

Following the use of the token for bidirectional working during the Santa special operations perhaps a few notes on how single lines are worked in mainline practice would be of interest.

In the infancy of railways most lines were single, however traffic was light and the 'policemen' who controlled the stations were more than adequate to deal with the traffic at the time. As traffic increased it became necessary to evolve some form of control. As the electric telegraph system became more widely used this was used to send messages to between stations to regulate the traffic. The telegraph clerks at the stations at each end of the section transmitted messages authorised and signed by the station inspector to allow a train to move between the two stations and also establish when the train had arrived at the other end of the section. This allowed trains to be signalled through the section according to traffic requirements.

This system worked well as long as trains ran to time, however when trains ran late problems could easily arise, especially when human nature and frustration were taken into account. In 1874 the line between Norwich and Brundall on the Great Eastern Railway was still single line. A misunderstanding between the operating staff at Norwich and an telegraph order wrongly sent to Brundall by the Norwich telegraph clerk resulted in a head on collision between the 8.40 pm Mail from Yarmouth and the 5pm up express to Liverpool Street. This resulted in the deaths of 25 people including all four enginemen.

Another early simple form of single line control was by the use of a wooden staff. As there was only one staff for the section it meant that only one train could be in the section at any one time. This meant that trains could only run in alternate directions. Thus this was largely confined to dead end branch lines often operated by the one engine in steam principle and the wooden staff incorporated a key to work any ground frames needed to control any points at the terminus and any intermediate sidings. To overcome the problems of the single wooden staff necessitating trains operating in alternate directions the staff and ticket system was developed. In this system trains were able to follow each other through the section. The driver of the first train to proceed through the section was shown the staff and then given a ticket to authorise him to proceed. The last train to proceed before a train was due in the opposite direction was then given the staff which was taken through the section to enable trains to run in the opposite direction.



The tickets for use with this system were kept in locked ticket boxes at the signalboxes at each end of the section; the key to these boxes was attached to the staff so that a ticket could not be issued unless the signalman was in possession of the staff. If trains were double headed both drivers would be given tickets and the staff would be carried by the following train. If the next train was to proceed in the opposite direction the leading driver would be given a ticket and the driver of the second engine given the staff.

With the staff and ticket system delays could occur if trains were running late and the staff was at the wrong end of the section. This was overcome when the electric token system was developed. With this system the two boxes at each end of the section had a token instrument capable of holding several interchangeable tokens. The two instruments were electrically interlocked so that if a token was taken from one of the instruments a further token could not be obtained until the token had been replaced in either of the instruments. The signalmen communicate with each other by bell codes which enable a token to be released from one or other of the instruments. Modern token instruments are capable of showing the state of the line would also indicate whether a token had been taken out for an up or a down train and that a tablet was in for the opposing direction. The token instruments were normally kept in the signalbox but at certain rural locations were often in a special room in the station buildings. At any one location the token instruments for the two adjacent sections were different so that they could only accept the correct token for that section. Only the signalmen and the stationmaster were normally the only people allowed to operate the token instruments. When a train arrived at the token station the token had to be inserted in the appropriate instrument before a further token could be removed for that section. The system worked perfectly well as long as the rules were followed but at Abermule on the Cambrian main line an accident occurred due to the mishandling of the tokens. When a down train from Montgomery arrived at Abermule the token was collected from the driver by one of the booking clerks as the stationmaster was at lunch. He then went to the booking office to replace it in the appropriate instrument. On his way he met the stationmaster returning from lunch and he handed him the token. The stationmaster enquired about the whereabouts of the up express from Aberystwyth, which was due to cross the down train at Abermule. The booking lad replied that it was about at Moat Lane from that the stationmaster wrongly assumed that the two trains would be crossing at Newtown the next station to the west. Without inspecting the token the lad had given him he then handed it to the driver of the local train. The points were set and the local train left. Meanwhile a token had already been taken out for the up train which by now had left Newtown, the next station to the west. Thus two trains were now approaching each other on the single line and the inevitable accident resulted in 17 people losing their lives.



In order to avoid the inevitable delays caused by the signalman having to collect, feed the token through the instrument and then obtain a fresh token various ways have been tried to speed up the process. Interlocking block instruments which could only be used to signal trains in one direction at one time or the use of direction levers in the signalbox which only allowed the signals for one direction to be cleared at any one time.