



MINISTRY OF TRANSPORT

## RAILWAY ACCIDENTS

# REPORT ON THE COLLISION

which occurred on

**12th November 1959**

at

**EAST HAM**

in the

**EASTERN REGION  
BRITISH RAILWAYS**

LONDON: HER MAJESTY'S STATIONERY OFFICE

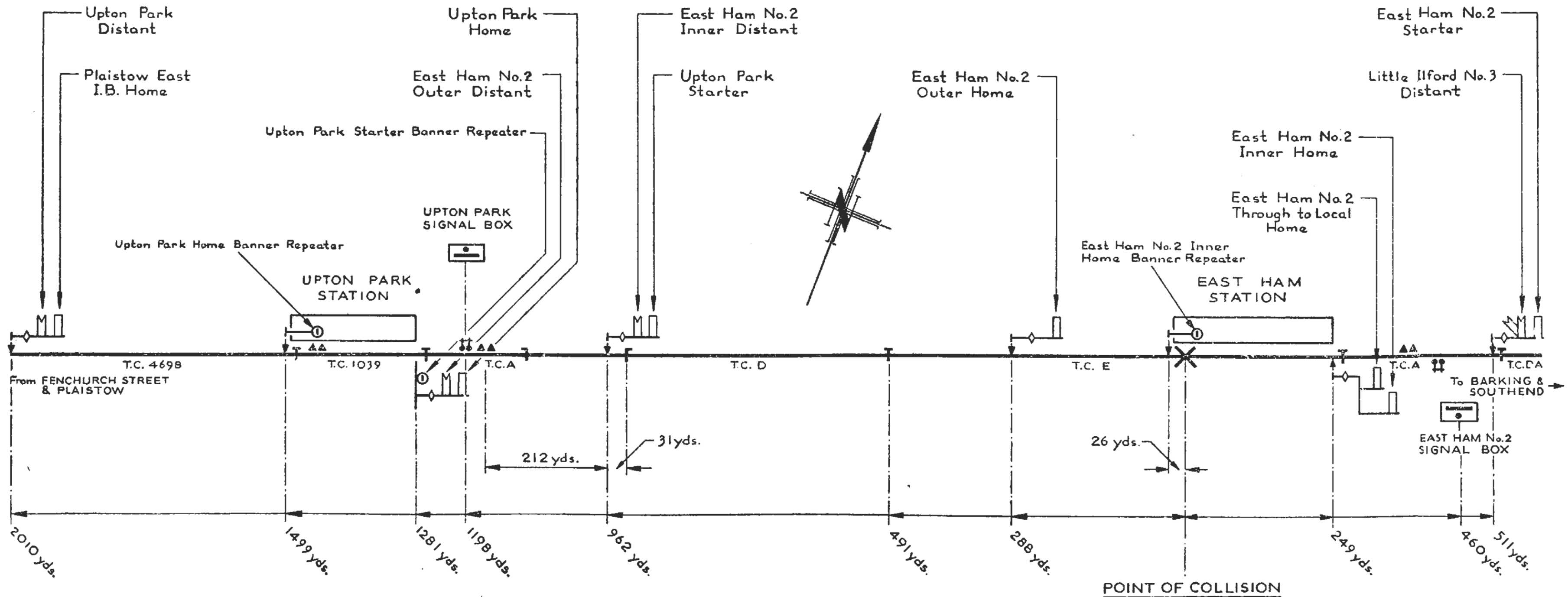
1960

PRICE 1s. 3d. NET

# EASTERN REGION

## COLLISION AT EAST HAM — 12th. NOVEMBER, 1959

### DIAGRAM OF DOWN THROUGH LINE SIGNALLING :- UPTON PARK — EAST HAM



A.W.S. Inductors shown thus Emergency detonator placers (worked from Signal Box) shown thus

NOT TO SCALE

SIR,

I have the honour to report for the information of the Minister of Transport in accordance with the Order dated 17th November 1959, the result of my inquiry into the collision which occurred at 12.47 p.m. on 12th November 1959 at East Ham on the London, Tilbury and Southend line in the Eastern Region, British Railways.

The 12 noon passenger train from Fenchurch Street to Shoeburyness was standing at the East Ham Down Through platform awaiting the clearance of the Inner Home signal, when it was struck in the rear by the 12.25 p.m. passenger train from Fenchurch Street to Shoeburyness which was travelling at about 15 m.p.h. This train had run past, in fog, the Upton Park Starting signal at Danger, and then past the East Ham Outer Home which was still "off" for the 12 noon train.

The shock of the collision was largely absorbed by the 10th and 11th coaches of the leading train which were telescoped into each other. The trains were lightly loaded, and fortunately no passengers were travelling in the damaged compartments. Twelve passengers were injured of whom nine were taken to hospital, but only two were detained; the guard of the 12.25 p.m. train suffered from shock and bruises.

Ambulances and police were summoned by the station staff and arrived at 12.55 p.m. and 1.0 p.m. respectively; owing to a misunderstanding, the Fire Brigade was not called until 1.18 p.m., but it responded promptly and was on the scene by 1.20 p.m. The injured passengers were given first aid by the station staff and within a few minutes the hospital cases had been sent to the East Ham Memorial Hospital.

Both the Up and Down Through lines were blocked and they were protected without delay. The steam crane from Plaistow began lifting the wrecked coaches at 2.40 p.m. and they were cleared by 4.20 p.m., and both lines were re-opened to traffic at 4.50 p.m. During the intervening period train services between Fenchurch Street and Barking were suspended; passengers for Barking and Upminster were advised to travel by the District Line service of the London Transport Executive and those for Southend and stations in the vicinity were directed to Liverpool Street and advised to use the Great Eastern route via Shenfield to Southend (Victoria).

Fog had been of variable density throughout the morning and at the time of the accident the visibility was about 20 yards.

#### DESCRIPTION

##### *The trains*

1. The 12 noon train comprised 11 non-corridor passenger coaches and a bogie parcels van at the rear; it was hauled by a Class 4 MT tank engine with 2-6-4 wheel arrangement travelling chimney first. The guard's compartment was at the rear of the 11th coach. The passenger vehicles were standard Tilbury line stock with wooden bodies on steel underframes. The parcels van was of similar though somewhat heavier construction. The total weight of the train was 418 tons, and the length overall was 245 yards. The train was equipped with the vacuum brake but it was not applied at the time of the accident.

2. The 12.25 p.m. train was hauled by a similar engine travelling bunker first. It comprised 8 coaches, similar in layout and construction to the passenger coaches of the other train. The vacuum brake was in use throughout and gave a power of  $20\frac{1}{2}$  tons equivalent to 67.2% of the total weight of 300 tons. The length overall was 166 yards.

The engines were equipped for left hand drive and consequently the controls on the 12.25 p.m. train engine were on the right hand side in the direction of travel.

3. As already mentioned the major damage was confined to two coaches of the 12 noon train. The front of the 11th coach lifted and mounted the one ahead, telescoping the four rear compartments of the 10th and the three front compartments of the 11th coach. Other damage was slight; the buffers at the rear of the parcels van were broken off, and the body and underframe were strained and damaged in places. There was some superficial damage to the front of the 12.25 p.m. train engine and two coaches in that train suffered minor damage. The track and signalling were undamaged.

##### *The site*

4. The London, Tilbury and Southend line runs from Fenchurch Street through Plaistow ( $4\frac{1}{2}$  miles from Fenchurch Street), Upton Park ( $5\frac{1}{4}$  miles), East Ham ( $6\frac{1}{4}$  miles) and then on to Barking, Upminster, Tilbury and Southend. It is a double line from Stepney East ( $1\frac{1}{4}$  miles) onwards and it is paralleled by the electrified line carrying London Transport trains from Bromley to Upminster.

The Down Through line from Upton Park to East Ham is straight and practically level. The position of the stations, signal boxes, and signals with other relevant features are shown on the accompanying drawing.

5. The distances from the point of collision were:—

		<i>West</i>	<i>East</i>
Fenchurch Street		6 miles	
Plaistow East	I.B. Home signal (with Upton Park Distant under it)	1½ miles	
Upton Park	Home signal (with East Ham No. 2 Outer Distant under it and the banner repeater of the Starter)	1281 yards	
	Signal Box	1198 yards	
	Starting signal (with East Ham No. 2 Inner Distant under it)	962 yards	
East Ham No. 2	Outer Home signal	288 yards	
	Inner Home banner repeater	26 yards	
	POINT OF COLLISION	—	—
	Inner Home signal		249 yards
	Signal Box		460 yards
	Starting signal (with Little Ilford No. 3 Distant under it).		511 yards

### *The signalling*

6. The signals on the Plaistow-East Ham section of the line are upper quadrant semaphores and where visibility is restricted the stop signals are repeated by illuminated banner repeaters. The Sykes Lock and Block system of block working is in force, but some of the treadles have been replaced by track circuits. It is not necessary to describe the controls in detail. It is sufficient to point out that a Starting signal cannot be cleared until the signalman at the box ahead has accepted the train by depressing a plunger in his block instrument, and this cannot be done unless the arms of the Home and Distant signals are normal and track circuits, where applicable, are clear. The Starting signal can be pulled once only for each release from the box ahead. The locking also ensures that Home and Starting signals must be returned to Danger behind a train before the next one can be accepted.

Referring in particular to the Upton Park-East Ham Down Through line, the East Ham No. 2 signalman cannot accept a train from Upton Park and so release the Upton Park Starting signal, unless the Outer Distant, Inner Distant and Outer Home signal levers and arms are normal, and track circuits D and E are clear. Similarly, the Upton Park signalman cannot accept a train from Plaistow unless the Distant and Home signal levers and the arms are normal and T.C. 1039 is clear. Also, he cannot pull the Home signal lever unless the Starter is at Danger. Plaistow I.B. Home cannot be cleared unless T.C. 4698 is unoccupied and a "Line Clear" has been received from Upton Park.

Track circuits D and E between Upton Park Starter and East Ham No. 2 Inner Home were brought into use in May 1959 when East Ham No. 1 box situated at the London end of East Ham station was closed and the control of the Home and Distant signals was transferred to East Ham No. 2 box. At the same time the old treadles were taken out of use including one in the Down Main platform, which when depressed sounded an annunciator in East Ham No. 2 box. These alterations were made in connection with track re-alignment associated with the electrification of the line.

7. The line is equipped with the Hudd Automatic Warning System (A.W.S.) of train control. This system comprises:—

- (a) a permanent inductor and an electro-inductor which are installed in the "4 ft. way" about 10 to 15 yards apart and about 200 yards on the approach side of the Distant signal:
- (b) the engine equipment, comprising a receiver, horn, brake valve, cancelling device and indicator.

With the Distant signal at Clear, the horn sounds when the engine receiver passes over the permanent inductor and it stops when the receiver is restored to normal by the energised electro-inductor.

With the Distant signal at Caution the electro-inductor is not energised; the horn continues to sound and after about four seconds the brake is applied. Normally, however, the driver acknowledges the warning by pulling the cancelling handle; this action restores the receiver to normal, stops the horn and re-creates the vacuum, thus releasing the brakes if applied and allowing the driver to take control of the train. An indicator above the cancelling handle displays an all-black aspect which changes to black and yellow when the handle is pulled, thus reminding the driver that he has cancelled a warning indication. It is restored to all-black when the engine passes over the next permanent inductor.

### *Extract from Rules*

8. Extracts from the relevant rules for working trains during fog are given in Appendix A and are summarised below:—

- (i) A signalman who requires to stop an approaching train must not only keep his signals at danger but where practicable place a detonator on the rail; where emergency detonator placers are provided they must always be used (Rule 94).
- (ii) A signalman must not allow a train to draw forward to a stop signal where it would be out of his sight to await acceptance into the section ahead unless a track circuit or other apparatus is provided, so that he can be reminded of the position of the train (Rule 39 (b)).
- (iii) In no circumstances must a train be allowed to draw forward to await acceptance at the signal controlling the entrance to the section ahead unless the signalman can satisfy himself by repeaters or other means that the signal arm and light are properly at danger. (Rule 39 (b) and Rule 65.)
- (iv) When a stop signal is at danger the stop signal next in rear of it and worked from the same box must not be lowered for an approaching train until the train is close to such signal and has been brought quite or nearly to a stand (Rule 39 (a)). *Note.*—This rule also applies to working in clear weather.

### EVIDENCE

#### *Train Crews*

9. Driver G. F. Clark, who was in charge of the 12 noon train engine, said that he left Fenchurch Street three minutes late and had a slow journey all the way to Plaistow on account of the poor visibility and the adverse signals. The Upton Park Distant signal was at Caution and he ran slowly forward to the Home signal which cleared as he was about to stop at it. He did not, however, notice the banner repeater of the Starting signal. He first saw that signal at a distance of about 10 yards and it was at Danger. He explained that it was not easy to see on account of a number of masts recently erected to carry the overhead wires.

Clark stopped at the signal for about 7 or 8 minutes and when it cleared he went on to East Ham at about 10-15 m.p.h. The Outer Home signal was "off", but the banner repeater of the Inner Home signal, which was at the London end of the station, was "on". Although the fog was still thick these signals were somewhat easier to see than those at Upton Park. He "crawled slowly forward", whistling as he entered the station, and came to a stand at the Inner Home which was at Danger. After stopping for two minutes he felt a severe blow and he and his fireman were thrown on to the cab floor. He assumed that the train had been struck in the rear and he sent his fireman back to find out the trouble. He himself went forward to the signal box and told the signalman to "throw up" the signals to Danger; the signalman had already done so.

After stopping at the East Ham Inner Home he had released the brakes and they were off at the moment of the collision. The train was pushed forward about a coach length by the force of the impact. Clark said that the A.W.S. equipment on the engine was working satisfactorily throughout the journey and that he had received the proper warning signals on approaching various Distant signals at Caution. Fireman D. A. Chittock gave corroborative evidence about the journey.

10. Guard R. Wood confirmed that the 12 noon train left Fenchurch Street three minutes late and it was badly delayed by fog and adverse signals on the run to East Ham. The train travelled very slowly through Upton Park but Wood said that he did not see the signals on account of the fog. After stopping for about 10 minutes at the Upton Park Starter the train ran into East Ham at about 15 m.p.h. and stopped in the station at 12.43 or 12.44 p.m. East Ham was not a booked stop, so Wood alighted on the platform to warn passengers not to leave the train. He was standing about 30 yards from the rear of the train talking to the station foreman when the collision occurred. He neither saw nor heard the approach of the colliding train. After rescuing a passenger from one of the damaged coaches he protected his train and asked the fireman to protect the Up line. He then returned to the platform to give assistance but found that by then all the injured passengers were receiving attention. Wood said that the rear of his train was underneath the wide overbridge at the London end of the station, where visibility was only a few yards on account of dense fog, which was made worse by steam escaping through a leak in the steam heating pipe at the end of the parcels van. The tail lamp had been alight and it was still hot when he recovered it after the accident.

11. Driver J. Everitt of Shoburyness, who had signed on for duty at 6.53 a.m., was in charge of the 12.25 p.m. train engine. He had previously worked a train from Southend to Fenchurch Street and a light engine to Plaistow, after which he had returned as a passenger to Fenchurch Street to work the 12.25 p.m. train to Shoburyness. He said he had a reasonably good journey as far as Upton Park though the fog gradually got denser until he could scarcely see the signals until he was "right on top of them".

On approaching the Upton Park Distant, which was underneath the Plaistow I.B. Home signal, he received the A.W.S. caution warning and cancelled in the usual way. He saw the signals at a distance of about 10 yards. The I.B. Home was "off" and the Distant "on". He entered Upton Park station at slow speed and received another A.W.S. warning as he approached the

Home signal with the East Ham Outer Distant under it. The Home signal cleared just as he was about to stop so he "kept his engine crawling". The Distant was at Caution and the banner repeater for the Upton Park Starter was "on". He approached the Starter at about 15 m.p.h. and he received another A.W.S. caution warning, this time for the East Ham Inner Distant which was under the Starter. As the engine was travelling bunker first he had been looking out for the signals on the fireman's side, but when he received the A.W.S. warning he crossed over to cancel it. He returned to the left hand side to look for the Upton Park Starter, but he lost it in the fog. He turned to his fireman and said "I think I have lost it. We have got to find the Home." By this he meant the Outer Home signal for East Ham. He continued forward at about the same speed because he did not think there would be anything standing at that signal. He saw it was "off" and took this as applying to his train. Then he saw the banner for the Inner Home at the London end of the East Ham overbridge showing "on" and started to apply the brake, but in a matter of seconds his engine collided with the train ahead. He neither saw this train nor its tail lamp. Everitt explained that since his fireman was a new mate who did not know the route he decided not to stop when he missed the Upton Park Starter because his fireman would not know where to look for the signal. He agreed, however, that he should have stopped when he realised he had missed that signal.

Everitt said that his engine was in excellent condition and the brakes were working well. There were no steam leaks and the A.W.S. equipment operated correctly. He stated that he had been working 8-hour shifts for many days and had not had a rest day for a long time, but he was not feeling tired at the time of the accident. He gave his evidence in a straightforward manner and frankly admitted his serious mistake.

12. Fireman N. E. James of the 12.25 p.m. train, had only recently been transferred from Stratford to Shoburyness and consequently he had not learned the Fenchurch Street-Shoburyness route by the time of the accident. As the engine of the 12.25 p.m. train was travelling bunker first he was working on the left hand side in the direction of running. He said that conditions were not too bad until the train reached Upton Park, where the fog was much thicker. Approaching the station he saw the banner repeater for the Home signal in the "on" position and he heard the A.W.S. warning for the Distant signal ahead. The "train crawled slowly" towards the Home signal which cleared as the engine approached it. The Distant arm was at Caution and the banner repeater of the Starting signal was "on". After this the train ran on slowly and James began firing again. He did not hear the A.W.S. warning for the East Ham Distant, nor did he observe the Starter. He could not remember whether his driver crossed the footplate to look on the left hand side nor whether he made any comment about the signal. On approaching East Ham, James looked out again and saw the Outer Home signal was "off". A little later he saw the banner repeater "on" (the repeater for the Inner Home signal). The driver commented on this and began to apply the brake. A moment later James saw the outline of the train ahead and shouted to the driver, but there was no time for action before the collision.

13. Guard G. Gooby of the 12.25 p.m. train said that the train left Fenchurch Street three minutes late and that it ran normally to Plaistow where the fog was very thick. He looked out as the train passed through Upton Park station because it slowed down so much that he thought it was going to stop. It went on, however, at about 15 m.p.h. towards East Ham. Gooby did not look out for any signals, and he was thrown across the van by the collision. He was so dazed that he asked a passenger who was a railwayman to protect the train for him. Having been told that both lines were protected, Gooby went to the station and then to hospital where he received attention, but was not detained.

#### *Signalmen*

14. Signalman C. W. Byford of Upton Park box, who had first taken charge on 26th October after learning its working the previous week, said that he had no difficulty in using the Sykes Lock and Block system because he had previous experience of it when in charge of another box. He came on duty at 6.0 a.m., and weather conditions were bad all the morning on account of the fog. At times he could just see a footbridge 70 yards away and then he would lose sight of it. The weather cleared a little at about 11.0 a.m., but by noon it had deteriorated again with the return of thick drifting fog.

He accepted the 12 noon train at 12.25 p.m. from Plaistow and immediately received "Train Entering Section". He cleared the Home signal as soon as the annunciator sounded (when the train depressed a treadle in the platform line) and allowed the train to run on to the Starting signal to await acceptance from East Ham. It stopped with the rear coach opposite the box. Byford could see it quite clearly and he observed the tail lamp when the train left at 12.38 p.m. after he had obtained "Line Clear". He gave "Train Out of Section" at 12.40 p.m. and immediately accepted the 12.25 p.m. train. He received "Train Entering Section" at the same time and also allowed this train up to the Starting signal at Danger as he had done with the previous one. Byford explained that this signal was locked at Danger because he had not yet received "Out of Section" for the 12 noon train and therefore he could not have obtained another "Line Clear" release, not that he had attempted to do so.

The 12.25 p.m. train passed the box at about 12.43 p.m. travelling very slowly. Byford saw the tail lamp disappear in the fog, but he was not alarmed because it was only an 8-coach train and the fog was so thick that he did not expect to see the tail light when the train stopped at the Starter (the rear of the train would have been 70 yards from the box). Shortly afterwards, however,

the East Ham signalman called him on the telephone and asked whether he had a train standing at his Starter. Byford replied that the 12.25 p.m. train was there, whereupon the East Ham signalman told him that the D track (between Upton Park Starter and the East Ham Outer Home berth track circuit) was occupied. Byford answered that the train had probably run by in the fog and he would try and find out about it. He rang off and went to the cabin window to look for the train. Not seeing any sign of it he telephoned to East Ham but was told by the signalman that the D track had cleared. Byford thought that the train must have set back, but almost immediately afterwards he received "Obstruction Danger" from East Ham and he realised there must have been a collision.

Byford said that on the Up Through line steam trains had passed the box at 12.33 p.m. and 12.41 p.m.

Regarding working instructions, Byford said that at the time of the accident a train could be sent up to the Starting signal during fog or falling snow to await acceptance into the section ahead, because the signal was repeated in the box and the driver was exempt from carrying out Rule 55 on account of the Sykes Lock and Block working (see Rule 39 (b)). On the day after the accident, however, the signal box instructions were amended to prohibit this working in fog or falling snow and now trains were held at the Home signal until the Starting signal was cleared.

15. Signalman R. W. Knight of East Ham No. 2 box, was sharing duties with Signalman Alliker and was assisted by Porter Signalman Hart who was learning the work. Knight, who had come on duty at 6.0 a.m., said that the weather had been very bad nearly all the morning, with visibility down to 10-15 yards, except for a break between 11.30 a.m. and 12.15 p.m., when conditions were better but after this the fog came down even thicker than before. Knight accepted the 12 noon train on the Down Through line at 12.37 p.m. as soon as he gave "Out of Section" for the previous (11.40 a.m.) train. He immediately received "Train Entering Section" and cleared the Outer Home signal, but he did not know at what time the train arrived because he could not see it in the fog. Consequently he left the Outer Home "off" and he did not clear the Home signal to allow the train up to the Starter to await acceptance from the box ahead.

Knight explained that the normal running time for a fast train between Upton Park and East Ham was only about 1½ to 2 minutes, but in fog he could not tell how long a train would take when a driver might be groping his way forward. Consequently he could not replace the Outer Home signal to Danger until he was absolutely sure that the train had passed it. Track circuit E was of no help because it extended from 200 yards in advance of the Outer Home right up to the Inner Home and so he had to wait until he saw the train or was told that it had arrived. About 6 months before the accident there was a treadle in the Down Through line which sounded an annunciator in the box when a train arrived in the platform, but this had been replaced by the long track circuit when an intermediate signal box between the station and Upton Park had been taken out of use. The day of the accident was the first on which they had controlled trains in fog under the new arrangements.

Knight appreciated that the 12 noon train had been a long time in the section and at about 12.44 p.m. he saw track circuit D and E were showing "occupied". Since he had seen track circuit D clear after the train had passed it, he rang Byford at Upton Park to find out why it was re-occupied. He was told that the 12.25 p.m. train was standing at the Starting signal and that Byford would go and look for the train. Meanwhile, Alliker told him that track circuit D had cleared again so when Byford rang again, Knight passed on the information to him. Knight, however, did not think that the 12.25 p.m. train had run forward into the occupied section. At about this time he heard a train blowing off and Signalman Hart went to the window and told him "I think he is in the platform." Knight thereupon replaced the Outer Home signal, but the collision occurred almost immediately afterwards.

16. Signalman H. C. Alliker, who had come on duty at 5.0 a.m. and was due to leave at 1.0 p.m., said that he was primarily concerned with working the Up Through line, though each signalman assisted the other because the work could not be exactly divided between Up and Down traffic. He generally confirmed Knight's evidence including his account of the telephone conversations with the Upton Park signalman. He also did not appreciate that the 12.25 p.m. train had run by the Upton Park Starter. He stated that as soon as Hart said that he could hear the 12 noon train at the platform the Outer Home was replaced to Danger but almost immediately afterwards the telephone rang and a signal lineman told Alliker of the collision. Alliker immediately told Knight to replace the Up line signals to Danger, and he sent "Obstruction Danger" for both Through lines.

17. Porter Signalman E. I. Hart said that he had been working the Down line signal levers and he had cleared the Outer Home for the 12 noon train as soon as the "Train Entering Section" signal had been received from Upton Park. After this he had been watching the track circuit between his box and Ilford No. 3 to see whether the 11.40 a.m. train would clear the section ahead and thus allow the other East Ham signals to be cleared for the 12 noon train.

That track circuit did not clear and meanwhile he heard Knight shout that track circuit D was occupied again. Hart saw this on the diagram, but a few seconds later the track circuit cleared. Alliker then called to him to rush to the window to find out whether the 12 noon train had arrived. Hart heard an engine blowing off and told the other signalmen, but he did not hear the collision. About a minute later someone telephoned to say there had been an accident.

18. Relayer S. Garrett said that on the morning of the accident he had been working on the London side of East Ham station. Just before the accident he saw a train (the 12.25 p.m. train) pass at about 10-15 m.p.h. Visibility was 20-30 yards.

19. Station Inspector S. Thompson of East Ham station was on duty at the time of the accident. He heard the 12 noon train stop at the Down Through platform and he went over there because he realised that it was an unscheduled stop. The weather was bad with visibility down to 20-30 yards. The train had been standing at the platform for about three minutes when the collision occurred. He saw that the Up line was obstructed so he ran to a telephone and warned the East Ham signalman to place the signals at Danger. After this a porter told him that the emergency services had been called so he advised Control and then supervised the arrangements for looking after the passengers.

20. Chief Signalling Inspector T. W. J. Dolder submitted a report, setting out in detail the tests which had been carried out to prove the integrity of the signalling system. He had arrived at the scene at about 2.0 p.m. and had supervised these tests. They included all electrical controls, mechanical interlocking, signal indicators and A.W.S. ground equipment.

21. Mr. R. A. Palmer, the Staff Assistant to the Line Traffic Manager, gave particulars of Driver Everitt's recent service. He said that in the last six months Everitt had had 27 completely free days made up of 13 Sundays, 2 days in lieu of Bank and Public Holidays and 12 days annual leave from 10th-22nd August. Excluding the leave period he had had approximately one day off each fortnight. His last Sunday free of duty before the accident was on 8th November. Owing to the impending electrification of the London, Tilbury and Southend line and the possibility of redundancy it had been difficult to recruit staff and the men at the depot had volunteered to work on their rest days.

#### CONCLUSION

22. I am satisfied that the Upton Park Starting signal was at Danger when the 12.25 p.m. train passed it. It could not be cleared until Signalman Byford had received "Train Out of Section" for the 12 noon train and had then obtained another "Line Clear". The signalman at East Ham No. 2 box could not give this "Line Clear" because the Outer Home signal was still "off" and track circuit E was still occupied by the 12 noon train. The examination and tests of the signalling equipment after the accident proved its integrity and confirmed that the Upton Park Starting signal must have been locked at Danger. At the time of the accident Byford was allowed to send a train up to the Starting signal although it was out of his sight in the fog, because the Starting signal was repeated in the box and it was controlled by the Sykes Lock and Block thereby exempting drivers from the provisions of Rule 55. Signalman Byford was therefore in no way responsible for the accident.

23. At East Ham No. 2 box the working was more difficult because this was the first occasion on which fog had been experienced since the signalling was altered in May 1959 following the closure of East Ham No. 1 box between East Ham Station and Upton Park. Previously an annunciator sounded in the signal box when a treadle in the platform line was depressed by the wheels of a train, thus advising the signalmen of its arrival at the Inner Home signal, even though it might not be seen through the fog. The treadle, however, was taken out of use when track circuits D and E were substituted for the standard Sykes treadles. Since track circuit E extends from 200 yards on the approach side of the Outer Home up to the Inner Home signal, its occupation does not indicate the position of the train in relation to these signals. Consequently when a train is entering the station with the Inner Home at Danger, the signalman has to wait until he has seen the train arrive or has heard it at the platform before replacing the Outer Home to Danger behind it and clearing the Inner Home. As the box is 200 yards ahead of the Inner Home, trains standing there are out of sight of the signalman during fog.

On this occasion the "Train Entering Section" signal for the 12 noon train was received at 12.37 p.m. and the train should have arrived at the platform within two minutes. Signalman Knight rightly concluded that it would take much longer on account of the fog, and left the Outer Home "off" until he was sure about the train's position. It would, however, have been prudent for him to have followed its progress by watching track circuits D and E and to have asked Hart to look out for its arrival. If this had been done, Knight would have known the moment track circuit D was re-occupied and then there might have been time to ascertain the position of the first train and to have returned the Outer Home signal to Danger before the second train had passed it. As I have already pointed out, conditions were difficult for these signalmen and I therefore do not hold them responsible for the accident.

24. I am satisfied that Driver J. Everitt of the 12.25 p.m. train failed to see the Upton Park Starter at Danger because he was not keeping a proper look out. He had practically stopped his train at the Home signal and he had seen the banner repeater for the Starter in the "on" position. He should, therefore, have been prepared to find this signal at Danger. In addition the A.W.S. caution warning which he received from the East Ham Inner Distant signal, under the Starter, should have helped him to locate it.

His view of the Starter was obscured to some extent by the masts for the overhead equipment which had recently been erected, but I believe that after cancelling the A.W.S. warning he did not cross the footplate to look out on the left hand side until the engine had passed the signal and



thus he missed it in the fog. Instead of stopping he went on without reducing speed and he must be held solely responsible for the accident. His explanation that his fireman was a new mate who did not know the route and could not help in locating the signals does not mitigate his serious mistake.

Everitt is nearly 60 years old with 44 years' service. He has been a driver for 14 years, and had a satisfactory record. He had been on duty for nearly six hours at the time of the accident, but he said that he was not feeling tired. He had been working for some time with only one day off a fortnight, excluding Annual Leave, but he had no complaints to make and had volunteered for the extra work.

#### REMARKS

25. The London, Tilbury and Southend line is equipped with the Hudd Automatic Warning System of train control, whereby drivers are given advance warning of the position and aspect of the Distant signals. It is a most valuable safeguard, but it does not relieve drivers of their responsibility for the observance of signals. It functioned correctly on this occasion and gave Driver Everitt vital information of the whereabouts of the Upton Park Starter above the East Ham Inner Distant signal, but he failed to use it.

26. The circumstances which gave rise to this accident would have been avoided if the 12.25 p.m. train had been held at the Upton Park Home signal instead of being allowed up to the Starter where, in the prevailing weather conditions, it was out of sight and out of control of the signalman. I am confident that Driver Everitt would have stopped at the Home signal if it had been kept at Danger—in fact he was preparing to do so when the signal was cleared for him. Even if he had run past it, the signalman would still have had a chance to warn him of his error by pulling the emergency lever which places detonators on the line opposite the signal box.

27. Having missed the Starter, owing to his failure to keep a proper look out, Driver Everitt found himself in a quandary. If he had stopped and sent his fireman to look for the signal the train would have been seriously delayed because, having found that it was at Danger, the driver would have had to get in touch with the signalman and advise him of his mistake. If he went on he would save delay, but unless he proceeded with the utmost caution he was seriously endangering the safety of his passengers and of those in any train ahead, as was exemplified by this accident.

28. The solution lies in preventing a driver being placed in such a predicament during fog by holding the train at a signal where the train is still within the control of the signalman, or by providing additional aids to enable the driver to locate the signal even in conditions of bad visibility. It will be recollected that the circumstances of the collision at Dagenham East on 30th January 1958 were very similar. In dense fog a driver failed to locate an outlying Starting signal at Danger, and on finding clear signals ahead he continued forward until his train collided with the one in front. In my report on that accident I recommended that during fog or falling snow a signalman should not be allowed to send a train forward to a stop signal to await acceptance ahead unless the signal was a colour light or, if a semaphore, it was fitted with co-acting detonators, the explosion of which was indicated in the box. The British Transport Commission accepted my recommendation in principle, but practical difficulties prevented its universal adoption.

29. The effect of applying this recommendation was examined by all the Regions, but the important and complicated nature of the problem did not lend itself to an immediate solution. Consequently it was not until 8th July 1959 that the Regional General Managers were instructed by the Commission to go ahead with the revision of the instructions in those signal boxes where the prohibition could suitably be applied. Upton Park was one of those boxes, but the actual instruction did not reach the signalman until the day after the accident.

Similar restrictions have now been applied in 1510 more signal boxes throughout British Railways bringing the total to 5522, which is 82% of those boxes where this restriction might be applied. It is also the Commission's policy to substitute, where practicable, colour light signals for semaphore Starters when they become due for renewal. The Commission's programme for providing complete colour light signalling for their main lines is well in hand with special reference to those lines which are to be electrified, and it is expected that the conversion of the signals on the London, Tilbury and Southend line will be completed next year.

30. The replacement of semaphores by colour lights will help drivers in their difficult task of locating signals in fog, but even when the present extensive programme is completed there will still be a large number of semaphore signals on main lines. I appreciate that an extension of my recommendation to other boxes may cause some additional delay to traffic in fog, but this must be set against the gain in safety. I therefore consider that the problem of operating in fog or falling snow should be reviewed again to see whether the safeguards I have proposed cannot be extended even further.

31. As already pointed out, the working in fog at East Ham No. 2 box was made more difficult when the annunciator was replaced by a long track circuit, occupation of which did not indicate the position of a train in relation to the Home signals. The annunciator has now been brought into use again as a temporary measure until new colour lights replace the semaphores. The provision of long track circuits may present similar difficulties at other places, and I consider

that, where necessary, they should be split so as to separate the berth track circuit from the clearance track circuit, and thus give signalmen a better indication of the position of trains which may be out of view during conditions of bad visibility.

32. The East Ham No. 2 Starting signal is only 50 yards ahead of the box and trains are allowed up to it at Danger in fog or falling snow because they are always in sight of the signalman. The emergency detonators were, however, located on the London side of the box to cover a crossover and so could not be used as an additional reinforcement to the Starter. The crossover has now been removed, and the detonators have been placed just ahead of the signal and the signalmen have been instructed to place them on the rail in accordance with Rule 94 whenever they wish to stop a train at this signal in conditions of bad visibility. There may be other boxes with Starting signals directly ahead, where similar modifications can be made and I think that this question might well be examined when the review recommended in paragraph 30 is undertaken.

33. Owing to staff shortage, on account of impending redundancy due to the forthcoming electrification, Driver Everitt and other men at his depot had volunteered to work on Sundays and rest days. Consequently Everitt had only been getting on the average one day off a fortnight excluding his annual leave. I do not attribute his lack of vigilance to this cause because the shifts were limited to 8 hours and they included long rest periods. It is, however, desirable for enginemen, on whose vigilance the safety of train operation so largely depends, to be given regular and adequate days off duty, and I hope the staffing difficulties will soon be overcome so as fully to achieve this object.

I have the honour to be,

Sir,

Your obedient Servant,

C. A. LANGLEY,

*Brigadier.*

The Secretary,

Ministry of Transport.

*Extract from Rules*

The relevant rules governing the movement of trains during fog are given in the following extracts from the 1950 Rule Book.

Operation of  
signals.

39. (a) When a stop signal is at Danger the stop signal next in rear of it and worked from the same signal box must not be lowered for an approaching train until the train is close to such signal and has been brought quite or nearly, to a stand.

*Note.* The above paragraph does not apply to multiple-aspect signals.

Where, however, the Signalman is unable to satisfy himself, in accordance with Rule 65, that the stop signal controlling the entrance to the section ahead is at Danger, the stop signal next in rear must not be lowered for a train to draw towards such signal . . . . .

Use of signal  
controlling  
entrance to section  
ahead during fog  
or falling snow.

(b) During fog or falling snow, a train must not be allowed to draw forward to the stop signal controlling the entrance to the section ahead to await acceptance from the signal box in advance, unless track circuit or other apparatus is provided to avoid the necessity for trainmen going to the signal box to carry out Rule 55, or the Signalman is satisfied that a train standing at such signal will be within his view. A train may, however, be allowed to draw forward towards this signal in the absence of track circuit or other apparatus where special instructions to this effect are issued, or for station duties or shunting purposes.

In no circumstances, however, must a train be allowed to draw towards the signal controlling the entrance to the section ahead unless the Signalman can comply with the second paragraph of clause (a) of this Rule . . . . .

Driver to draw  
slowly forward  
when signal is  
lowered but not  
to pass out of  
sight of  
Signalman.

(c) The Driver of any train which has been stopped or brought nearly to a stand in accordance with clause (a) must, after the signal has been lowered, draw slowly forward to the next signal and be prepared to stop at the signal box if necessary. When proceeding towards a signal controlling the entrance to the section ahead at Danger, he must (except for station duties or shunting purposes, or as shown below) only proceed as far as is necessary to leave the last vehicle well clear of junction points and junction crossings, and, as far as practicable, within sight of the Signalman.

Where there are no junction points or junction crossings the Driver must bring his train to a stand in a convenient position for the carrying out of Rule 55.

Where track circuit or other apparatus is provided in connection with the signal controlling the entrance to the section ahead, to avoid the necessity for trainmen having to go to the signal box to carry out Rule 55, the Driver must draw forward to such signal.

Signalman to be  
reminded.

55. (a) When a train has been brought to a stand owing to a stop signal being at Danger, the Driver must sound the engine whistle, and, if still detained, the Guard, Shunter or Fireman must (except as shown in the following paragraph, or where printed instructions are given to the contrary) go to the signal box and remind the Signalman of the position of the train . . . . . In clear weather a train must not stand more than two minutes at a stop signal before the man goes to the signal box. During fog or falling snow, unless the stop signal is lowered immediately after the engine whistle has been sounded, the man must at once proceed to the signal box.

Track circuits  
or other  
appliances.

Where track circuits or electric depression bars are provided, as indicated on or near the signal posts, or in respect to which printed instructions are issued, and the train is standing on such track circuits or bars, it will not be necessary for the Guard, Shunter or Fireman to go to the signal box to remind the Signalman of the position of the train, but the engine whistle must be sounded . . . . .

Care in  
operating signals.

65. When a Signalman operates a signal lever he must watch the signal to ascertain that it goes fully to the required position or aspect. Where a fixed signal is out of the Signalman's sight and its working is indicated by a repeater in the signal box, he must satisfy himself by means of the repeater that the signal is working properly, and if a signal light repeater or indicator is also provided ascertain therefrom that the light is burning . . . . .

Fogsignalling  
at signal boxes.

94. If for any purpose the Signalman requires to stop an approaching train during fog or falling snow and a Fogsignalman 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 Fogsignalman is on duty or not.