MINISTRY OF TRANSPORT

RAILWAY ACCIDENTS

REPORT ON THE COLLISION which occurred on 7th March 1950 near WITHAM JUNCTION in the EASTERN REGION BRITISH RAILWAYS

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EASTERN REGION
BRITISH RAILWAYS

MINISTRY OF TRANSPORT,
Berkeley Square House,
London, W.1.

31st *July*, 1950.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Order of 7th March, 1950, the result of my Inquiry into the collision which occurred in fog at 3.11 a.m. that morning, near Witham Junction on the Colchester main line in the Eastern Region, British Railways.

The 11.0 p.m. Up express passenger mail train, Peterborough to Liverpool Street (via Ipswich), overran all signals at Rivenhall and collided at about 60 m.p.h. with the rear of the 7.45 p.m. Class A mineral freight train Whitemoor to Witham, which was approaching Witham Junction Outer Home signal at slow speed preparatory to entering the Up loop.

I regret to report that Goods Guard A. F. Balls of the freight train and Fireman W. Hagger of the express were killed. There were only about 20 passengers and postal staff on this train and seven of them received minor injuries. The driver and second guard of the express were also injured, the former seriously. Prompt steps were taken to summon assistance; the Police arrived at 3.35 a.m., followed by the Fire Brigade, ambulances, and doctors shortly afterwards.

The engine and first four vehicles of the express were heavily damaged, the next two coaches were derailed, but the last four remained on the rails. The brakevan and last seven vehicles of the freight train were demolished, and 14 more were damaged.

About 100 yards of the Up track were destroyed, both lines were blocked by debris, and signal and telephone communications between Witham Junction and Rivenhall were cut. Prompt action was taken to stop rail traffic, and breakdown cranes were ordered without delay. A number of passenger trains were cancelled, others were diverted, and a 'bus service was introduced between Kelvedon and Witham. The wreckage was cleared rapidly and the Down line was reopened by 6.0 p.m. the same day, followed by the Up line 25 minutes later.

The weather was fine and mild with a waning moon, but intermittent fog had been growing in density during the night.

DESCRIPTION OF TRAINS AND EFFECTS OF COLLISION

1. The mail train, which was hauled by a Class B1 engine 4–6–0 type with left-hand drive, comprised one 4-wheeled van and nine bogie vehicles. The engine and tender weighed 123 tons and the vehicles 302 tons, giving a total weight of 425 tons; the length of the train was 220 yards. The steam brake was in operation on the coupled and tender wheels of the engine, and the vacuum brake on all wheels of the train; the combined brake power was 323 tons, equivalent to 76% of the total weight.

The train was marshalled with the 4-wheeled van in front, followed by three passenger coaches, then two brake and two mail vans, and finally two more passenger coaches at the rear. All underframes were of steel, and bodies were of wood, except the leading van and one of the mail vans which were of composite wood and steel construction. All vehicles were fitted with Buckeye couplings except the leading van and the two mail vans which were screw coupled.

2. The freight train, which was hauled by a 2–8–0 type engine with left-hand drive weighing 125 tons, comprised 34 loose-coupled loaded open and closed goods wagons and a 20-ton brakevan; the weight behind the tender was approximately 540 tons and overall length of the train was 254 yards. The steam brake, which operated on the coupled and tender wheels of the engine, produced a braking power of 66 tons.

3. The engine of the mail train, after striking the goods brakevan, veered to the left, ploughed through a shallow cutting, and came to rest on its side in the soft ground beside the track, 100 yards beyond the point of impact. The tender, which broke away when the engine overturned, was flung further to the left, but remained upright though facing in the reverse direction. The engine was very badly damaged; the front buffer beam and bogie wheels were torn off, the smoke box door was driven in, the main frame was badly buckled, cylinders were broken, motion and undergear were twisted and the cab was destroyed. The front and back of the tender were dented, the buffer beam was damaged and all axle boxes were broken.

The first four vehicles overran the engine. The 4-wheeled van overturned to the left, and was wrecked. The second vehicle was slewed at right-angles to the line and the whole of its bodywork was swept away; it is remarkable that the passengers in this coach escaped with minor injuries only. The third and fourth vehicles mounted the debris of the goods train, but fortunately the Buckeye couplings held, and the coaches did not turn over, nor was there any telescoping, although the frames and bodies were bent and twisted. The next coach, a brake van, and the leading bogie of the following mail van were also derailed, and bodywork and underframes were damaged. The rest of the train remained on the line.

4. The brakevan of the freight train was thrown to the left, and its shattered underframe was found between the express engine and tender. The next seven wagons were demolished and 14 others were damaged in varying degrees.

Description of Site and Signalling

Site.

5. The double line from Ipswich and Colchester runs in a south-westerly direction through open country approaching Witham; gradients and curvature are slight, and there are no outstanding topographical features. The positions of relevant signals, signal boxes, bridges, etc., are shown on the accompanying drawing. The stations and signal boxes to which reference will be made are, in order from the north, Marks Tey Junction, Hill House, Kelvedon, Rivenhall, and Witham Junction.

The following is a summary of the relevant distances :—

	Distance : miles.	yards.	Location :
Marks Tey Junction	7	400	North.
Hill House Signal Box	4	1,020	,,
Kelvedon Up Distant	3	1,200	,,
,, Signal Box	2	1,170	,,
Rivenhall Up Distant	1	1,310	,,
,, ,, Home	1	60	,,
,, Signal Box	1	30	,,
,, Up Starter	–	1,230	,,
Witham Junction Up Distant	–	640	,,
Point of Collision	–	–	–
Engine of Mail Train	–	100	South.
,, ,, Freight Train	–	440	,,
Witham Junction Outer Home (controlling entrance to the loop)	–	735	,,
Witham Junction Signal Box	–	1,440	,,

6. There are few landmarks by which a driver can locate his position in fog, but the following should be noted :—

Kelvedon Distant —located between two stone overbridges.
,, Starter —at the London end of the station.
,, Advance Starter—at the Colchester side of a high overbridge.
Rivenhall Distant —no easily recognised land mark nearby; public level crossing and gatehouse 700 yards on the Colchester side.
,, Home —nearly opposite the signal box.
,, Starter —near an occupation crossing.
Witham Junction Distant—no easily recognised land mark in the vicinity.

Block Working.

7. The section of the line between Marks Tey and Rivenhall is worked with Tyers one-wire two-indication double line block instruments. There are no block controls, except on the Up line between Rivenhall and Witham Junction, where track circuits (E and F) extend from the Rivenhall Starter to the Witham Junction Outer Homes, and "Line Clear" cannot be given unless these are clear, the arms of the Witham Distant and Outer Homes are normal, and the levers of the Outer Homes have been replaced behind the previous train. The block indicator is maintained at "Train on Line" by the occupation of the track circuits and acceptance is effective for one operation only.

Signals.

8. All relevant Up signals are on the left of the Up line and they can be seen at long range in clear weather except Kelvedon Distant, which is masked by an overbridge 270 yards from it. Rivenhall Up Starter when normal is locked by occupation of track circuits E or F, and Witham Junction Up Distant, which is electrically operated and works automatically, is controlled by track circuit F and by the arms of Witham Junction Outer and Inner Homes and Witham Station Distant.

Location of boxes and fog marking points.

9. Kelvedon signal box is on the Up side and its floor is 13 feet above rail level. There were no special fog marking points but the Up Advance and Down Starting signals, which are respectively 451 yards and 332 yards from the box, were used for this purpose. A Down siding disc signal, 195 yards on the London side of the box, was also used as a guide by the signalman on the night of the accident.

At Rivenhall, the box, which is only 7ft. above rail level, is on the Down side, and here again the Up and Down Starting signals, which are 554 and 344 yards from the box, were accepted as the fog marking points though the signalman also watched three electric cable poles in a field opposite his box. The distance of these poles from the box varies from 39 to 117 yards.

Witham Junction box is also on the Down side and is raised 21 feet above rail level so that the signalman has an extensive view over the junction. No special fog marks have yet been laid down and the signalmen select easily recognised points about 200 yards away for this purpose.

Emergency Detonator Placers.

10. Detonator placing machines are installed at all signal boxes, and those at Rivenhall are worked by standard levers which were easy and quick to move. The machine is of the L.N.E.R. type and consists of two arms, 2 feet apart, each holding a thin metal plate in which the detonator is mounted. These arms, when operated, revolve through an angle of nearly 90°, and place a pair of detonators on top of the running rail. The general arrangement is illustrated in the sketch.

Fog Working Instructions.

11. The instructions lay down that when the fog marking point becomes obscured, or where no fog marking point is provided, the fixed signals cannot be seen at a distance of 200 yards, the fog signalmen must be sent for immediately. Until they arrive at their posts, signalmen must act strictly in accordance with Clause (*e*) of Block Regulation 4, which is as follows :—

> "*Unless special instructions are issued to the contrary, in foggy weather or during falling snow, until the Fog-signalmen arrive at their posts, and at Boxes where Fog-signalmen are not employed, the 'Is Line Clear' signal must not be accepted from the Box in the rear until the 'Train Out of Section' signal has been received from the Box in advance*".

In 1934, the District Superintendent Stratford, issued a circular which is still in force, drawing attention to the difficulties which arose when fogmen were called out late and in consequence "double block" had to be enforced. He therefore expressed his wish that Station Masters should call out these men "possibly unnecessarily (early) rather than after the train service had been delayed". It was intended that this amplification of the rules would imply that "double block" working need not necessarily be enforced when fogmen were called out early, but only when visibility was reduced to 200 yards. Relevant extracts from the circular and the signalmen's instructions are given in the Appendix, from which it will be seen that there was some ambiguity of wording.

The instructions regarding use of detonators in foggy weather are contained in Rule 94, which reads as follows :—

> "*If for any purpose the Signalman requires to stop an approaching train during fog or falling snow and a Fog-signalman is not on duty, he must keep his signals at Danger and must also, when practicable, place one detonator on the rail of the line to which the signals apply.*
>
> *At signal boxes where emergency detonator placers are provided, the provisions of this Rule must always be carried out during fog or falling snow whether a Fog-signalman is on duty or not*".

Report and Evidence

Train movements.

12. The freight train, with Driver F. J. Buxton in charge, left Marks Tey at about 2.45 a.m., and passed Hill House and Kelvedon with clear signals. Buxton, who estimated he was travelling at about 20 m.p.h., missed the Rivenhall Distant owing to the fog, which was intensified by the steam and smoke of a passing Down train. He thereupon reduced speed and cautiously approached the Home signal, which was "off." On reaching the signal box he asked his fireman to find out from the signalman the aspect of the Starter. Buxton heard the signalman reply that it was "off" so he opened the regulator again and proceeded on his way. He was travelling at about 15 m.p.h. when he passed Witham Junction Distant signal at "Caution" and slowed down again to about 8 m.p.h., at which speed he was moving when the collision occurred. Buxton took immediate steps to protect both lines and telephoned to the Witham Junction signalman to stop all traffic. Fireman A. W. Millington confirmed his driver's evidence and said that when he asked the Rivenhall signalman whether his Starting signal was "off" the latter replied, "Yes, you are right away".

13. Driver L. J. Birch of the express, who was so seriously injured that he could not give evidence until eleven weeks after the accident, said that he took charge at Ipswich and had a clear run to Colchester. The train was late due to station delays and he was endeavouring to keep section time, which meant moving fast after reaching Marks Tey. He passed through this junction under clear signals at about 45 m.p.h., and then increased speed so that he was travelling at about 60 m.p.h. when he reached Hill House. The Kelvedon Distant, which was easily picked out from its position between two bridges, was clear, as were all the other Kelvedon signals which he located from the land marks in their vicinity. He was sure he saw both the Rivenhall Distant and Home signals "off", but after that he did not recollect anything else except seeing "two shapes like chandelier lights". He then felt a bump and thought he shut the regulator, but did not know whether he applied the brake.

He did not remember anything of an interview he had in hospital two days after the accident when he said that the last signals he saw were those at Kelvedon. During that interview Birch appeared to have a clear memory of events and he told Mr. Miller, District Motive Power Superintendent, that he was looking for the Rivenhall Distant and was beginning to think he had passed it when the collision occurred. He thought the goods train was being shunted into the Up siding at Rivenhall and was amazed when he was told it was near Witham. He was travelling fast and had not reduced speed, though he was surprised there were no fogmen out. Just before the impact he saw two red lights in front of him, but he had no time to take action.

14. Guard F. W. Balaam said that the mail train, which was running 21 minutes late, left Colchester at 2.54 a.m., and ran normally without any checks. He did not hear any detonator explode nor was the brake applied before the collision occurred. Driver R. L. Brunning, who was travelling as a passenger in the third vehicle from the engine, also confirmed that the train was travelling at about normal speed after leaving Colchester. Brunning thought it was moving rather fast through Marks Tey considering the foggy weather, but he was not alarmed about this, and did not notice the train passing through any other places.

Block Working.

15. Signalman E. J. Hunt of Kelvedon box, described how he accepted the freight train at 2.45 a.m., and received "Train Entering Section" from Hill House at 2.53 a.m. He thereupon offered it to Rivenhall and lowered all his signals as soon as he received "Line Clear". The train passed at 2.57 a.m., running a little under normal speed. At 3.3 a.m. he accepted the express from Hill House, and as the freight train had not cleared the section ahead as quickly as usual, he spoke about it to Signalman Etheridge at Rivenhall and received the reply, "It is passing now, and I will be giving you ' Out ' in about two minutes". Hunt said he received this bell signal at 3.6 a.m., and at the same time Hill House gave "Train Entering Section" for the express. He promptly offered it to Etheridge, who accepted it under full "Line Clear". He again cleared all his signals and the express, which was running very fast, passed his box at 3.8 a.m. He was somewhat alarmed at its speed so he spoke again to Etheridge, told him of this, and warned him to pull his emergency detonator lever. Hunt added that he broke off this conversation to return his signals to normal and give "Train Out of Section" to Hill House, and when he picked up the receiver again, he heard through the telephone the roar of the train as it passed Rivenhall box. He asked if it had slowed down, but Etheridge replied "No, it is still going very fast". Shortly afterwards Etheridge told him he had heard a crash.

16. Signalman F. A. Etheridge (Junior), of Rivenhall box, stated that he accepted the freight train at 2.54 a.m., and, after receiving "Train Entering Section" for it at 2.59 a.m., he obtained "Line Clear" from Witham Junction and lowered his signals. The train approached his box rather slowly, and as it went by the fireman called out "Is it clear" to which Etheridge answered, "Yes, right away". The fireman also said something about fogmen and Etheridge replied that they had already been sent for. He gave "Train Entering Section" to Witham Junction at 3.4 a.m., and returned the Distant and Home signals to normal when the train was half-way past the box. Hunt called him to the telephone about this time and enquired of the train. Etheridge replied that it had passed the box and he would be giving "Out of Section" very shortly. He waited until track circuit E was illuminated on the diagram and thought he allowed about two to two-and-a-half minutes for the train to pass the Starter before replacing the signal. Having done this he cleared the section to Kelvedon and was immediately offered the mail train, which he accepted under full "Line Clear" at 3.7 a.m.

He received "Train Entering Section" a minute afterwards, and a few seconds later, Hunt spoke to him again and told him that "The Peterborough was going like mad". Etheridge said that he went to the window and heard the train approaching, but as it did not appear to shut off steam at the Distant signal he returned to the telephone and told Hunt that it was "Still going like the dickens". Hunt then mentioned "stirrups" but Etheridge said he "had already moved away to place his emergency detonator". After pulling the lever he returned to the window to get his hand lamp in order to wave a red light, but before he could do so the train passed at high speed. He sent "Train Running Away on Right Line" (4–5–5) followed by "Obstruction Danger" to Witham Junction and heard the sound of the collision shortly afterwards. He was not certain of the order of his conversations with Hunt, but he was sure he pulled the detonator placer before the express reached it, though he could not account for the bent plate which was found afterwards, as described in paragraph 25.

17. Signalman F. A. Etheridge (Senior) of Witham Junction box said that he was offered the freight train at 2.59 a.m., and received "Train Entering Section" at 3.4 a.m. He set the road for the Up reception loop and lowered the appropriate Outer Home signal. He then spoke to the Kelvedon signalman and asked him about the mail train. Hunt replied that it was passing his box at very high speed and Etheridge heard through the telephone the noise which it made. He next received 4–5–5 from Rivenhall, immediately followed by "Obstruction Danger". He acknowledged these signals and replaced to Danger his Down Starting signal which he had cleared for a freight train from the opposite direction. He heard the sound of the collision a few moments later.

Train passing times.

18. Based on the above evidence and after careful consideration of possible variations in train speeds, it is probable that the passing times of the freight and express were between the following brackets :—

	Freight train	Express
Kelvedon Distant	—	3.6½ a.m. and 3.7½ a.m.
,, Box	2.56 a.m. and 3.0 a.m.	3.7½ a.m. and 3.8½ a.m.
Rivenhall Distant	2.59 a.m. and 3.2 a.m.	3.9 a.m. and 3.9½ a.m.
,, Box	3.3½ a.m. and 3.5 a.m.	3.9¾ a.m. and 3.10 a.m.
,, Starter	3.6 a.m. and 3.7 a.m.	—
Point of Collision	3.11 a.m.	3.11 a.m.

Density of fog.

19. There was conflicting evidence regarding density of fog; the three signalmen concerned all thought visibility was greater than estimates made by other witnesses. Hunt of Kelvedon said that it was a little misty when he came on duty at 10.0 p.m., and although at midnight it was a little more dense, he could still see the moon shining brightly. From thence onwards the fog was patchy, but at 2.30 a.m. he noticed the Down Starter (332 yards from the box) was no longer visible. He therefore consulted Etheridge at Rivenhall, who agreed the fog was thicker and both of them decided to call out their fogmen. Hunt explained that he wanted the men on duty in time for three Down newspaper trains, the first of which was due to pass his box at 3.38 a.m., but he did not consider conditions warranted institution of double block working, as visibility was still at least 200 yards (he said he could still see the Down Siding ground disc 195 yards away). He agreed that the fog was thicker nearer the ground and that a driver might have had more difficulty in seeing objects ahead than Hunt did from his box, which was some 7 or 8 feet higher than the footplate of an engine. He was also thinking about the fog when he told Etheridge to pull his detonator placer after the express had passed at high speed. He knew that the freight train had only cleared Rivenhall about two minutes earlier and he thought that something might happen if the express driver missed the Rivenhall signals.

20. Etheridge at Rivenhall said that there was a ground mist about 5 feet high when he came on duty at 10.0 p.m.; the fog continued to be patchy until about 2.30 a.m., when it got thicker, and both he and Hunt decided to call out their fogmen at 2.35 a.m., so as to have them ready for the newspaper trains. He said that an electric power pole directly opposite his box (39 yards away) was visible all night and that he could also see the top of the pole on the Witham side (117 yards away), though the bottom half was shrouded in the ground mist. He was surprised when the goods train approached so slowly, and thought the driver must have missed the Distant signal on account of smoke from a Down train and not because of the fog, although one of the enginemen shouted something about fogmen. In spite of the density of the ground mist, and the difficulty which the driver of this train had in seeing the Distant signal, Etheridge did not consider that conditions warranted the introduction of double block working. He thought the poles in the field were further away than their actual distances, which were measured after the accident.

21. Etheridge of Witham Junction said that when he came on duty at 10.0 p.m., it was a little hazy. At 2.20 a.m., conditions were worse, but he could still see the moon and the back lights of his Inner Home signals, some 165 yards from the box. About 2.30 a.m., the Witham Station signalman spoke to him about the fog and after consulting the Rivenhall and Kelvedon signalmen they all decided to call their fogmen in time for the Down newspaper trains. Etheridge explained that the fog seemed to be drifting; it was no worse at 2.55 a.m., but between 3.15 a.m. and 3.20 a.m., it was thicker and at that time fogmen would definitely have been required. At 3.30 a.m., however, it had cleared somewhat and fogmen would not have been needed.

22. Driver Buxton and Firemen Billington of the freight train, on the other hand, estimated that they could only see the signals approaching Rivenhall at a range of 10 to 15 yards beyond the engine, and when they stopped after the accident the fog was very thick. In describing their journey from Bury St. Edmunds they indicated that the weather conditions were getting progressively worse as they approached the scene of the collision. They said that fogmen were out only at Claydon, between Stowmarket and Ipswich, and they were surprised that the others had not been called out as well.

23. Driver Birch of the express, said that visibility was only about 30 yards at Colchester; it improved at Marks Tey which is on high ground, but was bad again at Kelvedon where he only caught a fleeting glimpse of the signals which he identified from the nearby land marks. The fog was also very bad at Rivenhall, and Birch thought that fogmen should have been out from Colchester onwards.

24. Guard Balaam estimated visibility directly after the accident at about 100 yards, Second Guard Coles thought it was less than this, and Driver Brunning, who was a passenger in the mail train, said he could only see for about 15 to 20 yards. The drivers of seven trains which passed through Witham between 12.30 a.m. and the time of the accident submitted statements which confirmed the other enginemen's evidence that the fog had been growing in density and was very thick around Witham and Rivenhall about the time of the collision. Lengthman Ketley, the fogman for Witham Up Distant, who lives at the crossing keeper's house about ¼-mile on the Ipswich side of Rivenhall box, said that he was called out by bell signal from Rivenhall box (at about 2.35 a.m.). He left his home some 20 minutes later, and at that time visilibity was only about 15 yards, though it was a little clearer when he reached Rivenhall box just when the express passed at high speed.

Rivenhall Detonator Placers.

25. After the accident the two detonator plates were removed from the Up machine at this box and were examined to determine whether one or both had been exploded. The one further from the approaching train had been detonated normally. The end of the other plate, however, had been bent upwards as if it had received a sideways blow and the top and bottom casings of a partially exploded detonator were found some distance away. It can be presumed, therefore, that the detonator placer was pulled as the train was passing over it so that the leading plate was hit and knocked sideways by a wheel, whilst the second one reached the rail and was exploded in the normal way.

26. There is no doubt that the express was travelling fast through fog which had grown in density during the night. Birch admitted that his speed was at least 60 m.p.h. and both Signalman Hunt and Etheridge confirmed that the train passed through Kelvedon and Rivenhall very quickly ; furthermore, the condition of the wreckage indicated a high speed of impact.

I am satisfied that all the Kelvedon signals were clear, and that the Witham Junction Distant must have been at "Caution", because it could not have been lowered for the freight train to enter the Witham loop and therefore it was locked normal. Evidence on the aspect of the Rivenhall signals, however, was not conclusive. Birch's statements were conflicting, which is not altogether surprising considering he was so badly injured. He made what appeared to be a perfectly coherent statement to two Railway officers who saw him in hospital 48 hours after the collision, and at that time he stated he was looking out for the Rivenhall Distant when the collision occurred and he expressed astonishment when told that it happened near Witham. Eleven weeks later he could not recollect this interview, and he denied having passed the Rivenhall signals at Danger. He said he saw both Distant and Home " off ", though he did not remember the aspect of the others. Etheridge, on the other hand, was emphatic that he replaced all signals behind the freight train. If he had done so he could not have cleared the Starting signal again, because it would have been locked by occupation of the track circuit ahead and consequently the Distant would also have been locked at "Caution".

The question arises as to whether Etheridge was late in replacing the signals behind the freight train and accepted the express before returning them to normal. He said that he replaced his Home and Distant signals when the train was half-way past his box, and the Starter two to two-and-a-half minutes after the track circuit ahead had been occupied. If this evidence is accepted at its face value, he could not have replaced the Starter until between 3.8 a.m. and 3.10 a.m., depending on the speed of the freight train, by which time the express must have been at or past the Distant. Thus, if he had waited to replace *all* three signals together, the Distant might well have been " Off " for the express, which he must have accepted not later than 3.6½ a.m. or 3.7 a.m., for all the *Kelvedon* signals to have been cleared in time. I do not think, however, that Etheridge made these mistakes. He is an intelligent young man, who has been in charge of Rivenhall box for over two years, and on the night of the accident he was on the alert and had nothing to distract him. I have no reason to suppose, therefore, that he did not carry out the normal, practically automatic, routine of replacing the signals after the passage of the freight train, and I feel sure that he did not give "Train Out of Section" and accept the express until he had done so. Moreover, his statement regarding the delay in replacing the Starter was only an estimate and was not based on any exact timing. It is much more likely that he returned this signal to normal very shortly after the track circuit indication had been illuminated and, having done this, he cleared the section at 3.7 a.m. (as in fact he said he did) just in time for Hunt to lower the Kelvedon Distant before the express reached it.

I consider that the more probable cause of the accident was Driver Birch's failure to observe the Rivenhall signals. He was travelling fast and only just saw the Kelvedon signals, all of which are located by good landmarks ; the Rivenhall Distant, on the other hand, stands in the open, 700 yards ahead of the only easily recognised point, i.e., the public level crossing, and although the Home signal is opposite the signal box, the latter would not be seen in fog by a driver looking out on the left-hand side. Hence, it would be easy to miss the lights of these two signals when passing at night in a thick fog at a speed of 60 m.p.h. Driver Birch did not make any brake application at the Witham Junction Distant (640 yards from the point of collision), which was undoubtedly at "Caution", and I cannot but conclude that he also passed the Rivenhall Distant and stop signals at "Caution" and "Danger" respectively. In my opinion he was travelling too fast for the proper observance of signals under the prevailing weather conditions, and he is primarily responsible for the collision. He is 56 years old, with 38 years Railway service, and has been a driver for the past 10 years. He has a clear record.

27. Signalman Etheridge (Junior) must also accept some measure of responsibility because it is clear from the evidence of the enginemen and other witnesses that the fog had become so dense in the Rivenhall area that fogmen should have been out and, if not in position, "double block" working should have been in force. Etheridge realised that the fog was getting bad and had called out fogmen, though he said he was getting these men in position for the newspaper trains which were due to pass later in the night. He made, however, a serious error of judgment in not instituting double block working immediately after the passage of the freight train, especially as the fireman's queries about the signal aspect and calling out the fogmen should have warned him that visibility was deteriorating. Etheridge was also at fault when he failed to operate the Up detonator placer in time. Although there is some conflict in the evidence, I am satisfied that he did not think about taking this necessary precaution until Hunt reminded him and then he waited until the train had reached his box before pulling the emergency lever at the last moment. Etheridge therefore not only failed to act in accordance with Block Regulation 4(*e*) but also did not comply with Rule 94. If he had complied with the former regulation he would not have given "Line Clear" to Hunt, who would also have kept his signals against the express, while if Etheridge had placed his detonators in time, Birch should have heard the warning and been able to stop before colliding with the freight train. Signalman Etheridge is 30 years old with 3½ years Railway service as a signalman. He has a clear record.

28. Although conditions at Kelvedon were somewhat better than at Rivenhall, I think Signalman Hunt would have been well advised to have instituted double block working after the passage of the freight train. Both drivers only saw the Kelvedon signals at short range and were helped by the well known land

marks ; I doubt, therefore, whether visibility from the foot plate could have been as much as 200 yards, which is the minimum laid down for normal working. Hunt's box was 13 feet above rail level, and I think he was misled regarding driver's visibility by the moon shining on the ground mist. He was, however, alert, and when the express passed at such high speed, he took commendably prompt action to warn Etheridge of this and tell him to pull his emergency detonator lever.

REMARKS

29. This accident has drawn attention once again to the desirability of providing the warning type of automatic train control at the Distant signal, so that an audible indication of its aspect is given to the driver in the cab, and the brake is automatically applied if the signal is at "Caution". This valuable safety equipment is at present confined to the Western Region and to the London-Southend line in the Eastern Region, but the Britisb Transport Commission in their Annual Report for 1948 have accepted its wider extension as an ideal at whicb to aim. Preparations are nearly complete for large scale experiments with improved apparatus on the East Coast main line between New Barnet and Huntingdon and trials will soon be begun with 65 engines. It is hoped that on their successful conclusion the progressive equipment of all important lines throughout the country will be given high priority in the allocation of available resources.

30. The particular value of automatic train control in fog, especially during the period before fogmen reach their posts, requires no emphasis. The need for special caution at this time has long been recognised and Block Regulation 4(*e*) has been framed accordingly to provide for "double block" working. This restriction naturally has an adverse affect on heavy traffic and tbe Stratford District Superintendent's circular letter in 1934 was intended to reduce the delays as much as possible by allowing fogmen to be sent for early. The signalmen concerned in this accident undoubtedly acted in accordance with this circular when they called out the fogmen for the newspaper trains, but their decision not to institute "double block" working may have been unduly influenced by their desire not to delay traffic. In order, therefore, to avoid ambiguity, instructions applicable to all Regions have now been issued by the Railway Executive, so as to allow for fogmen to be called out in anticipation of worsening conditions in areas of dense traffic, but at the same time to make it clear that whenever visibility is reduced to 200 yards, "double block" working must be introduced immediately unless the fogmen are actually at their posts.

31. There were no proper fog marking points at Kelvedon and Rivenhall and the signals used for this purpose were so far from the box that both signalmen had to rely largely on their own judgment and select other nearer points to assist them. Etheridge at Rivenhall clearly misjudged conditions by relying on seeing in the moonligbt a pole only 117 yards away. This unsatisfactory state of affairs has now been cbanged, and ground signals approximately 200 yards from each box have been selected in place of the original ones. General instructions have also been issued that when practicable fog marking points should be selected as near as possible to the distance of 200 yards from the box, and visible at driver's eye level, and that these points should be notified through the signalmen's special instructions. A proviso has been added that when it is not possible to lay down specific points, signalmen must work to a distance of 200 yards. They ought not to be expected to judge distances in fog without some guide to help them, and I consider that specially lighted fog markers as used on some Regions should be erected in those places where there are no suitable structures or signals at or near the correct distance.

I have the honour to be,

Sir,

Your obedient Servant,

C. A. LANGLEY,

Brigadier.

The Secretary,
Ministry of Transport.

APPENDIX

EXTRACT FROM STRATFORD DISTRICT SUPERINTENDENT'S CIRCULAR LETTER OF 8TH OCTOBER, 1934.

"*TRAIN WORKING DURING FOG: MANNING OF FOGGING POSTS.*

It is necessary that I should remind Station Masters and others concerned that all possible steps should be taken to minimise the difficulties appertaining to the running of trains which must of necessity arise in such conditions.

In this respect, I must draw attention to the calling of Fogmen. It has been pointed out in the past that there has been a tendency to withhold the calling out of these men until the signalmen could be certain that their services were required. This has led, in some cases, to the calling of Fogmen being delayed until the fog has developed intensively—which has resulted in delay to the train service in consequence of operating ' Dead sections '.

It is my wish, therefore, that you err towards bringing the Fogmen out possibly unnecessarily rather than after the train service has been delayed pending the Fogmen reporting for duty".

———oOo———

EXTRACT FROM CIRCULAR NO. R.R. 410.

ARRANGEMENTS FOR SIGNALLING DURING FOG OR FALLING SNOW

"*Calling Out of Fog-signalmen.*

When in consequence of fog or falling snow the fog marking points as laid down in Block Regulation Book becomes obscured, or where no fog marking point is provided, the fixed signals cannot be seen at a distance of 200 yards, the Fog-signalmen must be sent for immediately.

Until the Fog-signalmen arrive at their posts or where Fog-signalmen are not employed, the Signalman must act strictly in accordance with Clause (*e*) of Block Regulation 4.

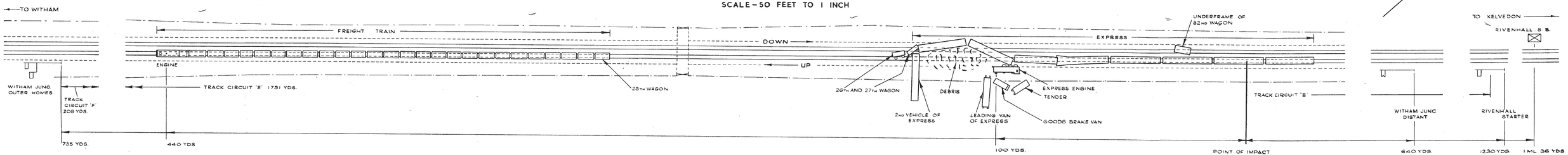
This instruction does not cancel any instructions issued by the Stratford District Superintendent to call out the Fog-signalmen earlier".

EASTERN REGION

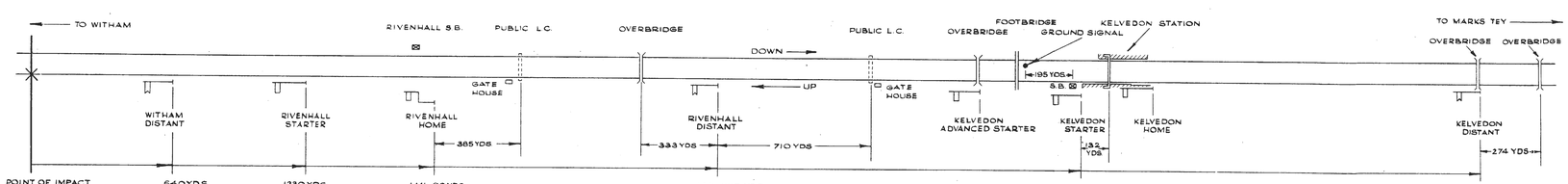
COLLISION NEAR WITHAM ON 7TH. MARCH, 1950

PLAN SHOWING POSITION OF TRAINS AFTER THE COLLISION

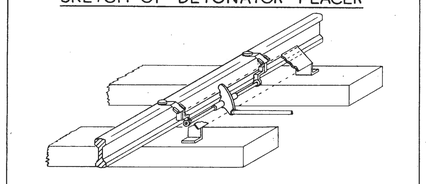
SCALE – 50 FEET TO 1 INCH



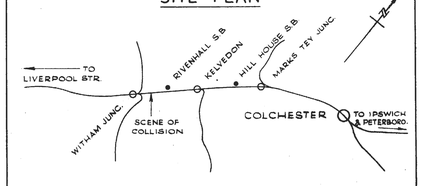
LINE DIAGRAM SHOWING SIGNALS AND LANDMARKS



SKETCH OF DETONATOR PLACER



SITE PLAN



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