MINISTRY OF TRANSPORT

RAILWAY ACCIDENTS

REPORT ON THE COLLISION

which occurred on

15th October, 1959

at

SMEDLEY VIADUCT SIGNAL BOX
near MANCHESTER

in the

LONDON MIDLAND REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE
1960
THREE SHILLINGS NET

MINISTRY OF TRANSPORT,
BERKELEY SQUARE HOUSE,
LONDON, W.1

18th January 1960

SIR,

I have the honour to report, for the information of the Minister of Transport, in accordance with the Order dated 21st October 1959, the result of my Inquiry into the collision between an engine and a diesel passenger train at about 4.10 p.m. on 15th October 1959 at Smedley Viaduct Signal Box, near Manchester, in the London Midland Region, British Railways.

The engine on the Up Fast line passed the colour light home signal, which was wrongly showing a yellow instead of a red aspect, at moderate speed and collided head-on with the 4.5 p.m. Down diesel train from Manchester (Victoria) to Rochdale which was travelling under clear signals from the branch across its path to the Down Fast line. Trespassers had tampered with the equipment of the Up Fast home signal to make it give the wrong indication: the signalman had failed to set the route ahead of the signal so that the engine could not collide with the diesel train.

Both drivers had time to apply the brakes and to reduce speed before the collision, and the impact was not severe. There were about 40 passengers in the diesel train, three of whom were taken to hospital for treatment but were not detained, and seven were treated for minor injuries at the site. The driver and guard of the diesel train, and the signalman who collapsed from shock after seeing the collision, were also taken to hospital but none was seriously hurt. All four main lines were blocked by the collision, but there was little delay to trains, which were diverted to an alternative route. Normal working was resumed after 4½ hours.

The weather was fine and clear.

DESCRIPTION

The engine and diesel set

1. The engine, which was travelling chimney first, was of power classification 5, with 4-6-0 wheel arrangement. This type of engine is fitted with a 6-wheeled tender, and its weight fully loaded is 126 tons. The brake power is approximately 64% of the weight, and the length over buffers is approximately 64 feet. The driver's position is on the left of the footplate. The engine was not derailed, except the rear wheels of the bogie, and it suffered only minor damage which was confined to the front end.

2. The diesel 2-coach set, which had been built at Messrs. Craven Bros. Ltd. in 1958, had a total length of 121 ft. 4 ins. This type of diesel set is equipped with the vacuum brake on all wheels with a designed braking power of 85% of the weight of 60 tons. Both coaches are motored. The bodies are of welded steel construction, with safety glass in all windows, on steel underframes with shock-absorbing buffers. There is a driving compartment at either end of the set with the driver's position on the left.

3. The front of the leading coach was lifted above its bogie by the collision and the centre pin was sheared, the bogie being forced back about 2 feet; severe damage was caused to the gear box, carden shaft, and brake equipment. The underframe of the coach also was distorted. The driver's compartment was wrecked, the damage being greater on the off side due to the slight angle of collision between the diesel train and the engine. The front windows and the one in the off side driver's door were shattered, but all the other windows including that of the driver's near side door remained intact. This door was flung open by the impact and the driver was thrown out. The second coach was not damaged.

The site

4. Smedley Viaduct is about 1¼ miles from Manchester (Victoria) station on the four-track main line which runs north-eastwards in the Down direction to Oldham and Rochdale. As will be seen from the location plan (Dg. 1), just before the viaduct the main line passes under the double track route from Manchester (Victoria) to Bury. A connection between the two routes, known as the Irk Valley Fork, is controlled at the main line junction from Smedley Viaduct signal box, and at its junction with the Bury line from Irk Valley signal box, ¼ mile away. The signal box on the country side of Smedley Viaduct box is Monsall Lane, ¾ mile away, and the one on the main line on the Manchester side is Cheetham Hill Junction, at about 500 yards distance.

5. The ground rises sharply on the country side of the viaduct, and immediately beyond it the line is in a fairly deep cutting, with brick retaining walls, in a closely built-up area. The cutting extends for about 100 yards before it gives place to a tunnel. The line curves gradually to the right in the Down direction and the gradient is rising at 1 in 113 at the junction, steepening thereafter to 1 in 63 past Monsall Lane box.

6. Dg. No. 2 shows the scene of the collision on the viaduct which is nearly 200 yards long and about 60 feet high where it crosses the River Irk. The Irk Valley Fork makes a double line junction with the Up and Down Slow lines which are to the left of the four-track main route looking towards Manchester; on the country side of the junction there are facing crossovers from the Up Fast to the Up Slow line and from the Down Slow to the Down Fast line on which

the diesel train was travelling when the collision took place. The speed restriction over the points at the junction is 15 m.p.h.

7. The collision caused no damage to the permanent way except a minor distortion of the track, and none to the signalling equipment.

The signalling

8. Smedley Viaduct signal box is supported on a wooden frame which rises from the river bank on the north face of the viaduct. It has a 48 lever frame (16 spare) on an elevated working floor from which the signalman has a good view of the signals on the Manchester side; his view towards Monsall Lane is, however, obscured to some extent by Weber Street bridge which spans the railway immediately beyond the viaduct where the cutting begins.

9. The position of the relevant signals is indicated on Dg. No. 2. They are semaphores, except the Up home signals which were converted to colour lights in 1936 because of the poor view offered to enginemen as their trains come through the tunnel. The colour light signals are fixed above the lines to which they apply on a signal bridge of lattice construction which spans the cutting on the country side of Weber Street bridge. The Up Slow line has separate 3-aspect signals for the fork and for the through line, and the Up Fast line has separate 3-aspect signals for the fork, for the crossover leading to the Up Slow, and for the through line. The two signals for the through lines each have a stand-by auxiliary yellow lamp. Berth track circuits are provided at the signals.

10. The colour light signal aspects are controlled by electric switches linked to weight bars carried on short posts fixed at the top of the Down side retaining wall adjacent to the signal bridge. This arrangement is unusual, but it was a simple way of linking colour light signals to a mechanical signalling system. There are 10 weight bars, weighing 33 lbs. each, worked mechanically by wire; 5 are worked from Smedley Viaduct signal box to control the stop aspects, 3 from Cheetham Hill Junction, and 2 from Irk Valley Junction to control the distant aspects. Dg. No. 3 depicts the group of three weight bars which were tampered with so that the middle weight was supported in the "off" position to cause the through signal for the Up Fast line (No. 6) to show a yellow aspect.

11. The positions of the weight bars are repeated electrically in the respective signal boxes by needle-type indicators, and the signal lights are repeated in Smedley Viaduct signal box, one indicator being provided for the three signals applying to the Up Fast line, and one indicator for the two applying to the Up Slow line.

Block working

12. Three-position block instruments of the Lancashire and Yorkshire type are in use in Smedley Viaduct signal box. The Up home signal levers are released by the "Line Clear (one-pull)" control, and Line Clear cannot be given to Monsall Lane signal box unless the appropriate home signal levers are normal in the frame. The signal aspects are not proved in the Line Clear control. The signal box Instructions forbid the acceptance of Up trains from Monsall Lane under Regulation 5 of the Regulations for Train Signalling which describes the method of acceptance under the Warning Arrangement when the junction in advance of the home signal is blocked. Acceptance under this Regulation is not permitted here because of the steep falling gradient and the short distances from the home signals to the fouling points of the conflicting routes. For similar reasons it is not allowed in the Down direction from Irk Valley signal box. In these two directions, therefore, the line ahead of the home signal must be clear for ¼ mile as laid down in Regulation 4 before a train can be accepted.

Traffic frequency

13. The number of trains which pass the box on a week day while it is open between the hours of 6 a.m. and 11.50 p.m. is about 200; of these only 26 are routed via the Fork. Between 2 p.m. and 7 p.m. there is only one booked Down movement from the Fork to the main line; this is the Down diesel train which was involved in the accident.

Railway security

14. There is much trespass on the railway in this area, especially at the cutting where access to the line is not difficult and where the land on either side is closely built over. The fencing consists for the most part of old sleepers on end with two or more strands of barbed wire at the top, but the walls of back yards of houses, which abut in places on the sleeper palisade, provide an easy means of trespass. Special efforts had been made to prevent trespass on the signal bridge and in the area of the weight bars by additional barbed wire entanglements.

Report

15. Driver R. Jones of the Down diesel train said that he had travelled at the proper speed over the junction under clear signals; the train was about to enter the crossover from the Down Slow to the Down Fast line when he saw the engine on the Up Fast line pass the home signal. He expected it to take the parallel crossover road towards the Up Slow line and the Fork but

then realised that the engine was still on the through line; he made a full application of the brake which, in his opinion, reduced the speed to about 5 or 6 m.p.h. Just before the impact he leaned against the door and was thrown out as it sprung open. He was dazed by a blow on the head but was able to tell the fireman of the engine to look after his passengers before he went to the signal box for attention.

16. Driver S. Taylor of the Up engine said that the through home signal was showing yellow as his engine approached it and he therefore passed it at caution. He saw the diesel train approaching from the Fork but assumed that it would travel on the Down Slow line. He then saw it take the crossover route and applied the brake. After the collision he arranged for his engine to be protected in rear and then went to the signal box where he found members of the Signal Engineering staff with whom he went back to the home signal to point out its yellow aspect. Driver Taylor estimated his speed at collision at 10 m.p.h.

17. Fireman E. Fawcett of the engine confirmed that the home signal was showing yellow, as did Driver J. W. McDermott of another engine which was standing at the home signal on the Up Slow line. Fawcett also saw the signalman waving his arms just before he, Fawcett, saw the diesel train and shouted to his driver.

18. Signal Lineman G. Gleaves arrived at Smedley Viaduct signal box within ten minutes of the accident. He saw that the Up Fast home signal lever No. 6 was normal in the frame but that the weight bar repeater for this signal was in the "OFF" position. He then accompanied Signal Inspector P. Fletcher and Telegraph Inspector B. Palin, who had arrived shortly after him, to inspect the signal. They saw No. 6 signal showing a yellow aspect, and then inspected the group of balance weights and bars for the home signals. The weight bar for this signal was found to be in the off position with the weight resting on a small piece of charred wood which had been placed under it across the weights of the bars on either side (see Dg. No. 3). Mr. Palin confirmed that when the wood was removed the weight descended to the on position and that the signal aspect changed to red.

19. Gleaves mentioned in his evidence that he had often seen children trespassing in this area, though he had not been able to catch them. I was further informed that trespass by children, between 9 and 14 years of age, was prevalent and that they had broken the signal lamps by stone throwing on occasions, though tampering with the signal equipment such as occurred on this occasion had not happened before; a few months previously, however, the sleeper platform on which the weight bars were fixed had been set on fire.

20. B. T. C. Police Inspector R. Plant, who accompanied the Signal Engineering staff to inspect the signal equipment, said that co-operation between the Railway and the City Police was good in dealing with trespass, but that the conditions here made it very difficult to apprehend trespassers, and also that the people who lived in the area were by no means sympathetic when children were involved.

21. Relief Signalman D. Gillson, who had taken duty at Smedley Viaduct signal box at 4 p.m., is 26 years of age and has been a Relief Signalman for 4½ years. He said that he knew the box well; it was one of eight in which he undertook relief duties. He had arrived 9 minutes before his duty time and had found conditions normal. The previous engine on the Up Fast line, before the one involved in the collision, had passed the box at 4.3 p.m., and Gillson said that he saw the repeater for No. 6 signal weight bar return to the "ON" position when he restored the lever. An engine on the Up Slow line was accepted at 4.2 p.m. and was brought to a stand at the home signal by Gillson at about 4.5 or 4.6 p.m. in order to give precedence to the Down diesel train from the Fork. Gillson accepted the Down diesel train at 4.8 p.m. with the route set across the Up and Down Slow and the Up Fast lines to the Down Fast, and obtained Line Clear ahead for it. As a part of the route setting it was necessary for him to set the junction facing points on the Up Slow line towards the Fork. Immediately afterwards, so Gillson said, he accepted an engine on the Up Fast line (the one involved in the collision), but did not again look at No. 6 signal weight bar repeater.

22. Gillson recorded Train Entering Section for the Down diesel train as having been received at 4.9 p.m., but he had not entered the times for the engine on the Up Fast line before he saw it pass the home signal at the same time as the Down diesel train was travelling over the junction. He ran to the window and gesticulated and blew his whistle in an effort to attract the attention of both drivers but without apparent success.

23. The record in Monsall Lane box shows the engine as having been accepted by Smedley Viaduct box at 4.7 p.m. and having passed at 4.8 p.m. This, combined with the fact that the engine could be expected to have taken longer to travel the ¾ mile from Monsall Lane to the point of collision than the diesel train took to travel the ¼ mile from Irk Valley, suggests that Gillson must have accepted the engine before he accepted the Down diesel train, though he insisted that this was not so.

24. Gillson said that he knew that he was not allowed to accept Up trains from Monsall Lane when the route was not clear ahead of the home signal, but explained his alleged mistake by saying that he had freed the lever for the Up Fast points for the crossover to the Up Slow (No. 17) by

putting back the facing point lock lever in the frame (No. 19) and had then pulled this lever again by mistake instead of lever No. 17. When it was pointed out to him that in order to set the route properly both No. 17 and No. 19 should have been pulled as well as two other levers which set the single slip trailing points at the Down Slow line diamond crossing and the trailing points on the Up Slow line, he replied that the interlocking would have prevented him pulling No. 19 after pulling No. 17 unless he had also pulled the other two levers, inferring that it would have been sufficient to have set No. 17 points. His reply was, in fact, incorrect as No. 19 lever can be pulled after No. 17 has been pulled, even when the other two levers are in the frame. Apart from this, however, if No. 17 points had been reversed, the engine would have taken the crossover route and the accident would have been avoided, though the engine would have trailed through the points on the Down Slow line diamond crossing and on the Up Slow line on its way to the Fork via the Junction points on the Up Slow line. When questioned closely Gillson admitted that he should not have considered the line clear for route acceptance until he had set the route properly and had pulled the facing point lock lever No. 19. This route setting would have obstructed the line ahead of the engine on the Up Slow line but it would have been permissible as he had seen that the engine was stationary at the home signal.

25. Assistant District Signalmen's Inspector H. J. Backshall reported that he had last visited Gillson at work on the 4th September. He had watched him on that occasion and on previous occasions, and was satisfied with his method of operating the box. Mr. Backshall made a practice of talking to the signalmen about the conditions of acceptance of trains as it was of such importance, and he found the men generally very willing to discuss these problems and their application to the working of their boxes; he found it not easy, however, to talk to Gillson who seemed to be unable to concentrate on his normal work if distracted in any way. Mr. Backshall thought Gillson to be reliable and hard-working though not outstanding. This opinion was confirmed by Assistant Station Master J. Robinson who added that it was not possible to discuss work with Gillson during his period of duty; he was too excitable.

Conclusions

26. The direct cause of the accident was mischievous interference with signal equipment, probably by children. I have no doubt whatever that the engine on the Up Fast line was fully under control and that Driver Taylor would have stopped it without difficulty at the home signal if it had been at danger. A contributory cause was Signalman Gillson's failure to carry out the Block Regulations governing the acceptance of trains at this junction.

Remarks and Recommendations

27. The exact moment when the tampering with the signal weight bar took place was not discovered. I do not therefore reject Signalman Gillson's evidence that he saw the repeater return to the "ON" position when he replaced the Up Fast home signal lever in the frame after the previous engine passed at about 4.3 p.m., though I think it more likely for the piece of wood to have been placed under the weight when it was raised while the signal lever was in the pulled position to give the signal for that engine than for the weight to have been lifted by hand and for the wood then to have been placed under it.

28. Signalman Gillson's excuse for failing to observe the Block Regulations was that he had meant to set the route for the Up engine by pulling No. 17 point lever but had pulled No. 19 lever by mistake. As I have said, he should have pulled both these levers, and two more, to set the parallel route properly. There appeared to be no general reason such as pressure of work which might have tempted him to curtail the proper sequence of route setting. If, however, he did accept the Up engine with the route set for the through direction *before* accepting the Down diesel train, this might well have been the initial error of judgment which gave rise to an attempt to re-set the route hastily when he was offered the diesel train before he answered the Is Line Clear bell code. He may not have wished to refuse it as he might have been criticised for the delay, since he could have held back the engine at Monsall Lane to let the diesel train pass unchecked over the junction. On the other hand, if he accepted the Up engine *after* the Down diesel train, as he said, there was not even the excuse of haste for his ill-executed attempt to set the route in a manner which, at best, can be described as slipshod.

29. I am satisfied that Gillson knew the Block Regulations and the box Instructions but I feel sure that he cannot have been meticulous in the past in route setting in situations such as arose on this occasion. His actions are a good illustration of the danger that can arise when signalmen curtail the proper box working procedure.

30. I do not think that the Supervising Staff had been remiss in their methods of inspecting signalmen at work, but their evidence, combined with that of Gillson himself, suggests that his promotion to Relief Signalman may have been too rapid, and that his ability was not commensurate with his knowledge of the Rules and Regulations. The Railways have difficulty in retaining men of suitable character and intelligence for the posts of signalmen, and I have no doubt that promotions now take place on this account more quickly than formerly, and that the choice of suitable men is more restricted. The maintenance of quality in the signalmen's cadre is under

close examination in the British Transport Commission and it is to be hoped that ways will be found of retaining the right sort of man for this responsible duty in spite of the competing attractions of Industry.

31. Trespassing on the railway in this area, and mischief by children, can have serious consequences not only to trains as happened in this accident, but also to the children themselves. It is, no doubt, difficult to curb, but I understand that the Education Authorities have responded very well to requests from the Railway that children should be warned against trespass, and I am sure that they will do whatever is possible to teach young people that tampering with the railway is neither brave nor clever, but contemptible. Teaching, however, will only be of limited value unless parents, on whom responsibility lies for their children's behaviour, reinforce it by home discipline.

32. I think, also, that the Railway could perhaps make trespassing rather more difficult by examining their fences and strengthening weak points. I realise that it is not possible to provide fencing that is really unclimbable except at prohibitive cost, but there are places near the Up home signals, where walls of back yards abut on to the sleeper palisade and make scaling comparatively easy, which could be strengthened. I have no doubt that there are other weak spots in the area.

33. The Up home signals are to be repositioned as a part of the modernisation of the East end of Manchester (Victoria) station which is to be put in hand shortly. In the meantime arrangements have been made to convert the existing signals to electrical operation with track circuit controls as a measure to avoid interference by trespassers.

I have the honour to be,

Sir,

Your obedient Servant,

W. P. REED,

Colonel

The Secretary,
Ministry of Transport

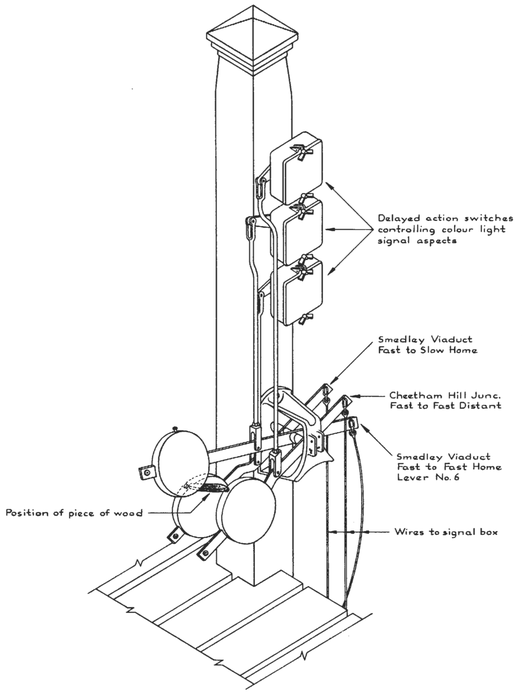
(0326) Wt. 4319—301 K8 3/60 A.O.St.

LONDON MIDLAND REGION

COLLISION AT SMEDLEY VIADUCT

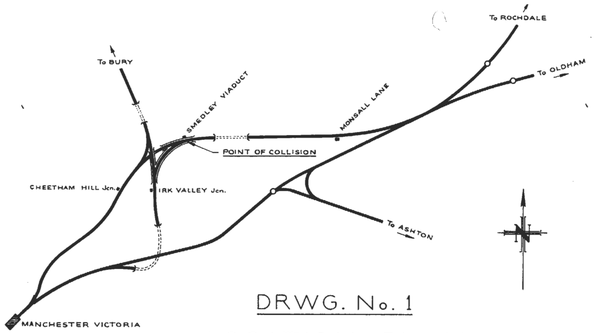
ON

15th. OCTOBER, 1959



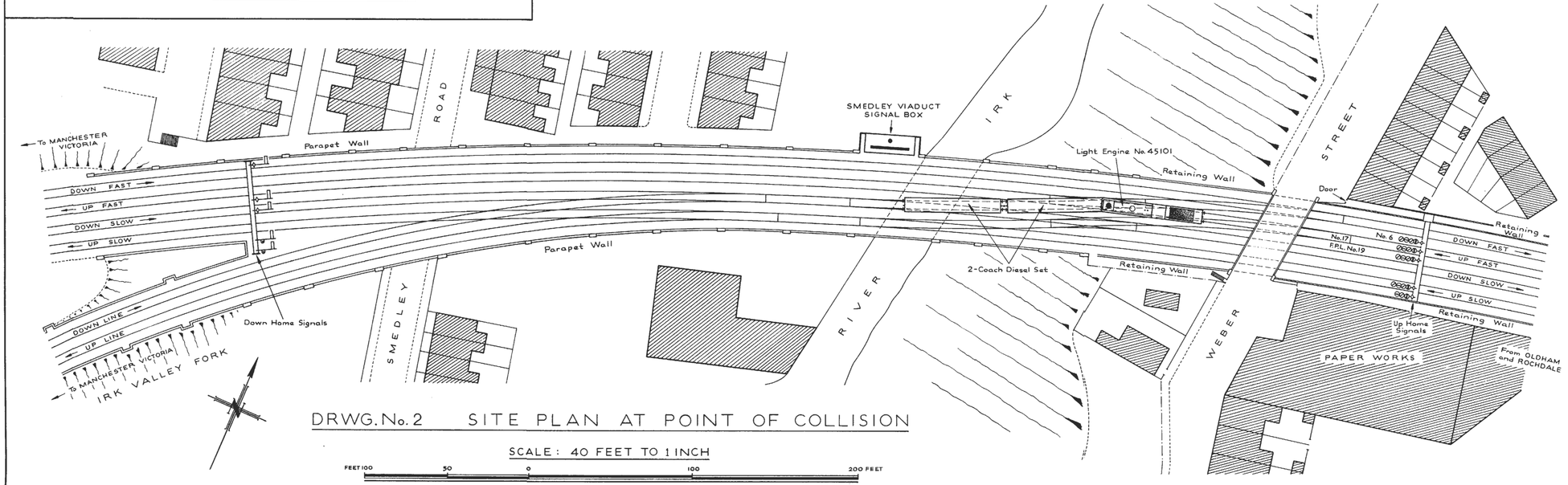
DRWG No. 3

VIEW OF OBSTRUCTION IN WEIGHT BARS



DRWG. No. 1

LOCATION PLAN



DRWG. No. 2 SITE PLAN AT POINT OF COLLISION

SCALE: 40 FEET TO 1 INCH

FEET 100 50 0 100 200 FEET