MINISTRY OF TRANSPORT & CIVIL AVIATION

RAILWAY ACCIDENTS

REPORT ON THE ACCIDENT
which occurred on
20th April 1955
near
DUNSTABLE
in the
LONDON MIDLAND REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE
1955
SIXPENCE NET
(Reprinted 1956)
I have the honour to report for the information of the Minister of Transport and Civil Aviation, in accordance with the Order dated 22nd April, 1955, the result of my Inquiry into the accident which occurred at about 8-40 a.m. on 20th April, 1955, near Dunstable, on the branch line between Luton and Leighton Buzzard, in the London Midland Region, British Railways.

The 8-30 a.m. "push and pull" train from Luton (Bute Street) to Leighton Buzzard was approaching Dunstable Town station when a fierce "blow back" occurred from the fire and the cab became enveloped in flames. The driver and fireman were forced off the engine and the train ran on for a distance of nearly 2 miles through Dunstable Town and Dunstable North stations, at both of which it was booked to stop. It ran through the gates of a public level crossing just beyond the latter station before being brought to a halt 160 yards further on by the guard applying the vacuum brake. I regret to report that the fireman, L. Capp, died from the injuries he sustained. The driver suffered from shock and burns and I was unable to interview him for some time.

The weather was fine.

REPORT

The line from Luton (Bute St.) to Leighton Buzzard runs in a westerly direction; it is single between Luton West box and Dunstable North and double from there onwards.

The approximate relevant distances from Luton (Bute St.) are as follows:

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luton West signal box</td>
<td>½ mile</td>
</tr>
<tr>
<td>Chaul End Crossing</td>
<td>2 miles</td>
</tr>
<tr>
<td>Blow back occurred</td>
<td>3½ &quot;</td>
</tr>
<tr>
<td>Dunstable Town station</td>
<td>4½ &quot;</td>
</tr>
<tr>
<td>Dunstable North station</td>
<td>5½ &quot;</td>
</tr>
<tr>
<td>Point where train stopped</td>
<td>5½ &quot;</td>
</tr>
<tr>
<td>Leighton Buzzard</td>
<td>12 &quot;</td>
</tr>
</tbody>
</table>

From Luton West to Chaul End Crossing the line is on a rising gradient and, generally, it continues to rise for a further 1½ miles, mainly at about 1 in 90 but the last 200 yards or so is at 1 in 46. It then falls slightly before rising again, at 1 in 14, to the summit just beyond which the blow back occurred. From the summit there is a falling gradient nearly to Dunstable Town and again for about ½ mile beyond the station. It is then more or less level through and for some way beyond Dunstable North. The line is mainly curved, and there are no tunnels or overbridges near the summit where the line is in shallow cutting in open country. The point where the driver was picked up almost unconscious was on the north side of the line 250 yards beyond the summit and the fireman was found on the other side of the line 120 yards further on.

There are points and crossings in the main line on each side of Dunstable Town station. There are also three connections to goods sidings on the Luton side of the North station, one of which is 650 yards from the station. On the same side but slightly further from the station there is a bridge over the line known as Dog Kennel Bridge.

The train provides a shuttle service between Luton and Leighton Buzzard and when the accident occurred it consisted of an engine, two coaches and a fish van, in that order; the van was to be detached at Dunstable North. At the trailing end of the rear coach there is a driving compartment for use by the driver when the train is travelling from Leighton Buzzard to Luton. It has a communicating door to the adjacent baggage and parcels compartment which also has a door, with windows, on either side, and two other windows.

The engine was No. 41222, a class 2 M.T. Tank with 2-6-2 wheel arrangement. It was running bunker leading as it hauled the train. This class of engine is driven from the left hand side and so in the direction of travel the driver was on the right of the cab. The engine is fitted with a vacuum operated steam brake. The blower valve handle is centrally above the fire hole door which is of the twin sliding type.
The train which was driven by Driver A. Burchett left Luton (Bute St.) on time. After travelling slowly past Luton West box he opened the regulator and set the reversing lever at 25% cut off. He said that the fireman put coal on the fire after passing the box and he thought that, after firing, the fireman closed the fire hole door. At the top of the 1 in 46 gradient the speed was about 30 m.p.h. and Burchett set the reversing lever at 15% cut off, but he kept the regulator open until after passing the summit. He was about to shut it when the fireman came across the footplate to speak to him. Burchett told him to open the blower valve and received the reply that it was open, so he then closed the regulator. Almost immediately the cab became enveloped in flames. He said that he was forced back to the door and that he had no chance to get to the brake handle and apply it. He could not see the fireman on account of the flames. He did not recollect opening the cab door, which was shut, and the last thing he could remember until he regained consciousness in a private house was that flames were burning his face.

Burchett recalled that when firing after passing Luton West, the fireman had, as usual, put on about twelve shovels of coal. He had not put on any more after that, and would probably not have looked at the fire again until after leaving Dunstable North. Burchett said that he normally kept the blower valve slightly open when the engine was running.

Porter Guard R. Hardy was travelling in the rear driving compartment when the train left Luton. He said that after passing Chaul End he went into the adjacent compartment to check some 40 parcels. When he returned to the driving compartment he realised that the train was approaching Dunstable North, having run through the Town station without stopping. He applied the vacuum brake slightly with the idea of attracting the attention of the driver, but he soon appreciated the fact that the train was travelling too fast to stop at the North station and he then made a full application. He thought he made the first application after passing Dog Kennel Bridge but before reaching the goods line connections, and the full application some 50 yards before reaching the platform. He estimated that at that time the train was travelling at not less than 30 m.p.h. but certainly not as much as 45 m.p.h. After the train had stopped Hardy went to the engine and found no one on it. He said that he did not notice that the train had run through the Town station because he was too busy sorting parcels.

The signalman at Dunstable North thought that the train was travelling at 35-40 m.p.h. when it was approaching the box which is West of the station.

Two local residents, Mr. J. A. Fulcher and Mr. M. Szucha, were on the north side of the line not far from the summit and saw the train pass. Mr. Fulcher said it was going faster than usual and that flames and sparks were coming from the engine; he saw someone (the driver) fall off the engine and he went to assist him. Mr. Szucha thought the engine was on fire as it was full of flames. He also went to help the driver, and both men took him to a private house. Mr. Szucha arranged for an ambulance to be called.

Driver C. H. Howe was on another engine in Dunstable North and was asked at about 8-30 a.m. to go to the engine of the 8-30 a.m. train. He realised at once from the scorched condition of various parts of the footplate that a blow back had occurred, and he made a careful examination of the position of the controls etc. He found one injector was on and that the boiler was full; the regulator was shut and the reversing lever notched up to about 30° cut off; the fire hole door was open about 2 inches (he agreed later it might have been slightly more) and the fire was level and bright, in fact he was able to take the engine through to Leighton Buzzard without having to put on more coal; the blower valve was slightly open, just enough to draw the fire when the engine was stationary; the single damper, at the front end of the ashpan (trailing in the direction the engine was travelling), was open. There were no pieces of burnt coal on the footplate, but there was about 4 cwt. small coal from the bunker which looked to him quite normal. The cab door on the right hand side in the direction of travel was open and the other was shut.

Howe had a good look all round the engine and said that it appeared to be in good condition. He set the train back into Dunstable North station and then worked it forward to Leighton Buzzard without incident.

I made a very careful examination of the engine soon after the occurrence in company with Mr. E. H. Baker, Divisional Motive Power Superintendent, Crewe. It had only recently undergone a general repair in the workshops, and it was found to be in excellent condition. The blower was in good working order and no defect at all could be seen that could have accounted for the blow back. The remainder of the coal in the bunker and from the wagon from which it was unloaded was examined and no foreign matter was found.
There was no defect in the engine nor was there anything to suggest that any mining explosive had found its way into the coal and this blow back most probably occurred because the steam blower valve had not been properly opened before the regulator was shut. The excessive amount of coal evidently put on the fire soon after leaving Luton may also have been a contributory factor. Every driver and fireman is taught to open the blower before the regulator is shut, and it becomes part of their regular routine to do so. Instructions have also been issued from time to time impressing on them the importance of carrying out this simple rule and in August, 1954, stress was laid on the fact that the valve must be opened to the full extent.

The guard cannot be commended for alertness. He had worked on the section for over six years and I find it difficult to understand how he failed to notice, even while he was sorting parcels, that the train did not stop at Dunstable Town. As mentioned earlier there are points and crossings in the main line on both sides of the station. The train must also have been travelling considerably faster than usual. If it is correct that he made the full brake application just before reaching the North station, as he said, calculations show that the speed was then nearly 45 m.p.h.

**Remarks**

Blow backs do occur in steam locomotives from time to time. In 1953 twenty-three cases, which were not caused by an engine defect, were reported and they resulted in 26 enginemen receiving injuries. In 1954 the number of occurrences and of injuries were the same and there was also one fatal casualty. There have previously been cases when the flames have forced both the driver and fireman off the footplate. The real cause of blow backs is somewhat obscure, but it is known that they are more likely to occur if the blower valve is not opened before the regulator is closed and that more frequently they take place in tunnels. It is thought that rows of high trees along the line may help to set up suitable conditions.

In this particular case the blow back was exceptionally violent. It did not however occur in a tunnel and there were no lineside physical features which might have contributed. The blower valve also was open sufficiently to cause a slight draught through the tubes and up the chimney. In these circumstances it seems that there may have been a "slow explosion" of the unburnt gases in the fire box.

From an analysis of the cases reported it appears that tank engines are more prone to blow backs than engines of other types. I have discussed the matter with officers of the British Transport Commission who have agreed to examine the whole question to see whether the conditions under which blow backs are likely to occur can be determined more exactly, and whether more positive and practical methods of preventing them can be found. Modern facilities enable such an investigation to be undertaken and so far as is known this will be the first of its kind. This may be regarded as very satisfactory.

I have the honour to be,

Sir,

Your obedient servant,

D. McMullen,
Colonel.

The Secretary,

Ministry of Transport and Civil Aviation.