

SOUTHERN RAILWAY.

Ministry of Transport,
7, Whitehall Gardens,
London, S.W. 1.

18th August, 1925.

SIR,

I have the honour to report, for the information of the Minister of Transport, in accordance with the Order of the 5th August, the result of my Inquiry into the circumstances of three buffer-stop collisions which occurred at Guildford Station on the Southern Railway on July 16th, 23rd and 31st.

These collisions were all of a minor character, and the personal injuries were slight, two passengers complaining of injury in the case on the 23rd and also in that on the 31st. There were no personal injuries on the first of the three dates.

The material damage was also slight. On the 16th July the fishplate bolts in the running rail adjacent to the buffer stop were broken and the stops displaced laterally to the extent of about 15 ins. In the case on the 23rd the attachment between the buffer stops and the rail was parted, and the stops tilted slightly backwards. On the 31st there was no material damage.

The trains concerned in all three cases were electrically operated, the formation being as follows:—

July 16th—3-coach unit No. 92, motor—trailer—motor.

2-coach trailer unit No. 37.

3-coach unit No. 60, motor—trailer—motor. Total 8 coaches.

July 23rd—3-coach unit No. 1246, motor—trailer—motor.

2-coach trailer unit No. 1014.

3-coach unit No. 1295, motor—trailer—motor. Total 8 coaches.

July 31st—3-coach unit No. 1300, motor—trailer—motor.

These trains formed respectively the 7.11 a.m., 7.51 a.m. and the 11.11 a.m. from Waterloo, and the accidents occurred at 8.5 a.m., 8.45 a.m. and 12.3 p.m.

Of the units concerned, Nos. 92, 37, 1014, 1295 and 1300 were new, and were brought into operation only on the 12th July. The remainder were of the older type such as have been in operation on the suburban electrified area of the London and South Western and Southern Railways for some years past.

The lengths and weights of the units are as follows:—

New stock—3-coach unit—length 181 ft. 8 ins., weight 105 tons 13 cwt.

2-coach trailer unit—length 115 ft. 2 ins., weight 51 tons 3 cwt.

Old stock—3-coach unit—length 159 ft. 1 in., weight 95 tons.

The trains were fitted with the Westinghouse brake operating blocks on all wheels.

Description.

The bay road at Guildford, on which these buffer stop collisions took place, is on the east side of the Station, and is laid alongside and east of a northerly extension of the down Cobham platform.

There is a trailing connection (radius 10 chains) from the bay road to the up Cobham line north of the station, with a through crossing over the down Cobham line, from which access to the bay road is provided by a facing slip connection (radius 8½ chains).

There is a two-post bracket down home signal, the post on the left carrying the signals (a running arm and a calling-on arm) for entry into the bay road. The calling-on arm is automatically selected when the bay road is occupied, the signal into a clear road being given by the running arm. Adjacent to this two-post bracket signal is a road over-bridge.

The total length of the bay platform line, from buffer stops to the top of the platform ramp at the north end, is 512 feet. The distances from the buffer stops to the other points concerned in the case are as follows:—

Facing slip points on down Cobham line leading to bay road—274 yards north.

Down inner home bracket signal—502 yards north.

The bay road is laid on a falling gradient of 1 in 660 towards the buffer stops, and the alignment is practically straight.

The buffer stops at the terminal end of the bay road are of the built-up bent rail type, with buffer beam, to which are attached two solid wooden blocks.

Report.

The bay road at Guildford where these three collisions occurred is a new one, having only been brought into use on July 12th last when the various extensions of electrically-operated suburban services were opened for traffic.

In none of the three cases does there appear from the evidence to have been any unusual features, either in regard to the behaviour of the equipment or the circumstances generally, on the outward run from Waterloo prior to the arrival of each train at Guildford.

On the 16th July the train was driven by motorman Nicholson, and the bay road was unoccupied. He had no reason to anticipate a collision as he ran up to the terminus, and made what he thought would be a satisfactory stop. Nicholson was indeed taken completely by surprise when he saw what had occurred, and could only account for the accident by his comparatively short experience of the Westinghouse brake and of its exact effect on the control of the train. He had no reason to question the efficiency or behaviour generally of the brake equipment. Neither he nor his guard, Sherwin, felt anything of the impact of collision, and Sherwin, in fact, did not know that it had taken place until he was subsequently told by the motorman.

On the 23rd the train was driven by motorman Taylor. After first reducing speed before approaching the bay road, which was unoccupied, Taylor, as he reached the end of the platform, made a further slight brake application by reducing his air pressure to the extent of some 5 lbs., intending to allow the train to run in with this amount of brake control still operative. As he neared the terminus, however, the effect of the brake application which he had made appeared to become progressively less. As soon as he realised this state of affairs he at once made a full application, too late, however, to prevent the collision. On thinking the matter over subsequently, Taylor came to the conclusion that after making the partial application he must have inadvertently pushed the brake handle past the "holding" position towards the "release" position sufficiently far to bring the brake release into operation. His explanation is a very probable one, and the release in these circumstances would be so gradual that the sound of the air escape would not easily be audible; and moreover, it would be some little time before the diminishing retardation of the train would be apparent. In regard to the general condition of the equipment, Taylor said that the brake was a particularly good one, and his intermediate stops, of which there are 10 on this run, were made with satisfactory accuracy.

In the last of the three cases, on July 31st, the train was again driven by motorman Nicholson. The circumstances were, however, different, in that it was composed of a single 3-coach unit and the bay road was occupied by a 5-coach train. The necessary warning of this platform occupation was given by the lowering of the calling-on arm under the home signal, after the train had practically come to a stand, and Nicholson saw the standing train sufficiently well to realise that it consisted of five coaches, as soon as he passed the bridge near the signal. Although there is ample room at the platform for eight coaches the margin is not very great, and it is therefore natural that the driver of a 3-coach train should approach the bay road in these conditions with caution. Motorman Nicholson in fact did so, and made a considerable brake application before reaching the platform. He quickly realised that this application, if maintained, would result in his train stopping two or three coach lengths too soon, and therefore released the brake. The rapidity with which this release took effect was somewhat unexpected, and his final application was therefore just too late to avoid a slight collision with the standing coaches. The rail was greasy at the time and the driving window somewhat obscured by light rain. In giving this information Nicholson was particularly anxious not to put it forward as an excuse, saying that he should have taken the conditions into account in handling the train.

Conclusion.

The evidence clearly establishes the following conclusions:—

(1) The collisions were not due to any defect in the brake equipment of the units concerned.

(2) Though all three cases were slightly different in detail, the eventual cause of each was the same; that is, a comparatively short experience of the Westinghouse brake and of the finer shades of control necessary for terminal working. Both men are ex-steam drivers of long experience with the vacuum brake, and except for their period of training have had no previous experience of the type of brake used in this stock. Both men began regular driving of electric trains only on July 12th.

In the case on the 16th the result was due merely to lack of experience in the degree of control exercised by the brake equipment. In the second case, on the 23rd, the control was upset by the placing of the brake handle in a slightly different position from that intended, an error which experience will automatically correct. In the third case, on the 31st, the motorman was obviously misled by the rapidity of the brake release as compared with the type to which he was accustomed.

Both motormen were agreed that there is nothing in the conditions which makes the handling of trains into this bay road more difficult than is the case at any other terminal station, and Nicholson added that, as far as driving is concerned, the platform line is to all intents and purposes level. The fact that these collisions all occurred at Guildford would therefore appear to have been merely a coincidence. It is, however, possible that the effect of approaching the terminus over the $8\frac{1}{2}$ chains radius facing turnout may be to necessitate a rather greater intricacy of brake control—particularly when the major part of the platform is occupied—than is required at most of the other terminal stations into which these men work.

Both motormen appear to have been adequately trained, and said that when they began this working they were fully confident of their ability to handle the trains. Their evidence was both candid and helpful, and it is satisfactory to note that they made no suggestion of any defect in the brake equipment on either the old or the new stock, the control of both of which was, in their opinion, equally satisfactory.

The collisions were all of a minor character and of the type which further experience of this type of brake, only to be gained under practical driving conditions, will tend to eliminate.

I have the honour to be, Sir,

Your obedient Servant,

G. L. HALL,

Major.

The Secretary,
Ministry of Transport.