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DEPARTMENT OF TRANSPORT

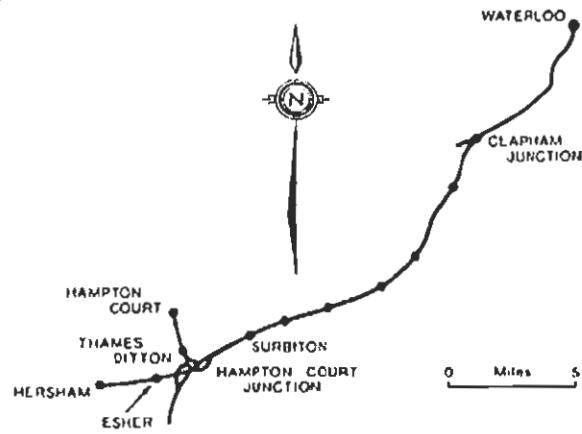
# RAILWAY ACCIDENT

**Report on the Collision that  
occurred on 23rd February 1979  
at Hampton Court Junction**

IN THE  
SOUTHERN REGION  
BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

£1.25 net



LOCATION PLAN

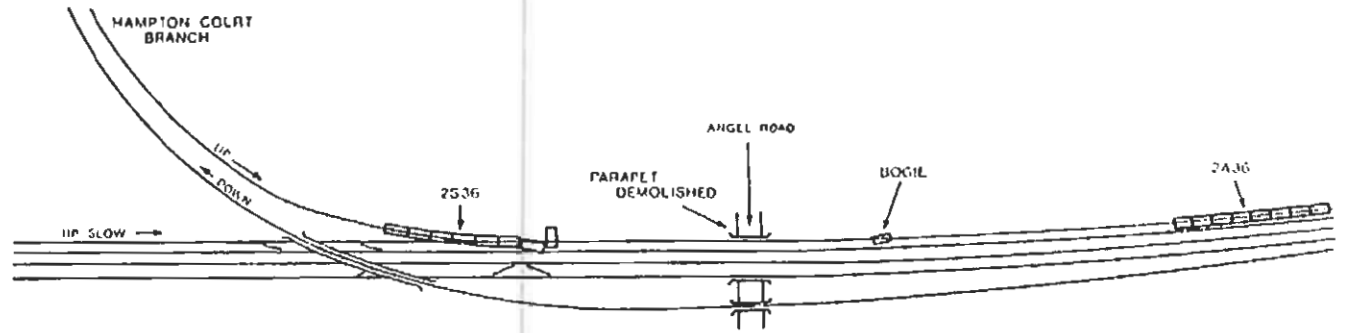


Figure 1 HAMPTON COURT JUNCTION, POSITION OF TRAINS AFTER ACCIDENT (Not to scale)

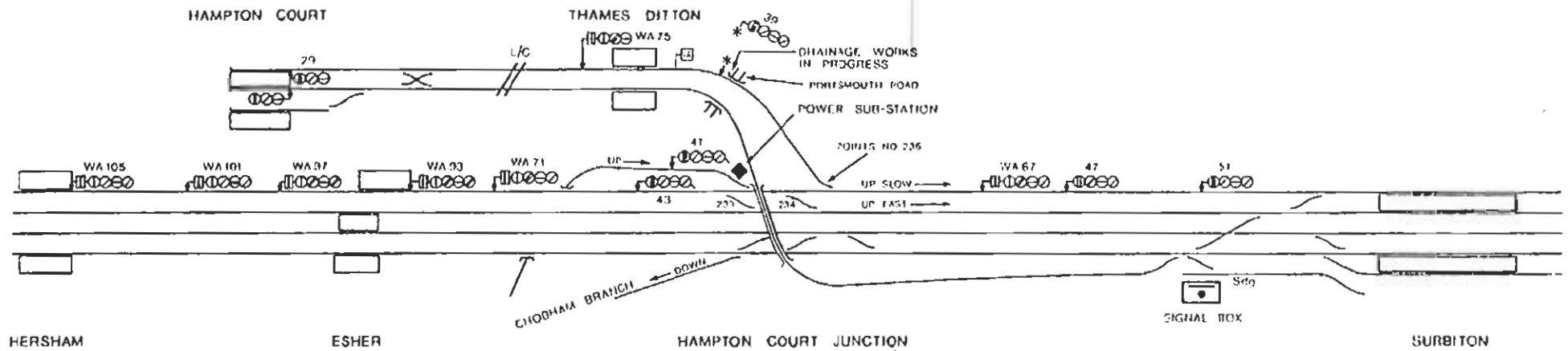


Figure 2 SIGNALLING DIAGRAM (Not to scale)

RAILWAY INSPECTORATE,  
DEPARTMENT OF TRANSPORT,  
2 MARSHAM STREET,  
LONDON SW1.  
31st October 1979.

SIR,

I have the honour to report for the information of the Minister of Transport, in accordance with the Direction dated 1st March 1979, the results of my Inquiry into the collision between two passenger trains that occurred at 13.20 on 23rd February 1979 at Hampton Court Junction on the South Western Division Main Line of Southern Region, British Railways.

The 13.13 Hampton Court to Waterloo eight-car electric multiple-unit passenger train, after making its scheduled stop at Thames Ditton, was driven past the branch exit signal at Danger onto the Up Slow line on which the 12.20 from Alton coupled with the 12.28 from Basingstoke to Waterloo eight-car electric multiple-unit passenger train was passing at speed. The Hampton Court train struck the rear three cars of the Alton train and the leading car of the Hampton Court train was diverted down a steep embankment with its trailing end, to which the second car remained attached, some twelve feet above the ground. The rear six cars of the train remained on the Branch line.

The Alton train came to a stand with the seventh car derailed and the trailing bogie of the rear car detached. The rear two cars struck and demolished the brick parapet of Angel Road underbridge which crashed onto the road below. Luckily nobody was passing at the time, but the roofs of several houses adjacent to the line were damaged by flying debris.

The emergency services were quickly called by a householder beside the line and thirty ambulances were soon on the scene, but only one passenger and the crew of the Hampton Court train and four passengers of the Alton train were taken to hospital suffering minor injuries. All were discharged after treatment. The guard of the Alton train was also slightly injured. A fifth person travelling on the Alton train suffered injuries which he did not report until the next day. All the Main lines, as well as the Hampton Court and Cobham lines, were blocked following the collision but normal services were resumed at 12.20 on 24th February and the Hampton Court line was restored by 04.00 on 26th February.

At the time of the collision the weather was dry with bright sunshine.

The signal had been passed at Danger on two previous occasions, on 16th June 1973 and on 11th December 1973, but on neither occasion had a collision occurred. I have considered these incidents in my report.

#### DESCRIPTION

##### *The Site and Signalling*

1. The Hampton Court branch is  $1\frac{1}{2}$  miles in length and connects with the Main lines at Hampton Court Junction  $13\frac{1}{2}$  miles from Waterloo Station. The branch runs in a northerly direction into one intermediate station at Thames Ditton about 1,200 yards from the junction with the Main lines. As shown in Figure 1, the Down Hampton Court line is carried over the Main lines by viaduct beneath which there are connections between the Fast and Slow lines and with the Down and Up Guildford via Cobham lines. The maximum permitted speed on the Up Branch line is 40 mile/h.

2. All the lines are signalled under the Track Circuit Block Regulations with 4-aspect colour-light signals on the Main lines and a mixture of 2, 3 and 4-aspect signals on the Branch. The signalling is controlled from Surbiton Signal Box. The locations of the signals, all of which are equipped with the standard British Railways Automatic Warning System (AWS), are shown in Figure 2. All the lines are electrified at 660 volts DC on the conductor rail system.

3. After leaving Hampton Court Station a train passes 3-aspect automatic colour-light signal WA75 situated 468 yards before the London end of Thames Ditton Station platform. A temporary restriction of speed of 15 mile/h commenced 560 yards beyond the platform end and the lines then begin to curve to the left on a 20 ft high embankment at the foot of which there are deciduous trees. The Branch exit signal, S39, stands 120 yards beyond the speed restriction board and 370 yards from the fouling point with the Up Slow line. The signal is first viewed at a distance of some 150 yards across the curve, and immediately beyond it the

line crosses over Portsmouth Road beside which, at the time of the accident, there was a deep pit in which a pipe was being thrust-bored beneath the railway; there were a crane, plant, and men working there. A termination board for the speed restriction was situated 72 yards beyond the signal, leaving 298 yards for a train to accelerate up to the point of collision at trailing points No. 236, on a falling gradient of 1 in 691. Because of the flyover structure and embankment, the driver of an Up Hampton Court train cannot see a train approaching on the Up Slow or Fast lines.

4. Surbiton Signal Box is equipped with a standard British Railways entrance/exit signalling panel with track-circuit and train description indications, installed in 1970. The aspects of signals controlled from the panel (prefixed S) are indicated red if the signal is at Danger or green if the signal is displaying a Proceed aspect, but the automatic signals (prefixed WA) are not so indicated. All signals have signal-post telephones.

5. Hampton Court Junction is remotely operated from a local relay room via direct wire connections from Surbiton. Power for the relay room and for Surbiton Signal Box is provided from an electrical sub-station in the fork between the Up Slow line and the Down Hampton Court line. The line-side ducting which runs alongside the Up Slow line carries three traction power cables to the sub-station and two signalling power cables from the sub-station to the signal box; each is capable of carrying the full signalling electrical load. The main power cable crosses over to the Down side of the lines approximately 250 yards on the London side of the point of collision.

6. Signal S39 will only display a Proceed aspect if points No. 236 are reversed and signal S43 is at Danger and free of approach locking, or points No. 230 or No. 234 are reversed. Both signals are approach locked as soon as their aspect has cleared. If Signal S39 is replaced to Danger after a route has been set from it, a route cannot be set from Signal S43 until two minutes have elapsed to release the approach locking. Signal lamps are of a double filament variety with automatic changeover should one filament fail. If there is a complete failure of Signal S39, then Signal WA75 will automatically revert to Danger.

#### *The Trains*

7. The Hampton Court train, 2S36, consisted of two four-car inner suburban (4SUB) electric multiple-units, Class 405, No. 4662 (leading) and No. 4628. The cars in each unit were permanently coupled with 3-link couplings and single centre buffers and the two units were coupled together using a standard screw coupling. The seats in the leading unit were of open type with seats arranged in groups of three and two on each side of a central gangway. Each group of seats had a door on each side of the car, but there was no gangway between cars. The train was 515 ft long overall, weighed 265 tons and was fitted with Westinghouse brakes with a brake force of 79 per cent. These units are not fitted with speedometers, nor is AWS equipment fitted.

8. The Alton train, 2A36, consisted of two four-car electric multiple-units of Class 423 (4-VEP) No. 7708 (leading) and Class 421 (4-CIG) No. 7423. It was gangwayed throughout with buck-eye couplings between cars. The train was 530 ft long overall, weighed 295 tons and was fitted with electro-pneumatic brakes with a brake force of 88 per cent. Speedometers and AWS equipment were fitted.

#### *The Course of the Collision and Accident Damage*

9. The Hampton Court train struck the sixth car of the Alton train and scraped the sides of the sixth, seventh and eighth cars. The leading car came to rest with its front end at the bottom of an embankment some 50 yards beyond the point of collision and with its rear end foul of the Up Fast line some 12 ft above the ground. The second car remained coupled to it but it was leaning to its off side foul of the Up Fast line with one pair of wheels of its trailing bogie derailed. The remainder of the train was undamaged. The leading car was severely damaged at its leading off-side end, and its bogies and underframe equipment were extensively damaged. Both body ends of the second car were pushed in, the body sides were creased and the floor was buckled. There was extensive damage to its bogies, underframe and interior equipment. Only the leading body end and jumper cables of the third car were damaged.

10. The left body sides of the rear three coaches of the Alton train were damaged by the collision. The frames of both bogies of the seventh car were bent and there was minor interior damage. Both bogies of the rear car were severely damaged and the rear bogie was torn off and came to rest some 240 yards beyond the point of collision. The tail of the train came to rest 840 yards beyond the point of collision.

11. In addition to the parapet of Angel Road bridge 175 yards beyond the point of collision, which was destroyed, 360 yards of track was destroyed and a further 400 yards was misaligned. Points No. 236 were damaged and the 650 volt supply cable, microcore and co-axial cables and the troughing in which they ran, were also severed or demolished. Sixty yards of conductor rail was thrown down the embankment and required replacement.

## EVIDENCE CONCERNING THE COLLISION

12. *Relief Signalsman J. C. Wood* was in charge of the London end of the Surbiton signalling panel from 10.30 until the time of the accident, having previously been in charge of the country end. The London end controls the lines from Walton-on-Thames to New Malden, including the Hampton Court Branch. At 13.18 he noticed that the Alton train, 2A36, was passing through Walton Station. It was routed on the Up Slow line and was running seven to eight minutes late. At that time he had set the route for the Hampton Court train, 2S36, from No. 1 platform at Hampton Court up to the Branch exit signal S39, and he noted that the train was approaching Thames Ditton Station. He thought that 2A36 would clear Hampton Court Junction by the time that 2S36 arrived at Signal S39 and he therefore set the route for 2A36 up to Surbiton Station where it was due to stop. Because an Up Portsmouth train had already cleared the junction on the Up Fast line, he had the option of routing 2A36 via points No. 230 onto the Up Fast line to leave the Up Slow line clear for 2S36 but trains were limited to 60 mile/h over the connection and this would have further delayed 2A36 so he decided not to do so. At that time the only other move was a train on the Down Slow line at Surbiton for the Down Cobham Branch.

13. He then heard circuit breakers opening in the track-parallel hut beside his signal box and immediately the whole of the signalling panel from New Malden to near Woking went dead and all control was lost; the telecommunications alarm began to sound. He was then telephoned by the electrical controller who told him that there had been a short circuit of the traction supply on the Up Slow and Up Fast lines at Hampton Court Junction and he thought that there must have been a derailment. Wood then immediately sent the 'Obstruction Danger' bell signal to New Malden and Guildford Signal Boxes. He also replaced the switches for signals WA105 and WA107 on the Up lines at Hersham and S10 on the Down Slow platform line at Surbiton to Danger. When he telephoned the police they already knew of the collision and told him that the emergency services had already been called. Finally the driver of 2A36 telephoned him from Signal S47, told him of the collision and that the signal aspect was out. Signalsman Wood told me that he could see Signals S51 and S3 on the Up lines ahead of the train and Signals WA78, 80 and 82 on the Down lines beyond his box and none of them showed any lights.

14. The signal box announcer made announcements to all stations telling the staff to hold trains, but, so far as Wood knew, the only train, other than 2A36, to stand at a failed signal was the 13.02 Waterloo to Guildford via Cobham train which was standing in platform 3 at Surbiton. Another train was held in the Up Slow platform at Walton-on-Thames by station staff as a result of the call.

15. Signalsman Wood was unable to confirm that Signal S39 was indicated as being at Danger before the accident, but believed that he would have noticed had it not been. He was adamant that he had not first set a route for the Hampton Court train and then changed his mind and replaced the signal to Danger. After the accident the light on the panel indicating the signal's aspect was not lit. He knew that the Senior Technician Graham Fry was in the signal box and he saw the Technician Officers and the other Senior Technician entering the signal box yard in their van shortly after the collision.

16. *Signalsman F. J. P. Harding* was working the country end of the panel at the time of the collision. He had set the route for 2A36 as far as Walton-on-Thames where Signalsman Wood took over. He saw him set the route onward into Surbiton Station. He was sure that Wood had not previously set a route for the Hampton Court train and Harding had jokingly remarked to him "Don't stop that one, my relief is on it".

17. The driver of the Alton train, 2A36, was *Driver R. T. Herbert*. The train combined with a Basingstoke train at Woking where they departed some 8 minutes late. Although the line speed was 90 mile/h, there was a permanent restriction of speed of 80 mile/h through Esher and he had driven at about this speed receiving green signals all the way. He shut off power approaching the Hampton Court flyover on seeing Signals WA67 and S47 ahead displaying double yellow aspects. This was normal for a train routed onto the Up Fast line at Surbiton where he was due to stop.

18. As he came under the flyover he was surprised to see a train almost alongside him. He was unable to estimate its speed but thought that his train might clear it. He lowered his window and saw the other train strike his so he released the Drivers Safety Device. When his train came to a stand he ran forward to Signal S47 some 400 yards ahead and telephoned the signalsman twice to make sure the emergency services had been called, but he omitted to make use of his track-circuit operating clip on the Up Fast line.

19. He had received an AWS bell signal at each signal, but just before his train came to a rest he cancelled an AWS horn. He could not say whether the aspect had gone out before or after he passed Signal WA67, but Signal S47 was definitely out.

20. The guard of the Alton train was *Guard C. Stafford*. He was between the second and third cars of the train when it came to a violent stop. He was joined by a ticket inspector and together they got out of the nearside of the fifth car and saw that the rear two cars of their train were derailed and the leading car of the other train was down the bank. He heard the ticket inspector ask a nearby householder to call the emergency

services, while he went to assist a lady passenger who had been injured. Some passengers were getting out of the nearside of the train where the conductor rail was situated. One young man nearly put his foot on the rail in climbing back into the train; at that time he was not sure if the current had been discharged. An ex-railwayman who was travelling on the train as a passenger, asked him for his track-circuit operating clip and put it down on the Up Fast line, but Guard Stafford admitted that he had not thought of using it himself.

21. The driver of the Hampton Court train was *Driver J. W. Hicks*. He had begun work that morning at 08.11 and drove a Guildford to Portsmouth train and then one to Waterloo where he arrived at 11.27. After taking his break he drove the 12.26 train to Hampton Court. He had driven the same services every day that week. The 4-SUB units which formed the train were running well and the brakes were effective.

22. He believed they left Hampton Court on time and thought that Signal WA75 was displaying a green aspect. That signal was normally at green because the route was generally set out onto the Up Slow line as it had been on the other days that week. He stopped the train at Thames Ditton Station where they picked up a few passengers. He told me that the platform had been extended, some new fencing had been erected and the 8-car mark had been moved. The guard then gave him a 'Right Away' signal and he drove the train up to the temporary 15 mile/h speed restriction board approaching Signal S39. Driver Hicks then told me that as he went over the railway bridge he saw that they were putting a concrete tube into the pit. He could see right down into the pit which he thought was part of the River Mole flood scheme. He accepted that he had been engrossed in the work going on and had completely failed to look at the signal. When his train passed the speed restriction termination board he accelerated and thought that his speed was 20-25 mile/h as he approached the Up Slow line. He saw the Alton train going by and first assumed that it was running on the Up Fast line, but when the two trains were much too close for this to be so, he released the Drivers Safety Device and hung on. His train bounced off the Alton train and was diverted first along the cess beside the Slow line and then down the bank.

23. After the train had stopped he climbed on to the embankment having suffered bruising but otherwise being unhurt. He then climbed back into the leading car where there was an elderly lady, but she was only badly shaken. When he saw three or four foreign men running back and forth over the Fast lines he shouted to them to return to the train and his guard finally caught one of them and restrained him. His guard then told him that the signalman was unable to replace to Danger the signal on the Up Cobham line so he, Hicks, took his flag and detonators and put detonators down at the signal. He admitted that he had quite forgotten to use a track-circuit operating clip to protect the Up Fast line.

24. I questioned Driver Hicks as to why he had passed Signal S39 at Danger. Although it was a sunny day, the sun was not in his eyes at all. He had eaten sandwiches with his coffee during the meal break at Waterloo Station as he had every day that week, and he assured me that he had taken no alcohol. He had taken a rest day on the previous Tuesday and said that he had no particular problems weighing on his mind. He had never previously passed in error a signal at Danger. He had been driving on the Hampton Court branch for 19 years and in all that time he had not seen the Branch Exit signal at Danger on more than four or five occasions. He mainly drove on the Main lines during the rush hours and when driving on the branch the signal was normally cleared before he approached it. He believed that if his train had had AWS fitted he would have realised that Signal WA75 was displaying a yellow aspect and not a green one as he had assumed.

25. The guard of 2S36 was *Guard D. T. Johnson* who was aged 19. He met his driver in the Guards Regulator's Room at Waterloo Station where they were together for 5-10 minutes. His driver seemed quite normal and sober and they chatted while walking down to their train. He remembered picking up about 10 passengers at Thames Ditton after leaving Hampton Court, which was more than usual, and he had blown his whistle to get them to board quickly as the train was running a little late. He was travelling in the fifth car when the train suddenly stopped. On looking out and seeing the leading car down the embankment he immediately collected his detonators and a fire extinguisher and ran to find his driver. Although he had placed a track-circuit operating clip on an electrified line at Eastleigh during his training, he forgot to use one in the heat of the moment. After leading the foreign men, two at a time, over the electrified lines, he telephoned the signalman from Signal S14 on the Down Fast line. He reported to his driver the signalman's message that the signalman was unable to replace signals in rear to Danger and he then helped get the passengers out of the train. He was not concerned about the conductor rail being live because he saw that it had been thrown aside during the collision.

26. *Technician Officer T. A. Ritchie* was told of the collision after returning to Surbiton Signal Box in his van. He immediately drove down to the junction and found that points No. 236 were standing Normal and set for the Up Slow line. Signal S39 was displaying a red aspect, but the signals ahead on the Up Slow line had no aspect in them. He therefore checked the route relays in Hampton Court Relay Room and found No. 39 Normal Lock Relay up and Reverse Lock Relay down, which showed that no route had been set ahead of the signal. He later carried out a full check of the interlocking and cable insulations and found everything to be correct. The relays connected with Signals S39 and 43 and points No. 236 were replaced and the originals sent for testing, and all the tests were satisfactory.

27. The Electrical Control operator in the Raynes Park Electrical Control room was *Operator G. A. Parker*. He told me that the short-circuits had occurred at 13.20. The Up Fast and Up Slow circuit breakers had opened and he did not reclose them. He created a neutral section to protect against other electric trains running on to the dead section on the Up Slow, Up Fast, Up Cobham Branch and the Down Hampton Court flyover lines. The conductor rail was therefore safe throughout the scene of the accident. At 13.27 the signalman asked him to discharge the Down lines also, which he did, and he also discharged the Down Cobham line at this time.

#### EVIDENCE CONCERNING THE TWO PREVIOUS INCIDENTS

28. On 16th June 1973 the 10.43 train from Hampton Court to Waterloo was driven past Signal S39 at Danger and through points No. 236 set Normal for the Up Slow line. An Alton train had just passed clear of the junction and it was the fact that the Hampton Court train ran through the points and damaged them that made it certain that it had been driven past the signal at Danger.

29. On 11th December 1973 following a track-circuit failure on the Branch line, the driver of the 08.25 Hampton Court to Waterloo train was instructed to pass Signal WA75 at Danger and to obey all other signals. The driver said that he wrongly assumed that he was also to pass Signal S39 at Danger and his train also ran through points No. 236 set Normal for the Up Slow line on which no other train was running.

#### CONCLUSIONS

30. I do not believe that Signalman Wood had set a route for the Hampton Court train from Signal S39 onto the Up Slow line and then cancelled it after the train had passed Signal WA75. It would have been possible for him to have done so for the collision probably occurred 3 minutes after the Hampton Court train had passed Signal WA75; at that time the Alton train would have been in the area of Walton-on-Thames with 4 or 5 signals displaying green aspects ahead of it. But Signalman Wood was adamant that he had not set such a route and cancelled it, and Signalman Harding was sure that he, Wood, had not done so.

31. I conclude, therefore, that Driver Hicks failed to look at Signal WA75 and assumed that it was displaying a green aspect as it most often did when he drove on the Branch line. Having made that assumption, it was natural for him to assume that Signal S39 was displaying a Proceed aspect so he allowed his attention to be distracted by the thrust boring going on beside the railway when he should have been looking at the signal above it. He, alone, is entirely responsible for the accident.

#### REMARKS

32. AWS is of considerable value in preventing this type of accident. The line had been fitted with AWS since 1963 but the train he was driving was not. Had Driver Hicks received an AWS warning at Signal WA75, I feel sure that his attention would have been drawn to the Caution aspect at the signal. AWS would probably have prevented the 16th June 1973 incident occurring although, if the driver's misunderstanding was a real one, it would not have prevented the December 1973 incident.

33. All the 200 units of Main line stock running on the South-Western Division of Southern Region is fitted with AWS. Of the 73 units of Classes 415 and 416, 47 were already fitted and the remainder will be fitted by mid 1980. The remaining 89 units of Class 418, and Class 405 (of which the Hampton Court train was formed) are due for withdrawal and it would not be justified to fit them with AWS at this stage of their lives. There are also electrical problems of doing so. Many of them will be withdrawn when the first batch of the new Class 508 units are delivered between August 1979 and July 1980 and the remainder by 1982.

#### *The Use of Track-Circuit Operating Clips on Southern Region*

34. In making my reports on the accidents that occurred on the Southern Region at Borough Market Junction on 6th May 1977 and at New Cross on 3rd August 1977, I commented that the train crews on those occasions failed to make use of their track-circuit operating clips to protect the lines. In this accident a similar failure occurred and I must again stress the need for staff to be reminded of their duties under Rule M 2.1.1. of the British Railways' Rule Book.

*Vulnerability of Cables to Damage in Collisions*

35. It is normal practice for an alternative power source to be provided for signalling power supplies, in case of failure of the normal supply. On Southern Region there are normally at least two independent traction power cables feeding each sub-station. These are backed up by Area Electricity Board supplies in a number of instances, but not at Surbiton Signal Box. Both the main signalling and stand-by power cables from the sub-station to Surbiton Signal Box were cut by the Hampton Court train causing a total signalling power supply failure to the Box. The running of both primary and stand-by power cables in the same route, beside the Up Slow line, made the signal box signalling power supply particularly vulnerable to being damaged by a derailment at the junction. I recommend that attention be given to these matters, particularly in the design of new signalling installations.

I have the honour to be,

Sir,

Your obedient Servant,

A. G. TOWNSEND-ROSE,  
*Lieutenant Colonel.*

The Permanent Secretary,  
Department of Transport.