MINISTRY OF TRANSPORT AND
CIVIL AVIATION

# RAILWAY ACCIDENTS

# REPORT ON THE COLLISION which occurred on 22nd December 1955 at LUTON STATION in the LONDON MIDLAND REGION BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE
1956
THREE SHILLINGS NET

MINISTRY OF TRANSPORT AND CIVIL AVIATION,
Berkeley Square House,
London, W.1.

*11th May*, 1956.

SIR,

I have the honour to report for the information of the Minister of Transport and Civil Aviation, in accordance with the Order dated 23rd December 1955, the result of my Inquiry into the collision which occurred at 7.56 p.m. on 22nd December 1955, at Luton Station in the Midland Division of the London Midland Region, British Railways.

The 6.45 p.m. train from St. Pancras to Leicester arrived at Luton at 7.44 p.m. Eight minutes later as the train was leaving the station three passengers attempted to board it, but one of them got into difficulties and the guard promptly stopped the train with the rear three coaches still at the platform. There was a delay while the incident was investigated, and in the meantime the 7.10 p.m. express from St. Pancras to Derby was accepted by the Luton South box. The acceptance was in order but the train passed the Luton South distant signal at caution and the home signal at danger, and it then collided with the rear of the Leicester train at about 20 m.p.h.

I regret to report that one passenger was killed and 23 were injured, of whom 12 were detained in hospital. In response to emergency calls for assistance the County Police, ambulances and the Red Cross Service arrived within five minutes and they were followed shortly afterwards by doctors and members of the Women's Voluntary Service. The St. John's Ambulance Brigade, and the Fire and Civil Defence Services also rendered invaluable assistance. The first ambulance left for the Luton and Dunstable General Hospital at 8.9 p.m., and the last injured person was removed from the train at 8.50 p.m.

The Up and Down lines were blocked, but prompt steps were taken to stop traffic from both directions. Breakdown trains from Kentish Town and Wellingborough arrived on the scene without delay and the lines through the station were re-opened for traffic by 4.30 a.m. on the following morning, 8½ hours after the accident. In the intervening time all traffic was worked over the Goods lines, and passenger trains suffered comparatively little delay.

The passengers from the damaged trains were conveyed to their destinations very promptly. In just over an hour all of them had left in buses for Leagrave, the next station to the north, where trains were specially stopped.

The night was dark with a little haze and the rails were damp.

## DESCRIPTION

### *The Leicester Train*

1. The Leicester train at the time of the collision comprised three non-corridor, three corridor coaches, and three vans, two of which had been attached next to the engine at Luton. The three non-corridor coaches at the rear of the train were of composite construction with steel panels on wood framing. Two of the corridor coaches were of similar construction, and the remaining four vehicles had timber bodies. All were mounted on steel underframes, with shock absorbing buffers in use on the coaches. The train was hauled by a Class 5 engine with 2-6-0 wheel arrangement, and the total weight including the engine was 360 tons; the overall length was 197 yards.

### *The Derby Express*

2. The Derby express comprised 10 corridor coaches weighing 306 tons. Eight of them were of composite construction with steel panels on wood framing; the third vehicle was a modern all steel coach, and the seventh was a pre-war cafeteria car built of timber. All were mounted on steel underframes, and shock absorbing buffers were in use throughout. The train was hauled by a Class 5 engine with 4-6-0 wheel arrangement weighing 126 tons. The engine had run 29,308 miles since its last light intermediate repair in May; its last X examination was on 28th November.

The total weight of the engine and train was 432 tons and its overall length was 227 yards. The steam brake operated on the coupled and tender wheels of the engine, and the vacuum brake on all wheels of the coaches, which were equipped with D.A. valves. The combined brake power of the engine and train was 328½ tons, equivalent to 76 per cent of the total weight.

### *Effect of the Collision*

3. Neither train was derailed but the force of the collision partially telescoped the last two coaches of the Leicester train, which was standing with the brakes off. The leading three compartments of the rear coach, and the guard's van and adjoining passenger compartment of the next coach were destroyed. The draw bar hook between the two leading vehicles was broken, and the engine and front van were driven 20 yards forward.

The right-hand side of the buffer plate of the Derby express engine was bent backwards but otherwise the damage to this train was mainly superficial.

*The Site*

4. The main line from St. Pancras runs in a northerly direction and it rises with comparatively easy gradients to St. Albans (20 miles from London) and then runs through undulating country to an intermediate summit one mile north of Chiltern Green (27¼ miles). Thenceforward the line falls to Luton (30¼ miles) and then climbs again to Leagrave (33 miles) before descending into the valley of the River Ouse at Bedford (50 miles).

5. There are four tracks between Chiltern Green and Luton, namely Down and Up Passenger, and Down and Up Goods, in that order from west to east, and their alignment and gradients are shown on the accompanying drawing (Figs. 1 and 3).

It will be noted that the Down line rises from Chiltern Green to the intermediate summit at the 28¼ mile post where the track is on a right-handed curve in a cutting. This is followed by a left-handed curve a ¼ mile further on, and a right-handed curve near the 29 mile post, where the large engineering works of the Vauxhall Motor Company on both sides of the line come into view. A part only of these works is shown on Fig. 1 so as to illustrate the position of a number of sodium yellow lights to which reference is made later. There is an overbridge known as the "Vauxhall" bridge at the Luton end of the main buildings, and another one known as the "Pipe" bridge 550 yards further on.

*Signalling*

6. The two boxes at Luton are only 420 yards apart, and the Luton South Down Passenger distant signal, which is a 3-aspect colour light also acts as the outer distant for the North box. At the time of the accident it was 1,448 yards from the Luton South Down home, and it was sited with the main yellow aspect 14 ft. 6 ins. above rail level on the left-hand side of the Down Passenger line. It was focussed so that it could be seen at a range of 370 yards from the left-hand side of the footplate. The Luton South Down home signal is an upper quadrant semaphore with the Luton North Distant under it. It is also on the left-hand side of the track and it can be seen from a range of 412 yards.

At night the glow from the Vauxhall Works buildings formed an unmistakable landmark, but at the time of the accident the cluster of yellow lights around the works and two similar lights on the Vauxhall overbridge made it difficult to identify the Luton South distant signal when it first came into view showing yellow aspects, although it stood out prominently at close range and also when it was showing a green aspect.

The Luton South distant colour light signal changes from Y to YY when the home signal is clear, and to G, when in addition the Luton North inner distant is off; it is automatically replaced to Y by the occupation of the Luton South Down home berth T.C.397. Occupation of this track circuit also places and/or maintains the Luton South Down Passenger block instrument at "Train on Line". Further controls ensure that "Line Clear" cannot be given to Chiltern Green unless the aspect of the distant signal is Y and the lever of the Luton South home signal is locked normal; this lever is released for one pull only by "Line Clear" from Luton North. Similarly the occupation of Luton North Down home berth T.C.398, which runs through the station, places and/or maintains the Luton North Down Passenger block instrument at "Train on Line", and also locks the Luton South home signal in the normal position. This track circuit is indicated in both boxes.

*Table of Distances.*

7. The relevant distances from the Luton South Down Home signal were: —

| | | | |
|---|---|---|---|
| St. Pancras Station ... ... ... ... ... ... | 30 | miles | South |
| St. Albans Station ... ... ... ... ... ... | 10 | ,, | ,, |
| Chiltern Green signal box ... ... ... ... ... | 2¾ | ,, | ,, |
| Intermediate summit ... ... ... ... ... ... | 1¾ | ,, | ,, |
| Luton South Down distant signal ... ... ... ... | 1,448 | yards | ,, |
| Vauxhall Bridge ... ... ... ... ... ... | 980 | ,, | ,, |
| Pipe Bridge ... ... ... ... ... ... ... | 430 | ,, | ,, |
| Luton South signal box ... ... ... ... ... | 132 | ,, | North |
| Luton Station footbridge ... ... ... ... ... | 410 | ,, | ,, |
| Point of Collision ... ... ... ... ... ... | 435 | ,, | ,, |
| Luton North Down home signal ... ... ... ... | 512 | ,, | ,, |
| Luton North signal box ... ... ... ... ... | 553 | ,, | ,, |
| Leagrave Station ... ... ... ... ... ... | 2¾ | miles | ,, |

## EVIDENCE

8. The Leicester train, with Driver H. Cookson in charge of the engine, left St. Pancras 11 minutes late. The first stop was at Luton where the train arrived at 7.44 p.m.—14 minutes late. The engine was uncoupled, and Cookson picked up two vans in accordance with the normal routine and backed them on to the train. This movement and the station duties were completed quicker than usual, and the train was ready to leave at 7.52 p.m. after a stop of only eight minutes instead of the booked time of 10 minutes.

9. Passenger Guard E. Foulger, who was travelling in the fourth vehicle from the rear gave the 'right away' signal, but as the train was moving out of the station he heard loud shouting and on looking back he saw a man trying to get into one of the rear coaches. Foulger realised that the passenger might fall between the coaches and the platform so he promptly applied the brake, and the train stopped with the last three coaches still in the station.

10. Police Constable J. T. Allen, who was standing on the platform, confirmed that all carriage doors were closed before the train started, but just as it was moving out of the station he saw three men running along the platform from the direction of the refreshment room. Two of them boarded the last coach but the third man, who opened a carriage door of the next coach could not get in. Allen shouted to him to stand clear but the passenger persisted in his efforts and by this time was being half dragged along the platform towards the ramp. Allen ran after him and shouted again, and the train stopped just in time to save the man from being injured. While Allen and the Guard were taking particulars from this man and the other two passengers, the Derby express collided with the rear of the stationary train.

11. The collision was witnessed by Stationmaster R. W. Ward, who saw the lights of the approaching express engine, which he thought was travelling at about 20 m.p.h. at the moment of the collision. He took immediate steps to stop rail traffic and to organise the rescue work, after which he arranged for the prompt conveyance of the stranded passengers to their destinations.

12. Signalman L. J. Wharton of Luton South box described the train movements at the time of the accident. On receiving an acceptance for the Leicester train from the North box he pulled his home and distant signal levers, but the distant signal aspect could only change to double yellow because Luton North distant was not lowered. The train arrived at 7.44 p.m. and eight minutes later Wharton saw it move from the platform. As soon as the tail light was about a coach length beyond the footbridge he gave "Train out of Section" to Chiltern Green in accordance with his normal practice, since by this time he estimated the train would be 440 yards beyond the Home signal, so giving the clearance required by the Regulations.

He accepted the Derby express at the same time, and three minutes later he received "Train entering Section" from Chiltern Green. It was not until then that he noticed T.C.398 was still occupied, and he saw the tail light of the Leicester train near the end of the platform. He spoke to Signalman Horne at Luton North to find out the cause of the delay but he did not anticipate any untoward incident because the distant signal was at caution and the home signal was at danger with sufficient clearance beyond it. Wharton said, however, that he would not have accepted the Derby express even with sufficient clearance, if he had known that the Leicester train was going to be stopped unexpectedly.

Wharton was still speaking to Horne when, on looking in the London direction, he saw the express coming under the Pipe bridge. He realised at once that it was travelling too fast, and he immediately gave the "Train running away on the right line" (4-5-5) signal. As the express got nearer he saw sparks flying from every brake block.

13. Signalman F. Horne of Luton North box said that the Leicester train arrived at 7.45 p.m., and as it entered the platform and occupied the berth track circuit he cleared his home signal for it. He had already obtained "Line Clear" from Leagrave, and when the station duties were completed he cleared the starting signal, which was some 440 yards ahead of the box. He gave "Train entering Section" to Leagrave when he saw the train start, but it stopped again before it had passed the box so Horne did not give the "Train out of Section" signal to Luton South. Horne received the 4-5-5 signal from the South box just before the collision, and when it occurred he immediately sent "Obstruction—Danger" to Leagrave.

14. Driver J. A. Chambers, of the Derby express, said he was in the No. 3 passenger link working main line express and passenger trains. He had been stationed at Kentish Town since he was promoted to driver in 1937, and he was thoroughly familiar with the route to Luton. On the day of the accident he signed on for duty at 5.30 p.m. and he took over the engine at Kentish Town Motive Power Depot where it had already been prepared. He took a train of empty coaches into St. Pancras and then backed his engine on to the express train. Chambers said that the 10-coach load of 306 tons was well within the capacity of the engine.

The train left St. Pancras at 7.18 p.m.—8 minutes late, and the first booked stop was Kettering, 42 miles north of Luton. The engine was running well, but Chambers noticed shortly after the start that the fireman was having some difficulty with the exhaust steam injector and that he had switched over to the live steam injector. Chambers said that this did not worry him, but it meant that he had to watch the gauge glass as he was uncertain whether this injector alone could maintain sufficient water in the boiler, and this distracted his attention.

Except for the difficulty with the injector there was nothing unusual about the journey from St. Pancras. The speed through St. Albans was about 60 m.p.h. and it had risen to 70 m.p.h. by the time the train reached the intermediate summit just beyond Chiltern Green. Chambers said that he kept the engine working with full regulator and between 15 and 20% cut-off, and he had not intended to shut off steam until he reached the top of the next bank beyond Luton.

All the Chiltern Green signals were clear, but on descending the gradient towards Luton he was unable to identify the distant signal amongst the cluster of yellow lights around the Vauxhall Works. He said that he expected to see a green aspect as he had never been checked there before on a through run, and he did not realise he had passed the signal until he had almost reached the Vauxhall bridge, where he promptly closed the regulator and applied the brake, reducing the vacuum to about 10 inches. He made a further reduction of about 5 inches before he reached the Pipe bridge, and when he saw the lights of Luton station ahead he made a full application, but he was unable to stop the train at the home signal. Chambers thought that the wheels were skidding when he passed the signal box, and he got the engine into reverse by the time it reached the platform. He admitted that he made an error of judgment in the handling of the brake, and he appreciated that he should have made an emergency application directly he realised he had missed the distant signal.

15. Fireman G. Owen said that he had been Driver Chambers' regular mate for the last five months, and he was quite familiar with the route to Luton. He started from St. Pancras with a full boiler and found it was steaming well at about 200 lbs per square inch steam pressure. He used the exhaust injector at first but shortly afterwards he noticed that it was wasting water so he changed over to the live steam injector. This worked satisfactorily but it did not fully maintain the water level, which fell gradually until there was only about two inches showing in the gauge glass when the train passed through Chiltern Green. Owen, however, was not worried, and he intended to try the exhaust steam injector again on the falling gradient into Luton.

He also thought the train would have a clear run through Luton after passing Chiltern Green without a check. He noticed the brake application near the Vauxhall bridge because the live steam injector "blew off" as was usual when the brakes were applied, and he confirmed that the train brakes were hard on when it entered the station. He thought that the speed was about 10 m.p.h. when the collision occurred.

16. Passenger Guard T. H. Johnson said that on taking charge of the Derby express at St. Pancras he tested the brakes from the van of the rear vehicle. Twenty-one inches of vacuum were registered on the gauge and he reduced this to about five inches when he lifted the brake handle.

The train left seven minutes late and it ran without incident until Johnson felt a sudden brake application when his van was about 400 yards on the London side of the Luton South signal box. On looking out of the van he saw the home signal was at danger and he applied the hand brake at once. He said that he had not noticed any earlier brake application, and he thought that if it had been made it must have been a very light one, and certainly not as much as would have been produced by a 10 inch drop in vacuum.

17. Chargehand Fitter A. F. Sibley said that he examined the Derby express engine at Kentish Town Depot on the day after the accident. The brakes were working satisfactorily and the brake blocks were in good condition; there were no signs of their having been overheated but he noticed some slight marks on the wheel tyres which suggested they might have been skidding slightly. Both the exhaust and live steam injectors were working efficiently, though Sibley agreed that exhaust steam injectors were sometimes "temperamental" and that they required adjustment by the firemen from time to time.

An examination of the records showed that a number of minor repairs had been carried out on the exhaust steam injector of the express engine since its last intermediate repair in May, 1955.

18. The brake equipment of the coaches of the express were examined and tested as soon as they had been removed from Luton Station to some adjoining sidings. The brake work was complete and in good order and all the brake pistons were in good adjustment.

19. Telegraph Inspector H. Milsom and Signal Inspector P. E. Wareham arrived at Luton a few hours after the accident and tested the relevant interlocking and electrical controls in the South and North signal boxes. They found everything in good order, and their tests confirmed that, with T.C. 398 occupied, Luton North could not give "Line Clear" to Luton South and the Luton South home signal was locked normal.

## Conclusion

20. The Leicester train was stopped unexpectedly as it was leaving the station owing to the irresponsible action of passengers in attempting to board it in motion. Guard Foulger took commendably prompt action when he saw that one of these passengers was in danger of falling under the train, and he was in no way to blame for the collision which followed. The train was fully protected by signals, and the sole cause of the accident was the very considerable over-run by the Derby express past the Luton South Home signal at danger.

21. A serious error was made by Driver Chambers, who did not keep a proper lookout on approaching Luton. He failed to see the Distant signal at caution, and when he did eventually see the home signal at danger his brake application was much too late to be effective. He suggested at first that the trouble with the exhaust injector distracted his attention, but he agreed that he was not worried by this

difficulty, which seems to have been a minor one. On the other hand, he admitted that he was expecting to have a clear run through Luton as he had never been checked there before, and I think that this was the real reason for his lack of vigilance.

Although the yellow aspect of the Luton South distant signal was not easy to identify at first amongst the cluster of yellow lights around the Vauxhall Works it shone out clearly at close range and it should not have been missed by an observant driver. In spite of his statement that he made a partial brake application near the Vauxhall bridge I doubt whether he took any effective action until he was near the home signal, where his emergency brake application was first noticed by the guard.

22. The Block Regulations lay down that, except where there are instructions to the contrary, the preceding train must have passed at least ¼ mile beyond the home signal before the "Out of Section" signal is sent and the next train is accepted. In some places clearance points are given in the signal box instructions, but at most places, including Luton South, it is left to the signalman to judge the distance. At this station the footbridge is over 400 yards from the Luton South Down home signal, and I therefore do not criticise Signalman Wharton for accepting the Derby train when he saw the tail light of the Leicester train passing out of sight beyond this bridge, even though on this occasion the train stopped unexpectedly five yards short of the specified ¼ mile clearance beyond the home signal. This signal was locked at danger with the distant signal locked at caution, and Wharton had every reason to expect that their aspects would be observed and obeyed.

## Remarks

23. Apparently no previous complaints had been made about the yellow lights near the Luton South Down distant signal, but I am glad to record that as soon as their attention was drawn to the possibility of confusion, Messrs. Vauxhall Motors Limited and the Luton Borough Council took prompt steps to screen all lights which might interfere with the view of the signal. This work has been completed, and the results are entirely satisfactory. The distant signal has also been moved to a new site 310 yards in rear of its old position. It now stands out very clearly, and the greater braking distance enables trains to travel in safety at higher speeds.

24. The signalling arrangements at Luton were up to modern main line requirements and they were in good order. The Railway Authorities have, however, accepted a suggestion that the 512 yards long track circuit between the South and North home signals should be used to control the Down block instrument in the South box instead of leaving the signalman to judge the 440 yards over-run necessary for acceptance purposes. The same arrangements have been made in the Up direction. These controls should simplify the work of the signalmen in both boxes, and they are another example of the many minor signalling improvements which, in addition to major schemes, are being made on the British Railways.

I have the honour to be,

Sir,

Your obedient Servant,

C. A. LANGLEY,

*Brigadier.*

The Secretary,

Ministry of Transport and Civil Aviation.

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FIG. 3
GRADIENT AND CURVATURE DIAGRAM

FIG. 2
SIGNALLING DIAGRAM SHOWING RELEVANT SIGNALS ONLY
SCALE: 200 FT. TO 1 IN.

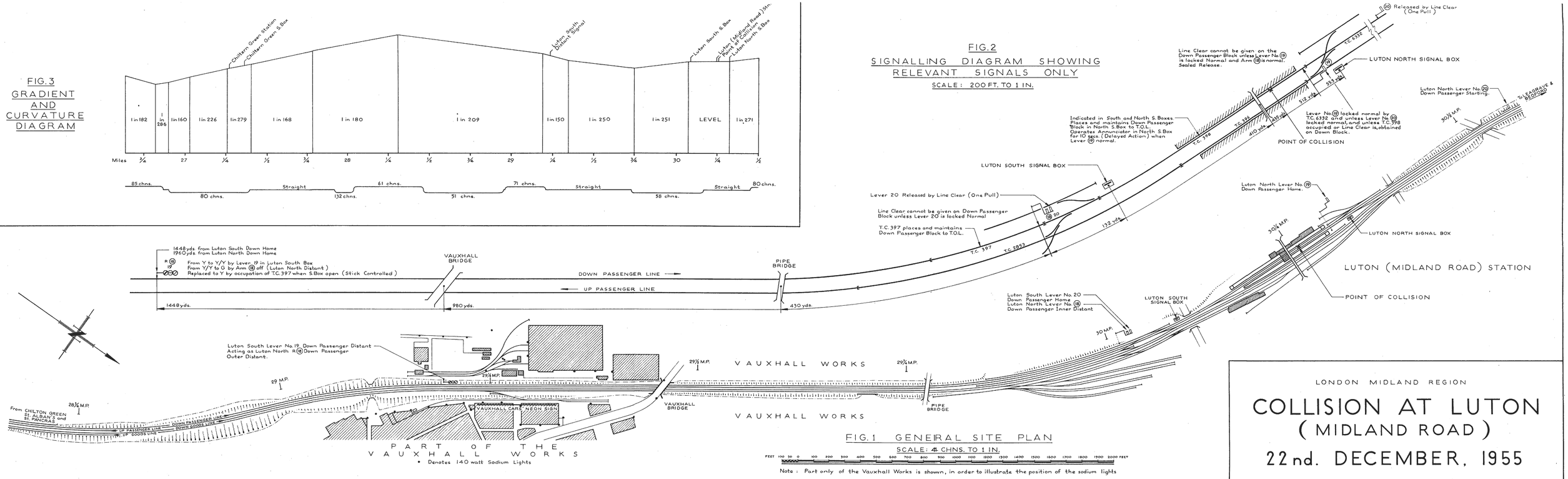


FIG. 1 GENERAL SITE PLAN
SCALE: 4 CHNS. TO 1 IN.

LONDON MIDLAND REGION

# COLLISION AT LUTON (MIDLAND ROAD)

## 22nd. DECEMBER, 1955