



DEPARTMENT OF TRANSPORT

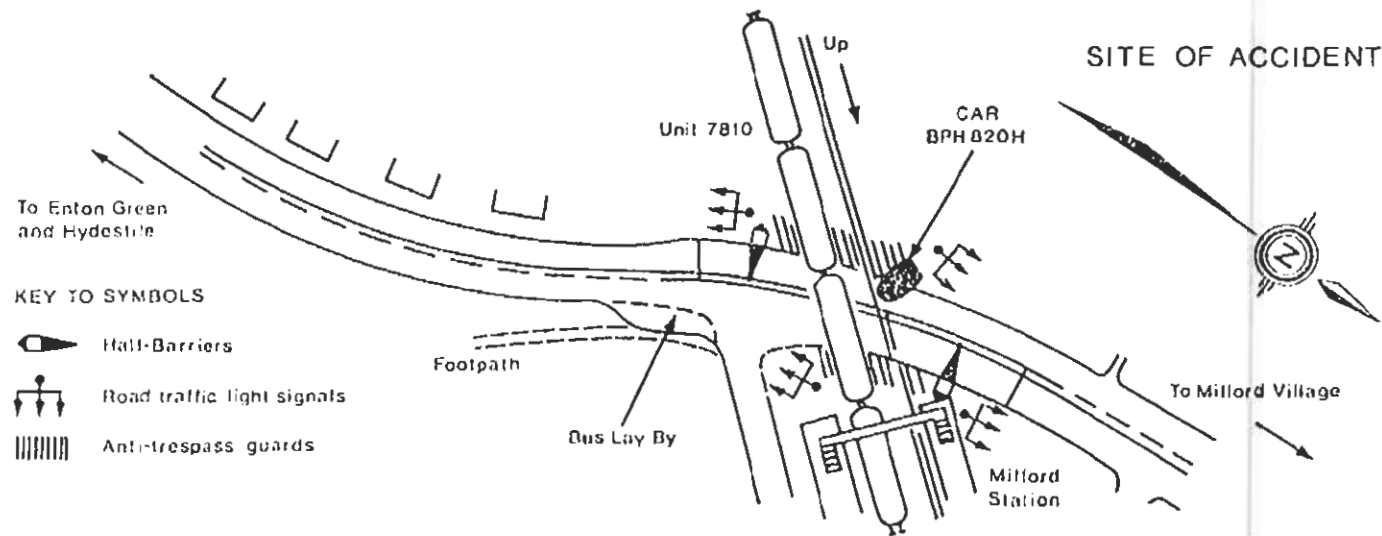
RAILWAY ACCIDENT

**Report on the Accident that
occurred on 22nd December 1978
at Milford Level Crossing**

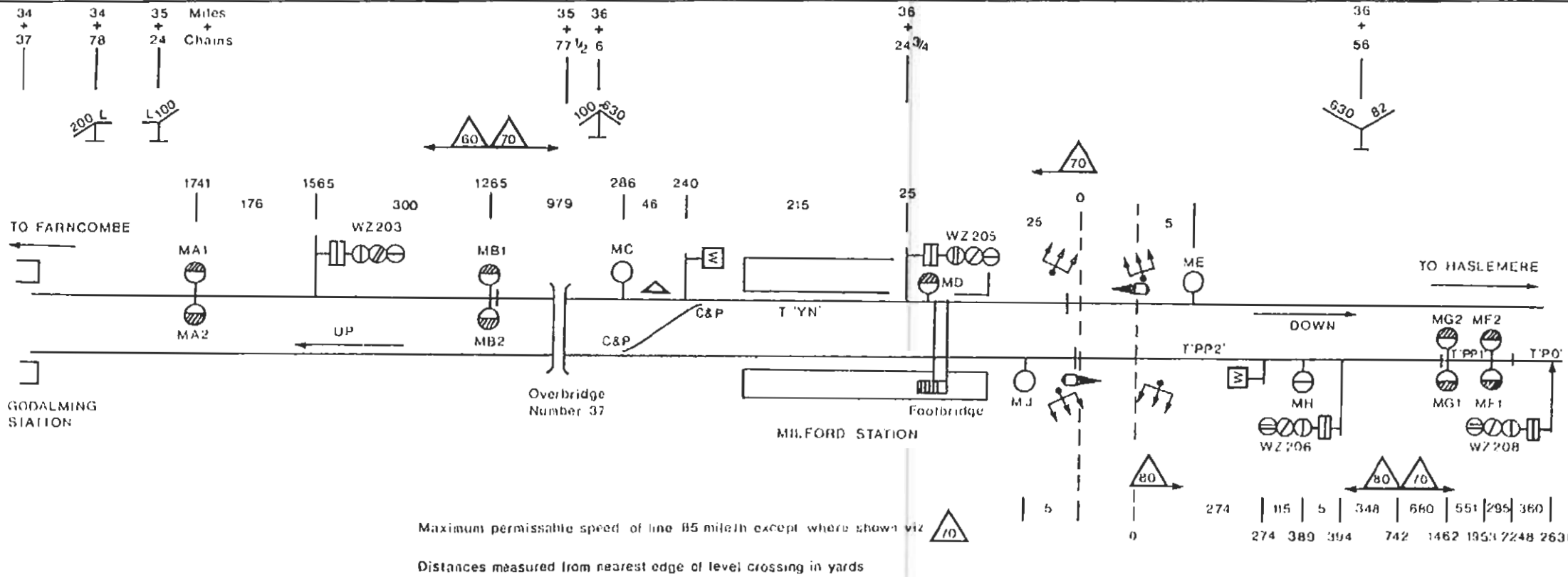
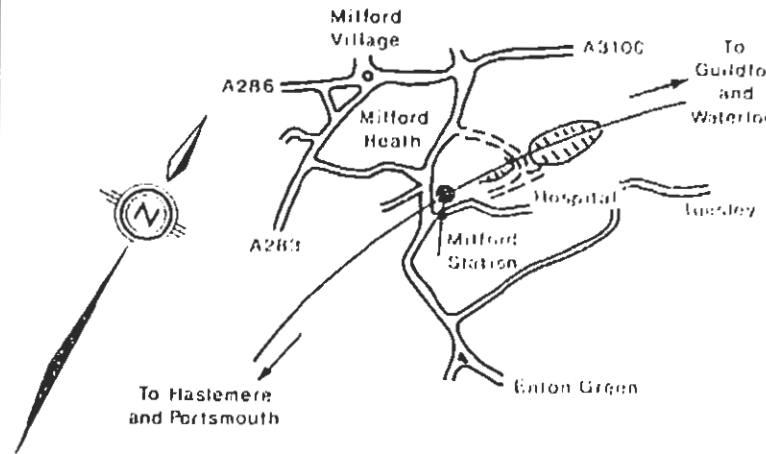
IN THE
SOUTHERN REGION
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

£1.20p net



LOCATION OF MILFORD STATION



MILFORD PUBLIC LEVEL CROSSING

COLLISION BETWEEN 1122
WATERLOO TO PORTSMOUTH
TRAIN AND CAR REG No
BPH 820H AT APPROX
12.50 ON FRI 22 DEC 78

SIR,

I have the honour to report for the information of the Minister that, in accordance with the appointment dated 17th January 1979, I served as Assessor to Lieutenant Colonel G. M. McEwan, HM Coroner for Surrey, at the inquest held at Guildford on 6th April 1979 into the death of Valerie Anne Fitzgerald White who lost her life following an accident which occurred at about 12.50 on 22nd December 1978 at Milford Level Crossing on the Guildford to Portsmouth line of the Southern Region of British Railways. A verdict of Accidental Death was returned.

Milford Public Level Crossing is equipped with Automatic Half-Barriers which were installed on 17th December 1973 by Order of the Secretary of State and which were inspected and approved on his behalf on 15th March 1974. Mrs. White was driving her car from the Hydestile direction over the crossing when it was struck by a Down train which had overrun the Stop signal at the country end of the Down platform at Milford Station. The car was pushed onto the Up line and was badly damaged. Mrs. White had died instantly. The train came to a stand with the third coach on the crossing. It was not derailed and had suffered almost no damage.

At the time of the accident the weather was cold and foggy, visibility being about 50 to 100 yards. Mrs. White was driving with the car's headlights on in the dipped position. The warning twin red road traffic-light signals were not flashing as Mrs. White drove onto the crossing but all the traffic lights became illuminated and the half-barriers descended afterwards in response to the operating sequence installed at the crossing.

The wreckage of the car was removed and the train was later driven to Fratton after it had been attached to the front of the following train.

DESCRIPTION

The site

1. Milford Level Crossing, which is legally described as a Public Level Crossing at National Grid Reference SU 954413, lies at the southern end of Milford Station and is adjacent to the foot of the platform ramp. The station is on the main Waterloo to Portsmouth line of the Southern Region of British Railways which is electrified at 750v DC on the conductor rail system. Standard three-aspect colour-light signalling was installed in 1973 and the level crossing was modernised in the December of that year when Automatic Half-Barriers (AHB) were installed.

2. The unclassified road, Station Lane, from Hydestile to Milford Village crosses the railway at a skew angle where the railway is closer to the road on one's left-hand side. There is a bend in the road approaching from the Hydestile direction which limits the road user's visibility of the crossing to about 300 yards but this was limited further on the day of the accident by fog. Full road markings, steady amber and flashing red road traffic light signals, road traffic warning signs, and barriers which close the nearside of the road only are provided in accordance with the Requirements for Automatic Half-Barrier Level Crossings issued by the Department of the Environment in February 1971.

The train and the car

3. The train involved in the accident was a Class 423 (4 VEP) four-car electric multiple unit which formed the 11.22 service from Waterloo to Portsmouth Harbour. The car was a Vauxhall Viva, Registration Number BPH 820H.

Accident damage

4. The car received extensive damage to its offside, to its roof, and to the rear of the nearside. The rear axle, including the wheels, was torn off in the collision. The leading coach of the train suffered only minor damage on its right hand side; the life guard was bent back, the leading wooden stepboard damaged and the electrical pick up shoe damaged. There were signs of a collision on the right hand buffer and the leading gangway connection. The car was thrown onto the Up line and came to rest on the southern side of the crossing and facing towards its centre. The train, which was not derailed, came to rest with the leading cab about 45 yards south of the centre of the crossing. None of the level crossing equipment or its controls was damaged.

The signalling and level crossing controls

5. The level crossing controls at Milford form part of the signalling controlled from Farncombe Signal Box. The next signal box to the south is Haslemere and trains between them in the Down direction are signalled under the Track Circuit Block Regulations. Milford Level Crossing is about one third of the way from Farncombe to Haslemere and is 4,758 yards from Farncombe Signal Box. On the Down approach to Milford within the level crossing control there are two three-aspect colour-light signals, WZ203 at 1,565 yards and WZ205 at 25 yards from the crossing. Both signals are fitted with Automatic Warning System (AWS) equipment. Signal WZ205 is located on the platform at Milford Station just in rear of the footbridge and its aspect is conditioned by the selection of the level crossing control in Farncombe Signal Box. With the selector in the 'non-stopping' mode the signal acts as an automatic signal whose aspect is governed by the state of the track circuits in advance of it. When a train reaches a pair of treadles (MA) 1,741 yards from the crossing (52 seconds running time for the fastest non-stop train) it alerts the level crossing controls and, if they are not already functioning for another train, the striking of a second pair of treadles (MB) 1,265 yards (37 seconds) from the crossing or the occupation of track circuit YN initiates the barrier operating sequence. The sequence is such that a train running at the maximum permitted speed cannot reach the level crossing until the half-barriers have been lowered for 16 seconds. However if the signalman selects the 'Stopping' mode, the effect of treadles MA and MB is inhibited and signal WZ205 is held at Red until 45 seconds after a third treadle (MC) 286 yards from the crossing has been depressed. Besides having the track ahead unoccupied, a further condition for signal WZ205 to clear is for the barriers to have been down for 11 seconds; this latter time being the balance of the 16 seconds for which the barriers have to be lowered after allowing for the shortest time taken by a train to start away from the platform and to cover the distance to the level crossing. Immediately beyond signal WZ205 is another treadle MD and beyond the crossing a further treadle ME. The latter is used to cancel the flashing red lights and to allow the barriers to rise should they not be required to remain operating for another train. The operation of treadle MD immediately starts the barrier lowering sequence, beginning with the illumination of the amber light, irrespective of whatever aspect signal WZ205 is showing.

6. The crossing protection sequence, started when treadle MC is operated by a stopping-train, is:
 - a. 15 second delay; this delay is required for the 'another train coming' control and to control the minimum road-open time between successive barrier closing sequences.
 - b. Steady amber road traffic light signals switched on and remain showing for 5 seconds.
 - c. The red road traffic light signals start to flash when the amber lights are extinguished and remain flashing until the barriers begin to rise.
 - d. 6 to 8 seconds after the red lights have started to flash the barriers begin to lower, taking 6 to 8 seconds to be lowered completely.
 - e. After the barriers are fully lowered a further 16 seconds must elapse or a total of 52 seconds from the beginning of the sequence must have elapsed before a train travelling at the fastest permitted speed can reach the crossing. In the case of stopping trains at Milford it is possible for a train to reach the crossing 5 seconds after starting from Signal WZ205. This signal is therefore also held at red until the barriers have been lowered for 11 seconds in order to meet the first of these conditions.

Because it is possible to determine reasonably accurately the length of time needed to complete station duties and the time taken between passing the treadle and stopping, both sets of timing controls on Signal WZ205 are set to clear the signal as nearly as possible at the same time.

EVIDENCE AS TO THE RUNNING OF THE TRAIN

7. The signalman on duty in Farncombe Signal Box on the morning of 22nd December 1978 was *Relief Signalman C. T. Moore* who had booked on duty at 08.00 and was being passed out for working the box by *Area Inspector W. A. H. Kendall*. He observed the passage of the 11.22 Waterloo to Portsmouth stopping train and selected the 'stopping' mode for Milford AHB. Shortly after 12.50 he received a telephone call from the Guard of the train, who was speaking from Signal WZ205 and who reported that the train had hit a car on the level crossing. He passed an 'Obstruction Danger' signal to Haslemere Signal Box and received an acknowledgement. He then called the Emergency Services, advised Guildford Signal Box to stop all Down trains, and arranged for the traction current to be cut-off.

8. Area Inspector Kendall confirmed the evidence of Relief Signalman Moore and said that having told Moore he was competent to work the box, had thereupon left for the scene of the accident.

9. The driver of the train was *Driver G. T. Watson* who took over the 11.22 train from Waterloo at Guildford. His previous working from Portsmouth had been delayed and the 11.22 left Guildford some 8 minutes late. The train ran normally and he had no difficulty in stopping at Farncombe and Godalming,

even though there was freezing fog. He had received AWS warnings or bells at each of the signals. On the approach to Milford he made a full electro-pneumatic brake application, obtaining a brake cylinder reading of 50 lb/sq in, as he was passing beneath bridge Number 37. This was his customary marker for making the necessary brake application for stopping at Milford. He was approaching Milford at his normal speed and was not attempting to make up the 8 minutes lost time. The wheels seemed to 'pick up' and they appeared to be sliding. He applied the emergency brake. He realised he was not going to stop at Signal WZ205, which was showing Red, and he began sounding the train's horn in a series of blasts. He noticed a car approaching from his left and that the barriers were still raised. The train kept on sliding towards the crossing and hit the side of the car at a speed he judged to be 5 milc/h. He admitted that he had misjudged his braking and said that the accident was in no way the fault of the motorist. She had not been attempting to zig-zag around the barriers.

10. *Guard W. Lawson* also joined the 11.22 train at Guildford and he confirmed Driver Watson's evidence about the running of the train. He thought that a normal stop was being made at Milford and had heard the driver sound the horn because his own window was open and he was looking out from his guard's compartment which was in the third coach. He then noticed that the train had reached the platform and that the leading end had passed the signal on the platform which was showing a Red aspect. He also observed that the barriers were up. He did not see the car but after the train had stopped Driver Watson spoke to him on the Loudaphone and told him of the accident. He got out onto the 'six-foot' and saw the car. He conferred with Driver Watson who then went to protect the Up line whilst he spoke to the signalman on the signal-post telephone.

11. On duty on the platform was *Railman T. Mather* and as the train entered the Station he was standing a little way away from the signal on the Down platform. Also on the Down platform were some passengers amongst whom was *Mr. D. E. Gunn*. Both Mather and Gunn confirm that they heard the sound of the train braking and the several blasts on the horn, which struck them as unusual. The train appeared to be braking normally but failed to stop at the signal which they confirmed was showing a Red aspect. Railman Mather, being closer to the crossing, noticed the car; Mr. Gunn did not. Railman Mather said he saw the barriers were up as the train passed him and Mr. Gunn noticed them beginning to lower shortly after the train had stopped.

12. *Driver R. Turner* was the driver of the train following the one involved in the accident. He was told to attach his train onto the rear of the 11.22 from Waterloo and then to drive the combined train of twelve cars to Fratton where he was relieved. He said that the train handled perfectly normally for a twelve-car train and that he would have noticed if the leading four-car unit had had defective brakes. He confirmed that the AWS was working and that there was nothing abnormal with the controls.

EVIDENCE AS TO THE SIGNALLING

13. *Mr. D. F. J. Cornall*, *New Works Assistant (Level Crossings) CS & TE's Department Southern Region* described in detail the signalling and level crossing controls at Milford Station. He said that if the signalman at Farncombe failed to select the 'non-stopping' mode the controls would automatically revert to the 'stopping' mode and Signal WZ205 would be held at Danger until the timing circuits allowed it to clear. He also explained that the function of treadle MD was purely for operating purposes. If, for any reason, it became necessary for a driver to be instructed to pass Signal WZ205 at Danger treadle MD would eventually cause the barriers to lower. The driver would be instructed not to drive over the crossing until the barriers were fully down. He agreed that it could be regarded as a form of safety device but pointed out that unless the train was going extremely slowly there was insufficient distance between the treadle and the crossing to allow time for the barrier lowering sequence to take place.

EVIDENCE AS TO FURTHER TESTS

The level crossing apparatus

14. *Area Signal Manager P. Eggar* said that on the day of the accident he went to Milford and performed a full test of the installation. He found no faults with it. He later carried out a further detailed examination of the apparatus and found that the timings over the various events were:

- a. The steady amber road traffic light signals showed for 6 seconds.
- b. Thereupon the red lights began to flash and remained flashing for 7.5 seconds before;
- c. the barriers began to lower.

He also timed the delay which occurred after track circuit YN had been occupied or treadle MC depressed before the amber lights became illuminated. The design time for this delay is 15 seconds but when tested it had risen to 17 seconds.

Condition of 4-car unit number 7810

15. Mr. A. B. Shepherd, Depot Engineer, Fratton, examined the unit involved in the accident later that day. He confirmed that the braking system was working and was within allowed tolerances. He noticed that the seal on the AWS isolator handle in the leading cab was missing although when he examined the cab the handle was in the operating position. With the handle in this position the system worked properly and in this respect confirmed the evidence given by Driver Turner. He also noticed that there was some evidence that the wheels had skidded at some time or other. He agreed that this was a normal occurrence, particularly at that time of year, and could have happened on the journey to Milford.

Braking tests on unit 7810

16. On 28th December 1978 Divisional Motive Power Inspector C. A. Stephens carried out braking tests on unit 7810. He attempted to produce a reconstruction of the events which had occurred on 22nd December. He had obtained from Driver Watson the details of how he had handled the train and said that the train was travelling at 50 mile/h by the time he passed beneath Bridge 37. He applied the brake in the same way that Driver Watson had told him he had done and would have had no difficulty in stopping the train at the station had he not had to release the brake in order to take the train over the crossing for other observations to be made. The rail conditions on 28th December were not precisely the same as on the 22nd as the rails were beginning to dry out after it had been raining. The difference in conditions could have accounted for the difference in stopping distances. He agreed that he could well have applied the brake fractionally sooner than Driver Watson had and if this was so, and bearing in mind the differences in the rail conditions, he considered it not unreasonable for there to have been a two coach length difference in the stopping places. He had taken the overall time for his test between when he first applied the brake and when he finally came to rest after having first released the brake to prevent stopping in the station. He had also noted that he had taken some 4 or 5 seconds to stop after passing the signal. He said that the train had handled perfectly normally with the brakes working efficiently. He had not noticed any significant wheel flats. He commented upon Driver Watson's driving technique, including his use of Bridge 37 as a landmark, and considered that there was nothing intrinsically wrong with it. He agreed that the weather conditions had probably been the major factor in the reduction in braking efficiency on the day of the accident.

17. Mr. C. E. W. Green, Divisional Movements Manager, South Western Division said that he had been responsible for the overall conduct of the braking tests carried out. From these and from other inquiries which he made, he was perfectly satisfied that Mrs. White had quite properly driven onto the crossing and she would have had no reason to believe that she was in any danger.

DISCUSSION

18. The operating sequence for the barrier controls at Milford AHB conformed to the Requirements of the then Department of the Environment in force at the time the crossing equipment was installed and which were still in force at the time of the accident. The evidence given showed that neither was there any fault in the signalling or the control arrangements for the level crossing nor was there any apparent reason why the driver should not have been able to bring the train to a stop normally. It has been suggested that greater safety would have been given by having full-barriers across the road and so prevent zig-zagging by motorists thus enabling the barriers to be lowered earlier. However the actual type of level crossing equipment was not material to the circumstances of this accident which arose because the train was driven past a signal at Danger as a consequence of mishandling of the brakes or misjudgement by the driver. The accident, which was the first of its kind at an AHB, could have occurred in the same way at any type of level crossing open to road traffic and under the protection of railway signals. As long as trains are manually driven and controlled, the safety of rail traffic must depend upon the strict obedience of Stop signals. AWS, when provided, is an aid to this obedience but does not relieve the driver of his responsibilities.

19. One of the recommendations on level crossing protection, which has been accepted by the Minister, is to reduce the basic time cycle at AHB from 37 to 27 seconds and to reduce the amber period from 5 to 3 seconds in keeping with that normally used at the red, amber and green road traffic-light signals at road junctions. I believe that this might have certain benefits at AHB with 'stopping-train' controls similar to those at Milford as it would enable the initiating point to be set closer to the crossing. Thus the effect of differences in driving and braking technique would be reduced. But there would be no change from the present in the way in which the barrier-closing sequence responded to a train passing the protecting signal at 'Danger' and it could result in the initiating point being very close to that at which trains stop.

CONCLUSIONS

20. On his own admission Driver Watson failed to prevent his train passing Signal WZ205 at Danger. From the subsequent tests and checks on the installation it is most likely that not even the amber light had become illuminated before Mrs. White drove onto the crossing and into the path of the oncoming train. In my view the sole responsibility for the accident lies with Driver Watson who had failed to appreciate that, notwithstanding his successful stops in apparently similar conditions at Farncombe and Godalming, his normal braking technique at Milford would not stop his train at the signal. I am in full agreement with the verdict of Accidental Death returned at the Coroner's Inquest.

21. Although this type of accident is not unique to AHB, this one was the first to happen at one, and even though it is estimated that there are only 11 other AHBs where precisely similar conditions occur, I have considered carefully the various suggestions which have been made for altering the arrangements at Milford Public Level Crossing. Most solve one problem at the expense of creating another. Whilst I believe that the reduction in the basic time cycle for AHBs might confer certain benefits it would not overcome the more fundamental problem which occurs at all types of level crossing and which was exemplified by this accident. I therefore feel it would be wrong to insist on this particular modification at Milford and similar AHBs and accordingly I have no recommendations to make.

I have the honour to be,

Sir,

Your obedient Servant,

C. B. HOLDEN,
Major.

The Permanent Secretary,
Department of Transport.