkham Abbey signaller was offered, and accepted, the train at 09:32 hrs. The crossing user called at 09:35 hrs and asked for permission to cross with a car, requesting two minutes to do so. The signaller granted permission, asking the crossing user to cross immediately. The signaller received the 'train entering section' signal from Barton Hill at 09:36 hrs. The train driver made an emergency call on the GSM-R radio at 09:37 hrs, reporting a near miss with a road vehicle.

The signaller normally allowed crossing users two minutes to cross, but was aware that regular users could often cross in about one minute. He had calculated that the train would be expected at the crossing at or after 09:37 hrs, and that giving the user permission at 09:35 hrs would allow them to be clear before then. However, the train approached the crossing as the user was driving across.

In July 2015, following a near miss at another crossing, Network Rail's York Operations Manager issued a local instruction to signal boxes, including Kirkham Abbey. This required signallers to ensure that crossing users had a minimum of three minutes to cross when granting permission. The signaller started work at Kirkham Abbey after this local instruction was issued, and had not been made aware of it. Furthermore, the instruction was not available to be read in the signal box. Network Rail has since reissued the instruction to all signallers in the York Operations area and introduced a yearly check of notices and instructions in signal boxes.

This instruction supplements Rule Book module TS9 'Level crossings - signallers' regulations' section 2.1.1 'Receiving a telephone call'. This states that 'If there is enough time for the crossing to be used before the next train passes over it, you must ... tell the user to use the crossing immediately. If there is not enough time, you must tell the user to wait and telephone again.'

In this case, the signaller misjudged the time available to the crossing user relative to the time the user needed to cross. If the signaller had been aware of the local instruction, and followed it, it is likely that he would not have given permission for the user to cross, and the near miss would have been avoided.

The RAIB observes that two minutes is a very short time to allow users to cross given that they may have to open two gates and return to their vehicle before driving across the line.

Underlying this incident is the fact that the safe use of telephone operated crossings is reliant on signallers making decisions on whether there is adequate time for the user to cross. These decisions will always be subject to the possibility of human error.

Previous similar occurrences

The RAIB has published a number of investigation reports and safety digests that have covered accidents or incidents where signallers have erroneously given level crossing users permission to cross. These include the following:

- Near miss at Dock Lane level crossing ([RAIB report 08/2017](#)). The RAIB made recommendations targeted at the management of human error and signaller workload when assessing level crossing risk.
- Collision at Hockham Road user worked crossing ([RAIB report 04/2017](#)). The RAIB made a recommendation relating to management of user worked level crossings, with the intention of either eliminating the need for a signaller to have to decide whether it is safe for a user to cross the railway or providing better information for signallers when making these decisions.
- Thorney Marsh Lane ([RAIB safety digest 02/2017](#)). The RAIB highlighted the importance of signallers fully considering and understanding the information available to them when crossing users ask for permission to cross.