



MINISTRY OF TRANSPORT

RAILWAY ACCIDENTS
REPORT ON THE COLLISION
which occurred on the
7th December, 1946, at
STAFFORD
on the
London, Midland and Scottish
Railway

LONDON: HIS MAJESTY'S STATIONERY OFFICE

1947

FOURPENCE NET

MINISTRY OF TRANSPORT,

Berkeley Square House,

London, W.1.

18th March, 1947.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order of 11th December, 1946, the result of my Inquiry into the accident which occurred at 7.16 p.m. on the 7th December, 1946, at Stafford, on the Trent Valley main line of the London, Midland and Scottish Railway. I was assisted by Brigadier C. A. Langley.

The 4.35 p.m. Local passenger train, Coventry to Stafford was standing on the Down Fast line with the engine opposite Stafford No. 4 Signal Box when it was run into at the rear by the 3.45 p.m. double headed Express passenger train, Euston to Liverpool.

I regret to state that one passenger died in hospital from an illness which was accentuated by the accident, one was taken to hospital and six suffered minor injuries; none of the Company's staff was injured.

The Local train consisted of four screw-coupled bogie coaches of the Company's standard suburban type, having timber bodies on steel underframes with timber headstocks, and a total weight of 92 tons, excluding the engine. It was drawn by No. 2487, Class 4, type 2-6-4, tank engine with left hand drive, weighing 88 tons in working order; the total weight of the train was 180 tons and its total length 83 yards. The brakes were off at the moment of collision.

The Express consisted of 13 corridor bogie coaches, having steel panelled bodies on wood framing with steel underframes, and a total weight, excluding the engine, of 421 tons; all coaches were fitted with the Company's standard shock absorbing buffers and screw couplings, and with the vacuum brake on all wheels. It was drawn by Engine No. 5512, Class 5, type 4-6-0, with 6-wheeled tender, weighing 123 tons in working order, assisted by a pilot Engine No. 5500 of the same class and weight. These engines had left hand drive and were fitted with vacuum brake on coupled and tender wheels. The total weight of engines, tenders and coaches was 667 tons; the combined brake power was 78% of the total weight.

As a result of the collision the Local train was driven forward 90 yards and the rear coach was telescoped for 16 feet by the leading engine of the Express. The second and third coaches of the Local train were also telescoped for about 12 feet. The leading engine of the Express was damaged by the centre longitudinal member of the rear coach of the Local train which penetrated the smoke box, otherwise the Express was virtually undamaged and was not derailed. Slight damage was done to the permanent way and signal fittings:

Fortunately the Local train was lightly loaded and the rear coach was practically empty. Prompt measures were taken to obtain medical assistance and first aid attention was given at the station whilst the two most seriously injured were taken to Stafford Infirmary for treatment.

The night was fine and clear; the rail was dry.

DESCRIPTION

For the four miles northward, from Milford and Brockton to Stafford the Trent Valley line consists of four tracks, in order from East to West, Up Slow, Up Fast, Down Fast, Down Slow. At Stafford No. 1 Signal Box the Birmingham branch from the South West joins the main line, and the tracks for the half mile from there onwards into Stafford Station are, from East to West, Up Loop, Up Fast, Down Fast, Up Slow, Down Slow, No. 1 Down Loop, No. 2 Down Loop. At Stafford the Up and Down Fast lines pass through the station clear of the platform lines.

The gradient of the main line undulates gently for some miles South of Stafford through which it is practically level. Approaching Stafford No. 1 Signal Box the line is on a 32 chain right hand curve but on reaching the Wolverhampton Road overbridge the curvature changes to 196 chains left hand. A clear view is obtained of No. 4 Box Home signals once the engine has passed under the overbridge, except when the view may be obscured by smoke and steam from engines working nearby, as happens fairly often.

A summary of the relevant distances from the point of impact are given below:—

Queensville Down Home Signals	1820 yards South.
Queensville Signal Box	1700 " "
Stafford No. 1 Box Down Home Signals	720 " "
Stafford No. 1 Box	600 " "
Wolverhampton Road Overbridge	425 " "
Stafford No. 4 Down Fast Home Signals	15 " North.
Stafford No. 4 Box	100 " "
Facing points from Down Fast to Platform line	180 " "
Newport Road Overbridge	200 " "
South end Stafford No. 2 Platform	320 " "

The relevant signal boxes controlling movement into Stafford are:—

(a) *Queensville*, on the Up side of the line, The Down Distant signals are 2 aspect colour light all other signals are upper quadrant, with Stafford No. 1 Distant below the Down Home Signals.

"Line Clear" can only be given to the box in rear when the Home signals are at Danger, and these signals can only be pulled off when "Line Clear" has been given by the box ahead. A normal train register is kept at this box.

(b) *Stafford No. 1.* This is a high box on the Down side of the line in the fork between the Birmingham and Trent Valley lines. The Signaller can obtain a good view of approaching Down trains on the main line but the Wolverhampton Road Bridge restricts his view towards Stafford. All the signals are lower quadrant with Stafford No. 4 Down Distant below the Down Home signals.

Two face discs inscribed with the words "DOWN FAST DISTANT OFF" and "DOWN PLATFORM LINE CLEAR" are fitted on the wall above the Down signal levers, and are operated from No. 4 signal box. The Signaller in No. 1 box is not permitted to pull off his Down Fast Distant signal until one of these two discs has dropped. "Line Clear" on the Down lines can only be given to the box in rear when the Home signals are at Danger and the track circuits in rear of them are unoccupied, and these signals can only be lowered when "Line Clear" has been given by the box ahead.

The box is manned by two Signallers controlling Down and Up movements respectively, and a Signal box lad. The passing times only of trains are recorded at this box.

(c) *Stafford No. 4.* This is another high box sited between the Down Fast and Up Slow lines, about 220 yards South of the South end of Stafford No. 2 Down platform. There is a good view of the track and signals to the South, but towards Stafford station the Newport Road overbridge makes it somewhat difficult to see trains standing at the platforms.

All signals are lower quadrant with Stafford No. 5 Down Distant below the Down Home signals. Two face discs similar to those in No. 1 box, but in this case worked by No. 5 box, are fixed above the Down signal levers. The Signaller is permitted to pull his Down Fast Distant signal and lever operating the "Down Fast Distant Off" disc in No. 1 Box only when his own "Down Fast Distant Off" disc drops. The Signaller may pull off his platform Home signal No. 117 and also the lever operating the similar disc in No. 1 Box only when the "Down Platform Line Clear" disc drops. The Down Fast Distant signal can only be pulled for movement along the Down Fast through Stafford Station. "Line Clear" can only be given when Home signals are at Danger.

The box is manned by a Traffic regulator, two Signallers controlling Down and Up movements respectively, and a signal box lad. Passing times of Up freight trains only are recorded in the train register.

A fireman's Call Pillar is provided at the base of each of the Home signal gantries. When its plunger is operated an indicator lettered "Train Waiting at Signal" drops alongside the appropriate block instrument and places or holds it at "Train on Line." When the Signaller places his commutator to "Train on Line," or if it is already at "Train on Line," a bell rings at the pillar to indicate to the Fireman that his message has been correctly transmitted to the box, and that he need not proceed thereto. The circuit is broken when one or other of the levers working the Home signals or Calling-on arm is pulled. This allows the lock on the block commutator to be released by pressing a re-setting knob but the "Train on Line" indication remains until the Signaller turns the commutator back to normal and replaces the drop indicator by hand.

(d) *Stafford No. 5.* This box is at the north end of the station and controls acceptance into the Down platforms and along the Down Fast line through the station.

REPORT

The train preceding the 4.35 p.m. Local from Coventry along the Down Fast line was a Freight train which passed Queensville at about 6.6 p.m. After that the 5.0 p.m. Passenger from Birmingham arrived at Stafford No. 2 Platform, but was cleared a considerable time before the arrival of the Local train, which left Lichfield 7 minutes late and proceeded without incident towards Stafford. Queensville Distant and Home signals were Off, but Stafford No. 1 Distant, under the Queensville Home, was at Caution when the train passed on the Down Fast line at about 7.8 p.m. Stafford No. 1 Down Fast Home was Off, but No. 4 box Distant under it was at Caution. On passing under the overbridge Driver Frost saw that all the Stafford No. 4 signals were at Danger. The night was so clear that he could see the arms as well as the lights even when some distance from the signal gantry.

Frost stopped his train at No. 4 box Home signal at about 7.12 p.m. and sent his Fireman to operate the Fireman's Call Pillar. Fireman Truman plunged the knob several times but could not hear an acknowledging ring, so he returned to his engine and reported this to the Driver, who instructed him to proceed to No. 4 box, some 85 yards ahead and report to the Signaller. Just as Truman was about to proceed to the box the Down Fast signal was pulled off, followed a moment or two later by the clearing of No. 5 box Distant signal which is on the same post. Frost thereupon decided to take his train up to the signal box and find out from the Signaller the reason for being sent along the Down Fast line instead of into No. 2 Platform. He stated that he sounded his whistle and moved his train gently forward, stopping with his engine at the south end of the box. Truman got off the footplate and was walking towards the cabin staircase when the collision took place. He was knocked sideways by the engine as it was driven forward by the impact but, picking himself up, he collected his detonators and ran forward to protect the Up line. On his return he noticed that his engine headlight was out.

Guard Wisbeach was travelling in the rear coach of the train. He was looking out on the offside when approaching Stafford No. 4 box signals and saw them all at Danger. The train stopped at the Home signal and after it had been standing for a minute or two Wisbeach noticed the top signal No. 113 for the Main line was lowered. The train then started again and he crossed over to the near side

of his van and observed the Distant signal come off. When the train stopped near the signal box, Wisbeach looked out again to see what was the matter, because he knew the train had been given the wrong signal. Turning round, he saw the headlights of the Express approaching, whereupon he jumped out of his van and displayed a red light with his hand lamp. He then ran clear and watched the Express, which he noticed was braking hard, crash into the rear of the Local.

The 3.45 p.m. Express was running late. The train Engine No. 5512 was steaming badly and Driver Tagg had asked for assistance at Roade; consequently Engine No. 5500 was put on as pilot at Rugby, with Driver Cooper in charge. Nothing untoward happened until Stafford was reached. When approaching Queensville at about 7.13 p.m. the Distant for Stafford No. 1 was at Caution and Cooper checked his train and passed Queensville box at 25-30 miles an hour; on approaching Stafford No. 1 Box the Home was Off and Stafford No. 4 Box Distant was at Caution but as he approached he noticed No. 4 Box Distant come off. Speed was increased slightly and passing under the overbridge Cooper estimated that it reached about 35 m.p.h. He then saw No. 4 Box Home at Clear with No. 5 Box Distant below it also showing green, and at about the same moment he noticed a tail lamp but thought it was on another road; as he got nearer however he saw also a white hand lamp as though a guard was climbing out of the train. He then saw a flash of green followed by red, and, realising that the guard was signalling to him, he immediately made a full brake application and shut the regulator. Cooper thought his engine was about 300 yards from the obstruction when he realised the position, and that speed at the moment of impact was about 20-25 m.p.h.; he felt the brakes take hold before the impact.

Nothing out of the ordinary occurred at Queensville and Stafford No. 1 boxes during the passage of the Local and Express trains. The Local train was accepted by both boxes and passed on to Stafford No. 4 in the normal way; the "Down Platform Line Clear" disc dropped in No. 1 box and all signals except No. 4 box Distant were at Clear.

At No. 4 Box Signalman Titley was in charge of Up movements and Signalman Baker of Down movements. Baker accepted the Coventry train and asked Titley to "Bell it on" to No. 5 Box for the Down Platform line for him. Titley obtained "Line Clear" and advised Baker who thereupon set the road. The face disc "Down Platform Line Clear" dropped and Baker pulled off his Home signal No. 117. Baker states that about a minute later he thought he had just heard the "Train Entering Section" signal for the Local when he was called to the telephone to speak to No. 1 Box about the 5.55 p.m. Down train from Birmingham. Whilst talking on the telephone he thought he heard a noise as of a train running past the box and he took it for granted that it was the Local train. On finishing his conversation, which he thinks lasted about 2 to 3 minutes, he looked South along the Down main and saw no signs of a train. He then looked towards the Down platform and thought he saw a tail lamp. Assuming this was the Local train he immediately put back his signals to Danger and gave "Train Out of Section" to No. 1 box.

The Express approached Queensville at normal speed running under clear signals from Milford but was checked by No. 1 box Distant signal at Caution. Signalman Phillips of No. 1 box did not get "Line Clear" the first time he offered this train to No. 4, immediately after he had "Out of Section" for the Local, but it was accepted on being offered shortly afterwards. Phillips thereupon pulled off his Home signal, but not the Distant, because the face disc had not yet fallen. Signalman Baker in No. 4 box, having accepted the Express from No. 1 Box, asked No. 5 Box for "Line Clear" but was refused at first because Signalman Wright was passing a shunting movement across to No. 1 Platform. However, shortly afterwards this movement was completed, and at about 7.14 p.m. Wright accepted the Express from Baker who thereupon lowered his Home signal No. 113 and his Distant. No. 5 Box Distant was lowered soon afterwards. About a minute or so after this Baker heard a crash outside his cabin and realised that the Express had collided with the Local train. He therefore gave "Obstruction Danger" signals for the Up and Down fast lines to No. 5 and No. 1 boxes.

Titley was busy at the up end of the box during this time and dealt with two or three train movements. He stated that there was also a good deal of shunting going on in the sidings behind the box.

Both Baker and Titley stated that some trouble had been experienced with the Home signals not coming off fully when the levers were pulled. This usually occurred when the weather changed and was due to temperature variations. Baker thought at first that this might have happened when he lowered his Home signal for the Local, but later agreed that this was unlikely, particularly as there was no indication after the accident that any of the Home signals were not responding to the levers and there had been no abnormal temperature change.

The failure of the Firemen's Call Pillar was traced after the accident to a broken connection on one of the signal levers. The breakage of this connection put the circuit out of action but unfortunately this trouble was not immediately revealed because this type of apparatus operates on the open circuit principle.

CONCLUSION

I think it is clear that responsibility for this accident must rest on Signalman Baker in that he accepted the Express before the Coventry train had actually passed through his section.

I have no reason to doubt Driver Frost's evidence that after passing under Wolverhampton Road overbridge when he first saw Stafford No. 4 signals they were at Danger, nor do I doubt that Baker had previously accepted the Local train and pulled off his Home signal lever No. 117 for it. Since Frost found this signal at Danger it is clear that either the signal failed to obey its lever or Baker had replaced it at Danger *before* the Local arrived within sighting distance of it.

I am satisfied that these signals were working properly ; no complaints had been made about them earlier in the day, the signals were found to be working properly after the accident and there had been no sudden change in temperature. On the other hand Baker, on his own admission, mistakenly replaced signal lever No. 117 to normal before the Local train had passed his box. The evidence suggested that Baker's attention had been distracted by his conversation with No. 1 box and he probably mistook the noise of another movement for the Local train. It seems possible that he was also mistaken in saying that this conversation took place shortly *after* he had " Train entering Section " for the Local. If this had been the case signal No. 117 would almost certainly have been at Clear when Driver Frost sighted it, and it is more probable that the " Train entering Section " signal for the Local rang just before Baker finished his conversation.

Baker, who is 49 years old, has been Signalman for 27 years, of which he has spent the last 7 in Stafford No. 4 Box ; he has a good record.

The failure of the Fireman's Call Pillar was a contributory factor in the circumstances leading to the accident. If this apparatus had worked when plunged by Fireman Truman, it is reasonably certain that Baker would have noticed it, and, assuming he had already accepted the Express, he would still have had time to warn Signalman Phillips at No. 1 Box. If the Fireman's Call Pillar had been worked before Baker had accepted the Express, the indicator would have dropped alongside the block instrument and he could not have given " Line Clear." This apparatus is however of an old fashioned type with an open circuit, and except by actual test a break in the circuit can only be detected by failure in operation ; such operation occurs here in ordinary traffic conditions perhaps two or three times a week. Modern equipments are worked on the closed circuit principle and therefore faults are disclosed as soon as they occur.

It should be appreciated, however, that this apparatus is an aid and not a vital factor in safety ; if the circuit fails, as in this case, the fireman knows that it has failed and has then to go to the box to carry out Rule 55 in the ordinary way, just as he has to do at all the many places where there is neither a Fireman's Call Pillar nor Track Circuit.

It is not possible to say whether the headlight of the Local engine was alight before the accident because the shock of the crash might well have been sufficient to put it out. If the headlamp had been alight when the train came into view of No. 4 box, Baker should have noticed it when he looked out. However, it is more probable that Baker looked out before the Local had come in sight, and therefore it is unlikely that the condition of the engine headlight materially affected the issue.

Driver Frost is clearly free from blame, and Guard Wisbeach took prompt action to warn Driver Cooper, who, I consider, exercised reasonable care on approaching Stafford. Having seen No. 4 Box Distant signal clear as he passed No. 1 box, Cooper naturally expected a clear run through the station. The tail light of the Local, which he saw after passing under Wolverhampton Road Bridge, might at first have been mistaken for a light on an adjacent line. I therefore do not think that Cooper can be criticised for failure to stop his train before the collision.

REMARKS AND RECOMMENDATIONS

I think it is probable that the provision of a track circuit in No. 2 Platform line would have prevented Baker from wrongly imagining that he saw the tail light of the local train at the platform.

The provision of track circuiting on a more extensive scale is very desirable at Stafford, as at many other busy stations, but I cannot think that the circumstances of this accident are such as to justify a recommendation that such work at Stafford should be given a higher place than that already allotted to it in the Company's programme of signalling modernisation and improvement, which has been drawn up after thorough consideration of the conditions at each place and of other relevant factors. Unfortunately, as in other matters, the programme has been much delayed owing to war conditions and is still affected by post-war shortages of material and labour.

The circuits of the Fireman's Call Pillar are at present tested *once a month*, and I suggest that the Company should consider the desirability of more frequent inspections in the case of the older equipments of the open circuit type.

I have the honour to be, Sir,
Your obedient Servant,

A. C. TRENCH,
Colonel.

The Secretary,
Ministry of Transport.