MINISTRY OF TRANSPORT & CIVIL AVIATION

RAILWAY ACCIDENTS

REPORT ON THE COLLISION

which occurred on

20th May 1958

at

ARKLESTON JUNCTION SIGNAL BOX

in the

SCOTTISH REGION BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

TWO SHILLINGS NET

MINISTRY OF TRANSPORT AND CIVIL AVIATION,
Berkeley Square House,
London, W.1.

3rd September 1958.

SIR,

I have the honour to report, for the information of the Minister of Transport and Civil Aviation, in accordance with the Order dated 20th May 1958, the result of my Inquiry into the collision between a passenger train and an engine and brake van which happened at 8.13 a.m. on that day, opposite Arkleston Junction signal box near Paisley, in the Scottish Region, British Railways.

The driver of the engine with van, which was being shunted from one side of the 4-track route to sidings on the other, rashly set his engine in motion without having received authority to do so, and drove it over a crossover into the path of the 7.15 a.m. Up passenger train from Gourock to Glasgow which was travelling under clear signals on the Up Slow line. The collision was almost head-on and the combined speed at impact was probably about 35 m.p.h.

The first two coaches on the passenger train, which was heavily loaded, were telescoped and four compartments in each coach were wrecked. I regret to report that 97 persons were injured, of whom one died the next day; of the remainder, 26 were kept in hospital, the others being discharged after treatment. The driver of the passenger train was not seriously injured and his fireman also escaped comparatively lightly, though he was not able to be present at my Inquiry. The driver and fireman of the engine with van jumped clear just before the collision without serious hurt, but the guard who remained in the van was seriously shaken.

The emergency call for ambulances, doctors, and the Fire Brigade was made very quickly, and it met with an immediate and full response, the first ambulance arriving on the scene within 11 minutes of the time of the collision. In the meantime a number of the local residents had come to the scene to render assistance. All the injured were released from the wrecked coaches and were taken to hospital by 9.10 a.m.

The accident occurred at a time when the morning passenger traffic is heavy, and it caused much dislocation as both the Up lines were blocked and damage to signalling equipment affected the working of the Down lines. The lines were restored to use in stages and normal working was resumed at 8.20 p.m.

The day was fine and clear and the rails were dry.

DESCRIPTION

The trains

1. The passenger train comprised 8 coaches weighing 226 tons drawn by a Class 4 tank engine, with 2–6–4 wheel arrangement, and weighing about 80 tons. The driver's position was on the left, and the engine was travelling chimney first. The length of the train over buffers was 531 ft. and the brake power was 73% of the total weight of 306 tons. The first coach was of old type constructed with panelling partly of wood and partly of steel, on a wood frame with steel underframe. All the other coaches had steel panels on wood frames. Screw couplings were in use throughout.

2. The engine was fairly heavily damaged by the force of the collision, particularly at the front end, and the leading wheels of the bogie were derailed; the bunker plates held firm, however, and prevented the coal from coming forward into the cab. The front compartment of the first coach was crushed against the engine, and the frame of this coach at the rear end slid over the frame of the one behind it, wrecking four compartments in that coach; the end four compartments of the first one also were wrecked. The remaining six coaches were only slightly damaged.

3. The engine drawing the van was a "J" type, with 0–6–0 wheel arrangement, weighing about 85 tons with its 6-wheeled tender; it was proceeding on a scheduled morning trip to Gallowhill sidings. It was fitted with the steam brake with a power of 45% of the total weight, operated by the usual combination brake valve. The driver's position was on the left. The 20 tons verandah type brake van was fitted with the vacuum brake but the hose was not coupled to that of the engine.

4. The engine was heavily damaged at the front end; the cylinder casting was fractured and both cylinder covers were destroyed, and the whole of the buffer beam was separated from the frame of the engine. The force of the impact was such that coal from the tender was carried forward to fill the cab to a height of about 2 ft. The brake van was comparatively undamaged, though the window glasses were broken.

5. The passenger train continued forward for 250 ft. after the impact, and the engine and van, which were not derailed, re-bounded after the impact to a distance of 560 ft. before coming to rest.

The route and signalling

6. The drawing attached shows diagrammatically the arrangement of the lines and the relevant signals, which are all semaphores, and the route followed by the engine and van and the passenger train. It also shows the route set by the signalman for a Down passenger train which had been accepted at the same time; this affected the lie of the facing points over which the engine and van travelled into the path of the passenger train. It will be noted from the diagram that the direction of running changes at the signal box; on the Glasgow side the two Up lines are to the North and the two Down lines to the South, whereas on the Paisley side the direction of running from North to South is Up Slow, Down Slow, Up Fast and Down Fast.

7. On the Glasgow side of Arkleston Junction signal box the lines are in a wide cutting which increases in depth to about 20 ft. at a road overbridge. This has a wide, high, masonry arch which does not in any way obscure the view from the signal box of the five Down line signals on the gantry about 200 yards away, on the far side of the bridge, nor is there any difficulty in seeing the box from an engine standing on the Up Fast line beyond these signals. Towards Paisley the cutting becomes more shallow, and the formation then changes to low bank. The permanent way consists of 95 lbs. bull head rails on wood sleepers, and gradients are negligible. The line is in an easy left handed curve in the Down direction at the site of the accident.

8. The signal box is of usual wooden design, with the working floor at 12 ft. 6 ins. above rail level. It is equipped with a 65 lever frame below an illuminated diagram on which the track circuits are indicated. The block instruments are of Tyers 2-position Caledonian type with the addition of Train on Line indicators, and comprehensive block controls are provided; there are arm and light indicators for all signals which are not in view from the signal box. The next signal box towards Paisley is less than half a mile away and the one towards Glasgow is 2¼ miles distant.

Report

9. There were no unusual circumstances leading up to this accident, nor any failure of equipment which might have conduced to it. Signalman A. Holmes, who was in charge of the Arkleston Junction signal box, said that the engine movement from the Paisley direction to Gallowhill sidings was a regular one, and that it was carried out three to four times a day. He stopped the engine, which was approaching on the Up Slow line, tender leading and propelling the van, at the home signal until a train had passed on the Up Fast line, and then set the usual route from the Up Slow line to the Up Fast via Nos. 50 and 48 points, before lowering the signal. The engine and van passed the box at 8.8 a.m. and stopped on the Up Fast line at the usual place beyond No. 15 coupled points. Holmes then cleared the Up Slow line block and accepted the 7.15 a.m. passenger train from Gourock, which normally runs past Arkleston Junction signal box on this line, Up Slow to Up Slow, at 8.10 a.m., and lowered the signals for it; the Train Entering Section message was received at 8.12 a.m.

10. The return route which the engine with van was to take from the Up Fast line across the Down lines towards Gallowhill sidings, is via Nos. 15, 20 and 27 points; this movement is hand-signalled from the box by the signalman holding steadily a green flag out of the window by day, or showing a green light at night. Holmes was not able to set the route immediately the engine had come to a stand beyond No. 15 points, as the 8.0 a.m. Down train from Glasgow to Gourock was approaching on the Fast line and it was to be given precedence. The route for this train was from the Down Fast line through Nos. 47 and 53 points reversed, to the Down Slow line. Before this route is set the mechanical interlocking in the signal box frame requires that No. 48 points shall be reversed, but there is no interlocking between No. 48 points and No. 50 points, so that when a Down train is signalled Down Fast to Down Slow with No. 48 points reversed, an Up train on the Up Slow line can also be signalled with No. 50 points normal. Holmes accepted the Down train from Glasgow at 8.11 a.m. and was given Train Entering Section for it at the same time. He immediately set the route and cleared signal No. 42 on the gantry which leads from the Down Fast to Down Slow line. The actual position of this signal is above the Up Fast line.

11. The engine and van which had been waiting on the Up Fast line for about 3 minutes, started towards the signal box as soon as signal No. 42 was cleared at about 8.12 a.m., and travelled over No. 48 points which were held reversed by the interlocking, into the path of the Up passenger train. Holmes saw it approaching and put all signals to danger before hastening to the window to wave towards it in order to attract the driver's attention. The engine and van, however, came steadily forward over the crossover route, and collided almost head-on with the passenger train on the lead of the turnout. This train had passed the Up Slow home signal before it was put back to danger. As soon as the collision occurred Holmes acted correctly and promptly in protecting the line and arranging for the relief services.

12. Driver R. Johnston of the passenger train said that he saw, from his position on the left hand side of the engine, the signalman's urgent gestures, and looked forward to see the approaching engine come into his line of sight past the boiler a short distance ahead. He applied the brake immediately. He was bruised but not incapacitated by the shock of the collision, and set about helping the injured as soon as he was satisfied that the lines were being protected. He estimated his speed to have been about 30 to 40 m.p.h.

13. Guard J. Walker, who was in the last coach, noted the severe brake application just before the collision. He handed out tools from his own van and from another in the fourth coach to platelayers and volunteers, to enable them to free the injured, and then protected the lines in rear of the train. He confirmed Driver Johnston's estimate of speed.

14. Passed Fireman S. Murray, who had been in this grade for one year, was in charge of the " J " type engine. He said that he had not previously carried out this shunting movement as a driver, but he had travelled over it a number of times as a fireman, and he knew what he had to do; he also knew that he must wait for a hand signal from the box before his engine could proceed from the Up Fast line over No. 15 points towards the sidings. He added that he could not see the signal box clearly from his position on the left hand side of the engine because the boiler was partly in the way, and he relied therefore on his fireman. Continuing his evidence he said:

> " We ran on to the Up Fast line and stopped clear of the points for coming back from the Up Fast line to the Down Fast line. After standing for two or three minutes in this position my Fireman said to me ' That's right '. When my Fireman said this I tried to give a toot on the

whistle but it did not work properly and made no sound. I looked at the points and saw they were set to take me back towards the Up Slow line and I thought that the signalman wanted me back in clear of the Up Slow home signal so that he could run a passenger train on the Up Fast line. After my engine was moving slowly back towards the Up Slow line I was looking out of the cab on the left side of the engine towards the Signalbox expecting the Signalman to give me a hand signal indicating where I should stop. When within a few yards of the box I saw a train coming towards Arkleston Junction from the direction of Paisley on the Up Slow line. I immediately applied the brake and shouted to the fireman to jump. This he did just before my engine collided heavily with the oncoming engine which was working on a passenger train. Just before the impact I jumped off the left side of the engine."

15. Murray knew that his fireman, Passed Cleaner D. R. Peden. was young and inexperienced, but he did not take any steps to check on the sort of signal which Peden had seen, nor did he try to exchange signals with the guard in the brake van immediately behind his engine, as he should have done in accordance with the Rules. His assumption that his engine was being moved back from the Up Fast to the Up Slow line, when he saw the points ahead of him set for that route, was not based on previous experience; he could not remember making such a movement here before.

16. I questioned Murray further about his statement that he could not see the signal box from the left hand side of the engine when it was standing clear of No. 15 points. I told him that I had made tests on an engine of this class and had found no difficulty in seeing the signal box through the spectacle glass from the driver's position on the left hand side, and that as the engine travelled over the route towards the box, I had found the view forward of the Up Slow line to be excellent; an approaching train on that line could have been seen clearly at a distance of about half a mile. Murray could only reiterate that the view forward was bad and that it was necessary to lean over the steam brake to look out. He could give no other reason for not seeing the passenger train until it was about a coach length away.

17. Passed Cleaner D. R. Peden is 19 years of age; he was passed for firing duties in September, 1956. He did not know the route to Gallowhill sidings and his knowledge of signals is slight. He said:

> " After passing Arkleston Junction we stopped on a line past the overbridge and at the Glasgow side of some signals. Soon after passing, a signal went off and I said ' right mate ' to my Driver. After saying this to my Driver, I put some coal on the fire and the engine moved forward back towards Arkleston Junction. The next I knew was my Driver shouting to me ' jump '. This I did, and jumped off the right hand side of the engine, the Signalbox side."

18. Peden agreed with his driver that the speed of the engine was very slow when he jumped off. He was not hurt and went to help the injured passengers after finding out that his driver had escaped injury.

19. Guard J. Christie who remained in the goods brake van, was shaken and bruised in the accident. He said that he had only just managed to put the tail lamp in position, a job which could be done in under half a minute, before the engine and van started from the Up Fast line. He added that he then assumed that the driver had been given the hand signal from the box, and he did not look out for it himself. This he should have done in accordance with Rule 111 (*b*), the relevant part of which reads as follows:—

> " Where the movement is over points worked, bolted or locked from a signal box or ground frame, and a fixed signal is not provided for the movement, the Guard, Shunter or other person in charge must have an intimation verbally, or by hand signal or other authorised means, from the Signalman . . . that the movement may be made . . . before giving a signal to the Driver to move."

20. Christie's railway service is short, but he had been over the route a number of times and apparently knew what kind of signal to expect before the engine and van moved from the Up Fast line towards the sidings. His evidence was confused, however, and he seemed to be very slow witted. It was difficult to make him understand that he had a clear responsibility in seeing that the proper signal was given before allowing the engine and van to proceed during this shunting movement from the Up Fast line; he insisted that the speed of events had been too much for him.

21. In view of the lack of co-operation between Murray and Christie during the shunting movement I questioned Inspector J. Murphy, Motive Power Depot, Polmadie, on the methods of training of firemen. He assured me that the Rules regarding exchanging signals with the guard were fully dealt with in the Mutual Improvement Classes and in the series of questions which formed part of the examination of these men, and that he looked out for this point amongst many others when studying the behaviour of firemen when they were driving. He said, however, that he did not keep a roster to ensure that he travelled with each recently passed fireman in turn. He relied on the frequency of his footplate inspections to cover all such men.

Conclusion

22. I am satisfied that Driver Johnston of the passenger train was fully alert and that he lost no time in applying the brake. Signalman Holmes also, is in no way to blame for the accident; he performed his duties in proper fashion, and he kept his head and acted very promptly when he saw the wrong movement of the engine.

23. The main responsibility for this accident lies clearly on Passed Fireman S. Murray who accepted the word of his fireman, an inexperienced passed cleaner, that a signal to proceed had been given, and failed

to verify that it was the correct signal and that it applied to his engine. He also omitted to ensure that signals were exchanged with the guard, and it was clear from his evidence that such was his habit. The shunting movement was a somewhat complicated one over four running lines, and he should have been all the more meticulous in his methods of working while carrying it out. I do not blame Passed Cleaner Peden for his mistake, in view of his inexperience.

24. Guard Christie should also have been looking out for the hand signal from the box. As I have said he seemed not to grasp his responsibilities in this respect, and he appeared to lack the mental agility necessary to undertake properly the duties of a guard.

Remarks and Recommendations

25. The movement in which the engine and van was engaged was, in some ways, more difficult than one of a passenger or freight train running in accordance with fixed signals. The driver had first to obey the fixed signal from the Up Slow to the Up Fast line and judge his stop on the Up Fast line clear of No. 15 points; he had then to carry out a reverse movement from this line under the authority of a hand signal given at a distance of some 200 yards, in order to cross two running lines towards the sidings. Such movements are often carried out by junior drivers or passed firemen, assisted by very inexperienced firemen, with junior guards, as they are normally a prelude to shunting work. It is all the more necessary, therefore, that the dual responsibilities of enginemen and guards on these occasions for observing signals should be brought home to junior men, both during teaching and examination, and during footplate supervision. It may be advisable to give more weight to this aspect of instruction for firemen and guards, and I would also suggest that some emphasis might be laid by supervisory staff, when instructing passed firemen, on their responsibilities for setting a good example in correct working to young and inexperienced passed cleaners who so frequently work with them.

26. The movement which the engine with van was carrying out on this occasion is a frequent one, and since it crosses running lines and begins at an appreciable distance from the box, I recommend that a fixed signal should be provided to control it.

I have the honour to be,
Sir,
Your obedient Servant,
W. P. REED,
Colonel.

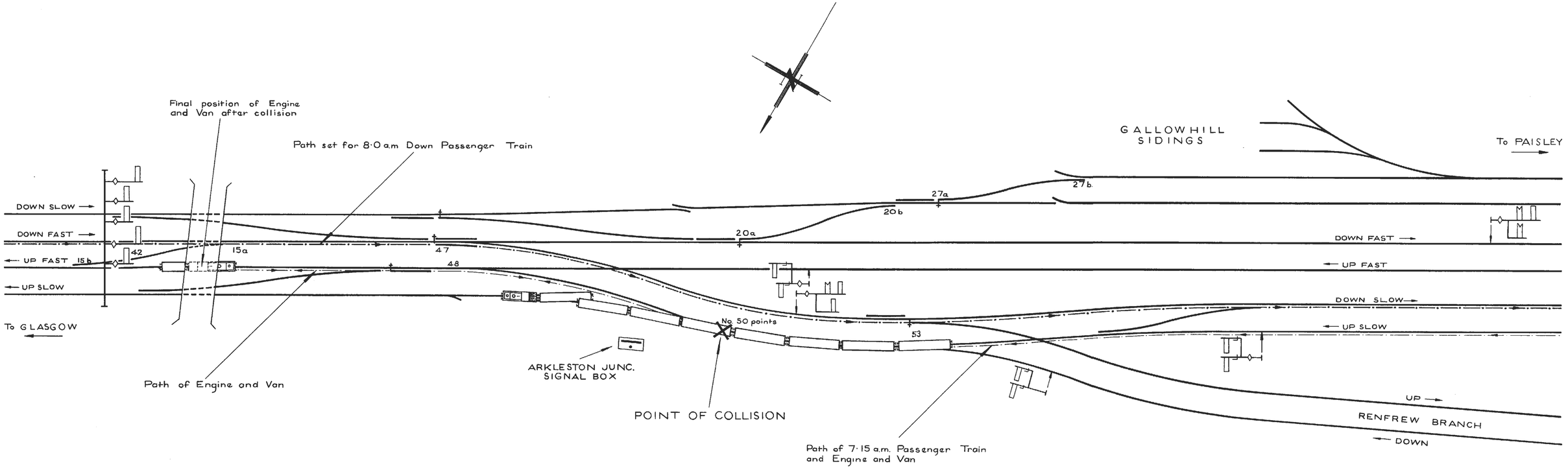
The Secretary,
Ministry of Transport and Civil Aviation.

(86955) Wt. 2884—V169 K8 10/58 D.L.

SCOTTISH REGION

COLLISION AT ARKLESTON JUNC., PAISLEY

20th. MAY, 1958



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