MINISTRY OF TRANSPORT

RAILWAY ACCIDENT

Report on the Derailment that occurred on 24th February 1965 at Wickford

IN THE

EASTERN REGION

BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE
1965

NINEPENCE NET

MINISTRY OF TRANSPORT,
ST. CHRISTOPHER HOUSE,
SOUTHWARK STREET,
LONDON, S.E.1.
28th June 1965.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order dated 25th February 1965, the result of my Inquiry into the accident that occurred at 10.57 hrs on 24th February at Wickford, in the Eastern Region, British Railways.

The 10.18 hrs Down multiple-unit electric passenger train consisting of eight coaches, from Liverpool Street to Southend (Victoria), became derailed after starting from Wickford owing to the facing points for the single line branch to Southminster being moved under the seventh coach. The signalman had heedlessly manipulated the lever as the train was over the points whilst demonstrating a fault in the electric locking to the signal technician.

The rear bogie of the seventh coach and the eighth coach followed the branch route which runs close to and parallel with the Southend line for about 350 yards, passing safely under the overhead portal electrification structures of the main line which here span all three lines. They were then derailed after damaging the track where the branch begins to diverge, and the seventh coach brought down two portal structures and demolished a slab concrete plate-layer's hut as it was dragged at an angle to the track before the train came to rest. The side of this coach was badly stove in about half-way along its length and the front end of the eighth coach was also damaged by sidelong collision with one of the structures or the hut, but I am glad to say that only two people were hurt, both passengers, and their injuries were minor.

Rescue and relief arrangements were made promptly; re-railing was completed at 18.05 hrs and the main lines were made available for non-electric trains from 06.30 hrs the next day. The Southminster branch was open at 12.05 hrs on that day, and on the main lines electric trains were running at 16.45 hrs.

The weather at the time of the accident was fine.

DESCRIPTION

The train

1. The train was formed of two, four-coach, Outer suburban type electric units of all steel construction (nos. 158 and 221) equipped with the electro-pneumatic and Westinghouse brake, and Buckeye couplings. Its length overall was 530 feet, weight 303 tons, and brake power 77% of this weight. The eighth coach in the direction of motion was a driving trailer second, the seventh a composite trailer, the sixth a motor coach with the guard's position at the rear and the fifth a driving trailer open second. The front four coaches were of similar composition, but in reverse order. The rear four coaches had been built in 1958 and the front four in 1961.

The line

2. Wickford is 29 miles from Liverpool Street Station on the double-track main line running east to Southend, which is electrified on the a.c. overhead system at 6.25 kV. The single line Southminster branch to the north-east, for which the facing points are in the Down line 150 yards on the country side of Wickford station platforms, is not electrified. In addition to the main line platforms there are Up and Down bay platforms at the country end of the station, primarily for the branch line. The Down bay platform is the one most used for this service. Through Wickford the overhead structures are of portal type and the first five portals on the country side of the facing points for the branch line span all three lines where the branch runs alongside the main line at only normal main line spacing. The sixth and subsequent portals span the main tracks only.

3. The main line has 109-lb flat bottom rails on wood sleepers with elastic spike fastenings, and the branch has bullhead rails. The gradient on both routes is rising in the Down direction at 1:100.

4. The signalling at Wickford is operated from a mechanical frame of 36 levers in the signalbox at the country end of the station on the Up side opposite the end of the Down platform. All the points are mechanically operated and there is electrical detection of all facing points. The signals are colour lights and the running lines are fully track circuited. As is usual when colour light signalling with track circuits is added to a mechanical signalling system, the track circuits are used to control the electric locks on the facing point lock levers in addition to their signal aspect control functions. The branch facing points which were involved in the accident are operated by No. 25 lever which, when in the frame, sets the points for the main line. Facing point lock lever No. 23, when reversed, locks No. 25 in both normal and reverse positions and it also operates the lock at the points. It is electrically locked in that position by the occupation of Track Circuit 41. The lock consists of a metal tongue, solenoid operated, which rests in a slot to hold the lever when the solenoid is de-energised. The circuit to this lock is controlled electrically by Track Circuit No. 41 which extends over the length of the facing points and certain other points in the area. If Track Circuit 41 is unoccupied, the electric circuit to the lock is complete except for an economiser switch worked by the first six inches of lever movement through the frame. The signalman frees the electric lock on lever No. 23 when the lever is otherwise free to move by moving the lever that short distance and waiting a moment for the energised solenoid to lift the tongue. The lever can then be put back in the frame. Lever No. 25 also has an electric lock controlled by Track circuit 41 in the same way as the one on Lever No. 23.

5. The Down starting signals from Wickford Down main platform are No. 8 for the main line and No. 9 for the branch. From the Down bay platform the starting signal is No. 6 with a two-way route indicator illuminated automatically for the appropriate route in accordance with the lie of the points. The mechanical and electrical inter-locking between these signal levers and the point and point lock levers on the route ahead are conventional and to the same general system as described above for Nos. 25 and 23 lever where appropriate. In particular No. 8 lever cannot be pulled unless No. 25 lever is normal, No. 23 lever reversed and the route ahead clear, as well as other signal and point levers for conflicting and converging routes properly set. When reversed, lever No. 8 locks lever No. 23 reversed.

Summary of Events and of Evidence

6. The train started from the station normally and neither the driver nor the guard, who was in the sixth coach, noticed that the rear bogies of the seventh coach and the eighth coach had taken the route to the branch. The train travelled with the seventh coach straddling the two tracks for the 350 yards to the point where the Southminster Branch begins to diverge from the main line, whence the diagonal pull of the seventh coach began to drag the branch line towards the main. The branch line eventually broke at an insulated fish plate joint about 90 yards ahead of the first sign of slewing. As it passed over this length the side of the coach struck the first portal stanchion between the main and branch routes, bringing down the overhead wires. As the train travelled forward the coach demolished the permanent way hut close to where the branch line broke and brought down the next portal structure ahead. By this time it and the eighth coach behind had returned more or less into line with the rest of the train ahead and both coaches were upright in the cess when the train stopped. The total distance travelled by the train from where the rear bogie of the seventh coach took the wrong route was approximately 530 yards; this was some 200 yards beyond where the seventh coach began to distort the branch line and 110 yards beyond where it collided with the first portal structure.

7. The circuit breakers for the overhead power supply on both sides of the accident area tripped immediately; those at Ramsden Bellhouse feeder station were reclosed at once but tripped again; and thereafter the overhead lines were kept dead until repairs had been completed.

8. *Guard A. L. Savage* said that the departure seemed normal until he heard a loud bang overhead. He opened the window, looked out, saw that the last two coaches were derailed, and pulled the brake handle. The train then seemed to stop very suddenly. He said that the overhead wires were down between the two tracks so he ran along the cess to meet the driver, he then returned along the Up line to the Up Home signal whence he telephoned the signalman. When asked whether he had specifically asked for the current to be cut off he said he had not because he had been given to understand that when wires came down the current was always automatically cut off.

9. *Driver W. R. Miles* said that he started the train slowly from Wickford as there was a temporary speed restriction of 20 m.p.h. over a bridge at the country end of the station. As soon as the train was clear of this he opened the controller. He noticed a drag on the train and shut the controller and at the same time saw the overhead wire in front of the train sagging, so he made an emergency brake application. After securing the train and speaking to the guard, he went forward to protect the Up line. On his way back he telephoned the signalman from Wick Lane level crossing gatehouse to tell him what he had done.

10. *Signalman J. E. Milton* was on duty in the signalbox at the time of the accident. He was one of the regular signalmen and had worked in the box since October 1962. He said that when he took duty at 06.00 hours, the night turn signalman told him that he had been informed by the afternoon turn man that he could move lever No. 23 with Track Circuit 41 occupied. Milton was not quite sure about the nature of the fault and thought it might be what he called a "lazy track" (a slow acting track circuit relay). He did not enter it in the Train Register nor did he telephone the maintenance staff about it. At about 10.50 hrs he saw Technician Barnett and called him into the box to tell him about the fault and, as he said, on impulse decided to demonstrate what was happening. At that time he had cleared the signal for the Southend train and was waiting for it to leave so that he could set up the route for a train standing in the station bay platform to go to the Southminster branch. This train was due to leave as soon as the Southend train had cleared the junction. As the Southend train was moving out he restored the starting signal lever and tested No. 23 lever. It should have been held by the electric lock but was free so, without thought, he restored the lever in the frame and then reversed No. 25 lever while the train was still over the points, which was what he intended to do to set the route for the Southminster train after the Southend train had cleared the junction. Milton had not thought the failure to be of so serious a nature that he should use a lever collar on lever No. 23 as a reminder.

11. *Signalman K. D. Youngs*, who was on the turn before Milton, had only been at Wickford box since the beginning of January. He said that he had been told by the afternoon turn signalman when he relieved him that No. 23 facing point lock lever could be pulled when Track Circuit 41 indicator showed a light (to show that the track circuit was occupied) and that the afternoon turn man had reported it to the maintenance staff at Southend. He did not think of entering the fault in the Train Register and did not presume to test the electric lock on the lever during his turn of duty. He said, however, that he was satisfied that the mechanical interlocking between it and the signal gave adequate safety.

12. *Signalman R. C. Petchey*, who was on duty before Youngs, has been at Wickford for over four years. He said that he found the fault while he was waiting to set the route for a Down train to Southminster after a Southend train had passed at 20.02 hrs. He was feeling lever No. 23 and noticed that the electric lock was not holding it though Track Circuit 41 indicator still showed occupied. He felt some concern and as soon as possible tried lever No. 14 which is similarly held by a track circuit lock controlled from Track Circuit 41 and found the same fault in it. He thereupon telephoned the Southend maintenance

staff to say what was wrong. As no one had arrived to put things right by the time he had finished duty at 22.00 hrs, he informed his reliever, Youngs. He agreed that he was wrong in not entering the fault in the Train Register.

13. When questioned about what he had said to the signal maintenance staff at Southend, Petchey said he thought he had made the nature of the fault clear, and added that he considered the responsibility thereafter lay with the maintenance staff in deciding how urgent it was to carry out repairs.

14. *Relief Signalman J. Van-Eyk* said that two days before the accident, when he was on duty in Wickford box, he had noticed the electric lock on lever 14 released when by accident he closed the economiser switch while Track Circuit 41 was still occupied. The economiser switch for this lever is closed by the signalman depressing a foot plunger and not by the preliminary movement of the lever. He had put his foot on the plunger by accident when working another lever and had heard the lock release. He had not paid much attention to it at the time as he had not wanted to work the lever, but recollected it after the accident.

15. *Technician R. W. Murfitt* received the telephone call at Southend from Petchey. He said that Petchey was vague about the fault and talked about "having a small query" about Track Circuit 41 and the lock bar. He thought Petchey wanted to find out something about the controls or the length of the track circuit and did not gather that there was an electric locking fault. He was emphatic that if he had been given to understand that there was such a fault he would have gone at once to Wickford to look into it. He could have done so without difficulty as there were no other emergencies at that time.

16. *Technician A. Barnett* was visiting Wickford when Milton called him into the box to show him the faulty lock on lever No. 23. He had not been sent there to carry out any special task. He said:—

> "I went into the box and I then told him if what he said was true I would fetch the lineman to assist me in investigating the matter further. I got halfway out of the box and the signalman then said 'Wait here a moment and I will show you exactly what's happening'. He grasped 23 lever and placed it back in the normal position in the frame. Following that he pulled 25 points."

17. Barnett said he did not expect lever No. 23 to be free with Track Circuit 41 occupied and he had no time to stop the signalman when he reversed No. 25 after restoring No. 23 into the frame. Barnett was not clear how he would have carried out the test on lever 23 in the proper way but said he would have called the lineman to supervise him.

Circuit Tests

18. *Mr. P. A. Langley, Assistant Signal Engineer (General)* said that after the accident, circuit tests were made and an insulation fault in the wiring was discovered. This was in the emergency plunger release for the electric lock. This is a sealed release which can be used by the signalman with certain precautions to free the electric lock if, through some fault in the circuit, the lock cannot be freed through the normal process when the track circuit is clear. Five wires are led into the back of the release instrument through a small orifice, and the insulation between two of these had broken down in the course of time as a result of the wiring being compressed when the instrument was fixed, so that an independent feed was applied to bridge the break in the circuit which the track circuit relay provides when the track circuit is occupied.

Conclusions and Remarks

19. The cause of this accident is clear. Signalman Milton freed the mechanical locking on the points lever and changed the points as the train was passing over them. Before he could move the points lever he had to restore the starting signal lever No. 8 and the point lock lever No. 23. He should not have restored the signal lever until the rear of the train had passed clear of the junction points; this is laid down in Rule 68a(i) of the Rule Book. After this initial mistake and his subsequent improper movement of lever No. 23 past the electric lock to demonstrate the fault, force of habit must have led him to restore it fully. He must have then forgotten momentarily about the Southend train and moved ahead in his mind to his next task which was to set the route for the Southminster train. He had no right to demonstrate the faulty lock on No. 23 lever while the train was on the track circuit, and his action in moving No. 25 lever was impulsive and unthinking. I am glad for his sake that the consequences were not more serious.

20. I have no reason to doubt that Technician Murfitt was not given a clear idea of the nature of the fault on the evening before the accident and that if he had been he would have gone to investigate it. The indication of the fault was not very positive and a signalman might have some doubt as to his correct interpretation of it, especially since there should be no cause whatsoever to test this particular electric lock in ordinary signalbox working. I can appreciate that in spite of what he told me, Signalman Petchey may have been diffident in describing it on the telephone.

21. Faults of this nature are uncommon; after it was discovered the Chief Signal and Telecommunications Engineer, Eastern Region, gave instructions that the wiring to all similar sealed releases be specially examined to ensure that the insulation was intact.

I have the honour to be,

Sir,

Your obedient Servant,

W. P. REED.

Colonel.

The Secretary,

Ministry of Transport.

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