DEPARTMENT OF THE ENVIRONMENT

RAILWAY ACCIDENT

Report on the Collision that occurred on 31st May 1975 near Rutherglen Station

IN THE

SCOTTISH REGION

BRITISH RAILWAYS

LONDON: HER MAJESTY'S STATIONERY OFFICE

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RAILWAY INSPECTORATE,
DEPARTMENT OF THE ENVIRONMENT,
2 MARSHAM STREET,
LONDON SW1.
23rd July 1976.

SIR,

I have the honour to report for the information of the Secretary of State, in accordance with the Order dated 5th June 1975, the results of my Inquiry into the collision between an electric passenger train and a goods train at about 09.15 on 31st May 1975 near Rutherglen Station in the Scottish Region of British Railways.

On a fine sunny morning, the 08.25 Glasgow Central–Hamilton–Glasgow Central electric multiple-unit passenger train, consisting of six coaches, having stopped at Rutherglen Station on its inward journey, was crossing from the Down Slow line to the Down Fast line when it was struck by the 12.45 (30th May) Northfleet to Uddingston diesel hauled cement train which was proceeding in the Up direction along the Down Slow line towards Rutherglen. As a result of the collision, the leading four coaches of the passenger train were derailed, as was the locomotive of the cement train: the rear two coaches of the passenger train and all the wagons of the cement train remained on the line. The overhead electric power was immediately discharged as a result of the collision.

The emergency services were promptly alerted and were quickly on the scene. Thirty four passengers and three railway staff were injured in the collision and all except one passenger, who unfortunately was trapped, were quickly removed to hospital; all except one were discharged the same day. The trapped passenger was seriously injured, having been pinned between the side of the leading coach and the ballast below it. He was released by firemen, who rapidly jacked up the coach and then he was taken to the Victoria Hospital Infirmary at 09.55. I am glad to report that, after a period in the intensive care unit, he made a good recovery.

The collision blocked the Up and Down Fast and Down Slow lines, and all lines were not fully opened to traffic until 01.30 on Monday 2nd June. The blockage caused extensive disruption to passenger services. The Anglo-Scottish services to and from Glasgow Central were diverted via the Cathcart Circle (Langside) and Kirkhill to Newton, where they rejoined the Main lines. The Hamilton Circle service was reduced to half its normal frequency and also diverted via the Cathcart Circle (Queens' Park), while the Glasgow to Newton service was extended to run to Hamilton and Motherwell.

DESCRIPTION

The Site

1. Rutherglen Station lies about 3 miles south of Glasgow Central Station, the line at this point consisting of the Up and Down Slow and Up and Down Fast lines, the Down direction being towards Glasgow. On the country side of the station lies Rutherglen Junction where the lines divide, the Up and Down Slow becoming the Carmyle lines to Carmyle Junction and thence to Coatbridge, while the Up and Down Fast lines become the Up and Down Main lines leading to Newton and thence to Motherwell and Carlisle.

2. On the Glasgow side of Rutherglen Station there is a ladder of crossovers from the Up Slow across to the Down Fast which in turn, in the Down direction, leads into the Up and Down Clydesdale Goods lines and Polmadie Down Yard. Polmadie Up Yard can be entered from the Up Slow line adjacent to the ladder referred to above or by a series of crossovers from all lines at the Glasgow Central end of the yard and the former motive power depot.

3. The track layout was extensively altered during the electrification of the West Coast Main line. Details of the tracks that are relevant to the accident are shown at Figure I at the back of the Report. At the site of the accident both the Fast and Slow lines have a maximum permissible speed of 75 mile/h, while the crossovers between the Fast and Slow lines have a maximum permissible speed of 40 mile/h: the Clydesdale Goods Lines are restricted to 40 mile/h.

4. All running lines in the area of the accident are electrified on the overhead system, energised at 25 kV AC.

The Signalling

5. The new signalling in the Rutherglen–Polmadie area was commissioned in April 1973 and is remotely controlled from Panels 4 and 5 in Glasgow Central Signal Box via the remote interlockings at Polmadie and Rutherglen. The interlockings are of the all relay route setting type and are arranged with the relay sets interconnected geographically. All signalling circuits operate on direct current and are immune to the effects of the AC traction currents. A diagram showing the signalling in the Rutherglen–Polmadie area is at Figure II at the back of this report. All the lines concerned in the accident have continuous track circuiting and all points are continuously detected. All main running signals are four-aspect colour-light, the British Railways' standard Automatic Warning System (AWS) is fitted at all running signals, and all the lines are worked in accordance with the Track Circuit Block Regulations.

6. Two-way signalling with main aspect signals is provided on the Up Slow line between Polmadie and the ladder of crossovers on the Glasgow side of Rutherglen Station and similarly on the Down Slow line through Rutherglen Station. The Up and Down Clydesdale Goods lines opposite Polmadie have been signalled to allow the equivalent of permissive working. However the Down Slow line from Crossover No. 935 on the Glasgow Central side of Polmadie to Crossover No. 962 on the Glasgow Central side of Rutherglen Station is not signalled for running in the Up direction and subsidiary Signal G 824, a shunt signal of the position light type, mounted at ground level to the right of the line to which it applies with the lenses on the axis 15° above the horizontal, was only provided to enable locomotives to set back from the Down Slow over Crossover No. 962 onto the Up Slow before proceeding into Polmadie motive power depot.

7. Subsidiary ground position light signals in the Rutherglen–Polmadie area, as in many other areas in Glasgow, have had to be protected against damage by vandals by fitting wire mesh screens over all the lenses. There is no doubt that this reduces the conspicuity of the lights, particularly the red one.

The Trains

8. The 08.25 Glasgow Central–Hamilton Circle via Bellshill train (2J15) was formed of two three-car Class 303 and 311 electric multiple-units (EMU), Nos. 007 and 101, marshalled as follows in the direction of travel:

SC.75572 Driving Trailer Open Second	34 tonnes
SC.61487 Motor Brake Open Second	57 tonnes
SC.75607 Driving Battery Trailer Open Second	37 tonnes
SC.76413 Driving Trailer Open Second	34 tonnes
SC.62172 Motor Brake Open Second	57 tonnes
SC.76431 Driving Battery Trailer Open Second	37 tonnes

Its length overall was 397 ft and its available brake force was 256 tonnes.

9. The leading multiple-unit, No. 007, sustained considerable damage, particularly to the non-driving side of the cab of the leading coach, where it was struck by the front corner of the locomotive of the cement train: the underfloor equipment was also extensively damaged and the trailing bogie was considered unrepairable. The body of the second coach, apart from the corner of the guard's compartment and the removal of one door, was little damaged, but again the underfloor equipment was severely damaged and both bogies were regarded as beyond repair. The third coach suffered only slight damage to the body, but again there was considerable damage to the underfloor equipment including the bogies, the brake equipment, the batteries and their boxes. The second unit, No. 101, was virtually undamaged.

10. The Northfleet–Uddingston cement train, 6S45, consisted of diesel locomotive No. 47553 and 13 cement wagons. Of these, six were 45/50 tonne gross laden weight cement tank wagons and seven 100 tonne tank wagons, the total weight of the train and locomotive being 1107 tonnes. All the wagons were fitted with air brakes and the total brake force available to the driver was 546 tonnes, or 49.3 per cent of the total weight of the train and locomotive. The total length of the train and the locomotive was 509 feet.

11. The damage to the cement train was confined to locomotive No. 47553 and the leading cement tank wagon. The right hand side of the leading cab of the locomotive, where it had struck the EMU, was demolished and the leading bogie damaged, the buffer beam buckled and the buffers broken: the buffer beam at the trailing end of the locomotive was also distorted. There was also superficial damage to the body of the locomotive and to its brakegear and other underflooor equipment. The leading 50 tonne cement tank wagon, APCM No. 9193, had its headstocks badly bent and holed, the buffers damaged, the draw bar breastplate torn at its weld and the draw bar bent, and the tank barrel damaged.

The Course of the Collision

12. The cement train, 6S45, had been routed via Edinburgh Waverley, Polmont Junction, Greenhill Lower, Cumbernauld, Coatbridge and Rutherglen Junction. It proceeded through Rutherglen Station on the Down Slow line and was brought to a stand at Signal G 783. The locomotive was then run round the train in preparation for returning along the Up Slow line to Rutherglen Junction and then to Uddingston. After the run round movement had been completed, the train was run on the Down Slow line in the Up direction with the only signal protecting the crossover Down Slow to Up Fast (No. 961) being the ground position light shunting Signal G 824 located less than 200 ft from the clearance point. The EMU, 2J15, had stopped for station duties at Rutherglen Down Platform and was then routed along the Down Slow line to Crossover No. 961 from where it was scheduled to go across to the Down Fast line through Crossover No. 957. The EMU had accelerated to between 30 and 40 mile/h before the driver observed the other train coming towards him and there was insufficient time for the brakes to be applied before the cement train, having passed Signal G 824 at Danger and travelling very slowly struck his leading coach.

13. As a result of the collision the leading coach of 2J15 was thrown onto its side, blocking the Up and Down Fast lines. The second coach remained upright but shed its bogies and was blocking the Up Fast and Down Slow lines. The third coach was canted at about 45° and was straddling the Up and Down Fast and Down Slow lines, while the leading bogie of the fourth coach was derailed and the coach was in contact with the locomotive of 6S45 which was derailed all wheels.

Rules and Regulations

14. Page 2 of the British Railways General Appendix to Working Timetables and books of Rules and Regulations, 1972, lays down when wrong direction movements can be made where Track Circuit Block is in operation. The Regulation states:

"Movements must not be made in the wrong direction on any portion of any running lines where Track Circuit Block is in operation except as authorised below:

(a) Where a fixed signal is provided for the movement.

(b) Where it is necessary to set back through a crossover road or through a siding connection worked from a ground frame. The set back movement must not be commenced until the crossover road or siding points have been operated for the movement.

(c) Where it is necessary to set back to a standing train or vehicles and the movement will not require to cross or foul any other line. If, however, such movement requires to pass over any points operated from a signal box the permission of the Signalman must be obtained.

(d) Where it is necessary in an emergency arising from train accident, accidental division, locomotive failure or other obstruction of the line (Rule Book, Section M), or when a train overruns a station platform (Rule Book, Section H), or when special authority is given for an Engineer's train to be moved in the wrong direction (Rule Book, Section Q), or when trains are proceeding to or from a section of line in the Engineer's possession (Rule Book, Section T), the provision of the appropriate Rule must be complied with.

(e) Where authorised in connection with the passage of out-of-gauge loads."

Evidence

15. The driver of 2J15 was *Driver H. Cantley*, who said that on approaching Rutherglen Junction he received a single Yellow aspect at Signal G 877 and then a single Yellow at Signal G 855 together with an indication that he was routed from the Down Fast to the Down Slow which is the Down Platform line at Rutherglen Station. On arriving in the station the Down Platform Starter, Signal G 831, was displaying a Red aspect but, while the train was standing in the platform, the aspect changed to double Yellow and a route indicator showing that the train was routed through Crossovers Nos. 961 and 957 from the Down Slow to the Down Fast.

16. Cantley said that he accelerated to between 30 and 40 mile/h after leaving Rutherglen. He noticed a train apparently coming towards him soon after passing through the overbridge on the Glasgow side of the station, but did not appreciate the possibility of a collision. It was not until he was closely approaching the crossovers to take him to the Down Fast line that he realised that the cement train was still slowly moving towards him along the Down Slow in the Up direction and that a collision was inevitable. He decided that there was no hope of accelerating his train clear of the other train, nor was there any possibility of braking the train to a stand before the collision, thus he shut off power but did not apply the brakes. Immediately before the collision Cantley looked at the facing points at the Rutherglen end of Crossover No. 961 and saw that they were correctly set to take his train across to the Up Fast line.

17. As a result of the collision the driver's coach was thrown on its side and Cantley said he was thrown into the corner of the cab. After reassuring the passengers in his coach, he climbed through the shattered windscreen and made his way to the nearest signal post telephone but was unable to contact the signalman, nor was he able to do so at an adjacent signal, but he was successful at a third signal and immediately reported the collision to the signalman at Glasgow Central Signal Box. He was informed that the accident had already been reported and the emergency services alerted.

18. *Passenger Guard A. Laverey* was in charge of 2J15. He said that the train had arrived at Rutherglen about 30 seconds early and so he held it there until 09.13, the correct departure time. He was travelling in the fifth coach in the train and from there he was unable to see Signal G 831 before the train left the platform. Lavery was unaware of anything untoward until shortly after leaving Rutherglen Station, the train came to an abrupt halt and there was a loud bang. On looking out of his guard's compartment he saw that there had been a collision and that part of his train was derailed. Lavery quickly telephoned the signalman at Glasgow Central Signal Box from a nearby signal post telephone, telling him what had occurred and requesting that the emergency services be alerted immediately.

19. Lavery then protected his train, taking his detonators and walking back to the signal at the end of Rutherglen Platform (Signal G 831) where he placed 3 detonators 20 yards apart on the Down Slow line. When returning to the scene of the accident he met the guard of the cement train and they agreed that further protection should be provided by placing detonators on the Up and Down Fast lines. I asked Lavery why he did not use track-circuit operating clips to provide immediate protection for his train, but he was unable to provide a satisfactory answer. He admitted he had been instructed in their use, but by instinct he adopted the method of protection with which he had been familiar for many years.

20. The driver of 6S45 at the time of the collision was *Driver R. Baxter* of Millerhill, a driver of 28 years' experience and a railwayman since 1935. He had taken over the train at Millerhill, carried out a brake test in conjunction with his guard and then had a good run to Rutherglen Junction where the train was brought to a halt for 2 or 3 minutes at Signal G 875. Baxter instructed his secondman to get down and tele-

phone the signalman, informing him of the number of the signal from which he was speaking and the number of their train. On Signal G875 clearing, Baxter said he drove the train through the junction onto the Down Slow line on the country side of Rutherglen Station and along that line until he stopped just short of Signal G 783 which was displaying a Red aspect. The guard, who was travelling in the rear cab of the locomotive, telephoned the signalman from the signal post telephone and returned to Baxter with the instructions that they were to run round their train there using the Up Slow for the run round movement. After uncoupling the locomotive they proceeded past Signal G 783, which was displaying a single Yellow aspect and halted just beyond subsidiary Signal G 792 which controls the movement from the Down Slow in the Up direction through Crossover No. 939 to the Up Slow. This signal in turn cleared and Baxter drove the locomotive through the crossover and along the Up Slow towards Rutherglen, stopping beyond subsidiary Signal G 827. Baxter said that from there they were signalled via Crossover No. 962 onto the Down Slow line and he drove forward in the Down direction as far as Signal G 813 which was at Danger.

21. Baxter again instructed the secondman to speak to the signalman who gave instructions that it was to be passed at Danger. Baxter said that no further instructions were given by the signalman regarding the last part of the running round movement and in particular about running the train along the Down Slow in the Up direction, nor did he consider it necessary to ask for more detailed instructions from the signalman despite the fact that he had never carried out this particular move before.

22. Having passed Signal G 813 at Danger, Baxter drove the locomotive up to the train where the guard coupled it up and then carried out a brake test. Baxter said that he then set the train in motion and ran slowly down towards shunt Signal G 824, a distance of some 600 yards. Initially, both in his statement to the Railway Officers and in his evidence to me, Baxter said that he was under the definite impression that Signal G 824 was clear as he approached it and that he opened the controller, passed the signal and then observed that the points just ahead of his train were set for a movement from the Down Slow to the Down Fast, whereupon he immediately made an emergency application of the brakes. It was not until he had applied the brakes that he looked up and saw the passenger train from Rutherglen closely approaching and realised that a collision was inevitable.

23. Baxter said that, in his opinion, his train was stationary when the collision occurred. He was flung from one side of the cab to the other by the impact and both he and his secondman made their way in rather a dazed condition through the engine room to the rear cab, as both doors of the front cab were jammed. On vacating the locomotive Baxter spoke from a signal post telephone to one of the staff at Glasgow Central Signal Box who challenged him with passing Signal G 824 at Danger, but he could not recall what he had said to the signalman.

24. I questioned Baxter at length about Signal G 824 with particular reference to its aspect when first sighted, its sighting distance on a bright sunny day and the nearest point from which one could see the signal when seated in the driver's seat of a Class 47 locomotive. Baxter agreed that the white light in the signal could be seen from about 200 yards away, but that the red light was not visible until one was between 50 and 60 yards from the signal. He then agreed that when he first observed the signal it was displaying a red and a white aspect, at which time he could not have been more than 60 yards from the signal. Baxter said that when he next looked at the signal it was displaying a proceed aspect of two white lights, hence his proceeding past the signal and not applying the brakes until he saw the points ahead set for the other route. Baxter was unable to explain why he did not see Signal G 824 change its aspect as one would have expected him to be watching it continuously while approaching it at Danger. Similarly, Baxter was unable to explain why he had not immediately applied the brakes when he first saw the signal at Danger only 50–60 yards from him.

25. I ascertained that the guard in addition to the secondman was in the driver's cab as the train approached Signal G 824, but I was assured by Baxter that his attention was in no way distracted from his driving duties.

26. Baxter assured me that he was in good health and had been passed as quite fit by his doctor the previous September when he had been examined in connection with a mild diabetic condition. He had had no drugs of any description prescribed to him for a considerable period prior to the accident. Baxter said he had not drunk any alcoholic liquor before coming on duty on the day of the accident, but had drunk 2 or 3 pints of beer when he was off duty the previous evening, which was consistent with his normal drinking habits. He was quite satisfied that, when he set off from Millerhill on the morning of the accident, he was in good health and his head was quite clear.

27. The secondman of the cement train, *Secondman S. McHardy*, confirmed the evidence of his driver regarding the run from Millerhill to Rutherglen Junction. After their train had been standing at Signal G 875 at Rutherglen Junction for two or three minutes he spoke to the signalman at Glasgow Central Signal Box: the signalman explained that there were several passenger trains passing through the junction, but their signal should clear for them to proceed in about two minutes. McHardy was adamant that the signalman did not refer in any way to the running round movement that was to be carried out on the Glasgow Central side of Rutherglen Station.

28. McHardy explained that, when the signal cleared, they proceeded through Rutherglen Station on the Down Slow line until they were brought to a stand at Signal G 783 at Polmadie. He was unsure what would then happen, as on three occasions earlier that week when he had worked the same train, they had run round on the Clydesdale lines. The guard spoke to the signalman from the telephone at Signal G 783 and then signified that the locomotive should be uncoupled, which McHardy did forthwith. They then proceeded to run round the train as described by Baxter. When the locomotive came to a stand at Signal G 813, which was

at Danger, McHardy again spoke to the signalman on the signal post telephone. McHardy explained that he merely asked the signalman if they were to pass the signal at Danger to which the latter replied "Yes". Neither McHardy nor the signalman discussed how the last part of the running round movement should be accomplished despite the fact that it involved running along part of the Down Slow line not signalled for wrong direction working in the Up direction.

29. McHardy said that, having coupled up the locomotive to the train, the guard and driver carried out a brake test and they then proceeded slowly towards Rutherglen along the Down Slow line. The guard entered the driving cab from the engine room to collect his belongings and almost immediately Baxter shouted "Look at this" and, on looking up McHardy saw a passenger train approaching them, apparently on the same line. Baxter had made an emergency brake application when he shouted and McHardy estimated that their train had just come to a stand when the collision occurred.

30. I questioned McHardy at some length as to why he had not asked the signalman at Glasgow Central Signal Box for more explicit instructions regarding the run round movement, particularly as the movement on all his previous occasions had been carried out on the Clydesdale lines, but it was clear that he did not consider it was his duty to ask for more details.

31. McHardy explained that when the train was running along the Down Slow in the Up direction he was taking off his dust coat and stowing it in his bag and thus he did not resume the secondman's seat until shortly before the collision. He said that he did not notice Signal G 824 in the 10-foot way on his side of the train and stressed again that this was the first time he had been on a train that had run round at that location, and that he did not know what signals to look for. He also confirmed that his driver did not ask him to look out for the aspect of Signal G 824.

32. Finally McHardy confirmed that, in his opinion, Driver Baxter was thoroughly alert throughout the period of duty leading up to the collision and appeared to be in good health.

33. *Guard D. McGeachy* was the guard of the cement train. Like Baxter and McHardy he had joined the train at Millerhill where, in conjunction with the driver, he had carried out a brake test before setting off for Uddingston. The journey was uneventful as far as Rutherglen Junction where they waited 2 or 3 minutes before proceeding along the Down Slow line to Signal G 783, which was at Danger. He got down off the locomotive and contacted the signalman at Glasgow Central Signal Box to ask for instructions, the signalman telling him "Couple off and I'll take you round about." McGeachy said these were the only instructions he received and he did not consider it was necessary to ask for any details of how the operation was to be carried out, even though he had never run round a train on the Down Slow line at that point before.

34. McGeachy's evidence regarding the run round movement confirmed that of Baxter and McHardy. When the train had been recoupled and was running towards Signal G 824, he walked through the engine room to the front cab to pick up his kit and to obtain the driver's pay number to enter in his train book. As he was about to return to the rear cab he heard Baxter say "Oh, look at this," whereupon he looked up and observed a passenger train closely approaching on a collision course. He made his way back into the engine room and the collision occurred almost immediately.

35. After the collision McGeachy attempted to contact the signalman at Glasgow Central Signal Box from the telephone at Signal G 825 without success but, noting that Baxter was making his way to another telephone, he went forward to protect the obstruction. He met the guard of the passenger train who said that he had already protected the Up and Down Slow lines and so he protected the Down Fast line at Signal G 833 with three detonators and the Up Fast line in a similar manner at the same point.

36. *Signalman R. Coull* was on duty on No. 5 Panel in Glasgow Central Signal Box at the time of the accident. Included in this panel are the approaches to Rutherglen Junction from Newton and Carmyle Junction, the junction itself and the four main running lines past Rutherglen Station towards Glasgow Central. The edge of the panel is on the country side of Signals G 789, G 785, G 783 and G 781 at the Glasgow end of Polmadie Up and Down Yards, these signals being operated from Panel No. 4. Coull said that at about 09.00 train 6S45 was signalled towards Rutherglen Junction on the Down Carmyle line. He could not recall stopping the train at Rutherglen Junction or speaking to a member of the train crew, but he signalled the train forward on the Down Slow line to Signal G 783 where his colleague in Panel No. 4 issued the necessary instructions to the guard regarding running round the train. The light locomotive was signalled back to him via the Up Slow and came to a stand behind Signal G 827. Coull said he then signalled the locomotive to Signal G 813 on the Down Slow which was held at Danger by the occupation of track circuit 473 by the wagons of the train. He spoke to the secondman of the locomotive and authorised him to pass the signal at Danger to go forward onto the rear of his train. He issued no further instructions to the secondman but said that he had expected the train would draw down to Signal G 824 and the driver or secondman contact him to indicate that they were ready to proceed to Uddingston.

37. Coull said that while the locomotive was proceeding back onto its train he had signalled 2J15 onto the Down Slow line at Rutherglen Station and then cleared the route for it from the Down Slow to the Down Fast line via Crossovers 961 and 957 reversed. He observed from the track circuit indications on the panel the passenger train leave Rutherglen Station and at the same time became aware that the cement train was moving towards Signal G 824, which was indicating a Red aspect, as track circuits 474 and 475 became occupied.

38. The first indication he had that a collision had occurred was when the guard of the passenger train spoke to him from Signal G 815. He was subsequently informed that all lines were blocked and he protected the obstruction by placing collars on the signals on all lines approaching the scene of the accident.

39. I questioned Coull at great length about the use of the Down Slow line between Signals G 813 and G 783. While admitting that the normal running round of the cement train was carried out on the Down Clydesdale line, where proper run round facilities existed, or by Rutherglen and Bridgeton Yard, Coull maintained that he had run round trains previously, as a normal as opposed to an emergency move, on the Down Slow line. When I pressed him as to how many times he had previously run round a train on this line he finally admitted he could only recall one previous instance, a ballast train when both the civil and signal and telecommunications engineers' staffs were working in the Rutherglen area.

40. On both occasions he had decided to run round the train on the Down Slow line on his own authority. He did not consider it necessary to seek the agreement of his supervisor and he merely mentioned it to his colleague on Panel No. 4 as he was also involved in the move. Coull said that the reason for running round on the Down Slow line on the day of the accident was the fact that there was a ballast train standing on the Down Clydesdale line and earlier in the week he had received a complaint from a driver, when he had run the cement train round via Bridgeton, on account of the severe gradient on the east curve on that line.

41. Coull agreed that the Up Clydesdale line was signalled for bi-directional working and that it would have been possible to run round the train on that line, even though the Down Clydesdale line was occupied by another train. Admittedly the movement would have taken longer, as the locomotive would have had to cross to the Up Slow line to proceed back towards Rutherglen before being signalled from Signal G 827 across all the running lines back to the Up Clydesdale line, but this whole movement would have been properly signalled and there would have been no necessity to instruct the driver to pass any signal at Danger.

42. Coull did not seem to appreciate that the movement of the cement train along the Down Slow line after the run round in the Up direction was contrary to the regulation concerning wrong direction movements where Track Circuit Block is in operation (see paragraph 14). Nor, as indicated by the telephone conversation with the secondman at Signal G 813, did he consider it necessary to come to a clear understanding with the driver as to how the movement should be carried out.

43. On questioning Coull further, he agreed that he had made no request for the train crew to telephone when they were ready to depart after completing the run-round movement, but had assumed that they would carry out the same procedure as normally used in the run-round movements on the Down Clydesdale line. When pressed to say what telephone the train crew should have used, Coull agreed that, if they had obeyed the rule that they should only use the telephones at signals relating to the line on which they were standing, they would have had to walk the whole length of the train to Signal G 783 or well over ¼ mile towards Rutherglen to Signal G 813 or Signal G 824.

44. *Signalman K. Howard* had worked in Glasgow Central Signal Box for about 7 years before the accident. On the morning of the accident he had been in charge of No. 4 panel and, shortly before 09.00, Coull had told him that it was his intention to run train 6S45 round on the Down Slow line. In due course the train arrived at Signal G 783 which he had maintained at Danger. A member of the train crew spoke to him from the signal post telephone and Howard said that he told him that the train would be run round there. He then cleared Signal G 783 and the locomotive drew forward to clear of Signal G 792, whereupon he set the route from that signal back along the Up Slow line towards No. 5 panel.

45. In answer to my questions, Howard stated that he too had run round trains on the Down Slow line in a similar manner to that used on the day of the accident when he had been operating No. 5 panel, but he could not remember the last occasion that he had done so. He had carried out these moves on his own authority, despite the fact that they contravened the General Appendix Instructions and had not considered it necessary to seek the authority of his supervisor. Howard was non-committal regarding whether he gave special instructions to drivers when carrying out a run-round movement at this location.

46. *Regulator J. Kirk* was acting as the Senior Supervisor in Glasgow Central Signal Box on the morning of the accident. He had been a supervisor for 7 years and had worked in the signal box since 1961. At 09.16 the lights in the signal box dipped which from experience he knew signified that the overhead electrification system had been tripped. He noticed that a large number of track circuits were indicated as occupied near Rutherglen and that the power supply indication light for Rutherglen relay room was flashing. He immediately contacted Cathcart Electrical Control who confirmed that the traction supply had been tripped at Rutherglen. Almost immediately Signalman Coull turned to him and informed him that there had been an accident. He then spoke to Guard Lavery who gave him a good description of what had occurred, whereupon he immediately alerted the emergency services. Kirk then instructed the Electrical Control to keep the traction power off in the Rutherglen area.

47. Mr. Kirk said that, immediately after the accident, the route lights in No. 5 panel were illuminated from the end of Track Circuit 514 to Signal G 815 and forward to Signal G 785 and its overlap: Signal G 815 was indicated as showing a proceed aspect, while Signal G 824 was indicated as showing a Red aspect. So far as the points were concerned, No. 962 was showing normal, No. 961 reverse, No. 957 reverse, and all the individual point switches were in the centre position. The train description for 2J15 had stepped forward into the berth at Signal G 815 and there was no description for the cement train as there was no berth to cover this wrong direction move, and the previous description had disappeared when the locomotive, having been detached, started its run-round movement.

48. Mr. Kirk said that not only did he not authorise the running round movement on the Down Slow line on the morning of the accident, but he was not aware that it was taking place. If a signalman wished to carry out an unusual move, such as the one leading up to the accident, he would have expected this signalman

to have discussed it with him first and sought his agreement. Kirk said that he personally knew of no previous occasion when signalmen had run round trains on the Down Slow line and, if he had been aware that it was taking place, he would have questioned the advisability of such a move. He agreed that the move, with the long distance to travel in the wrong direction before reaching Signal G 824 was certainly not in accordance with the General Appendix Instructions regarding wrong-direction movements where track circuit block is in operation.

49. In answer to further questions, Mr. Kirk confirmed that in the area controlled from Glasgow Central Signal Box it was very infrequent that a driver had to be instructed to pass a signal, such as Signal G 813, at Danger to get back onto his train. If it occurred with any regularity he would question the adequacy of the signalling and take the matter up with higher authority, as had been done by a number of the senior supervisors in the past.

50. *Relief Supervisor J. Dingwall* had been based at Rutherglen for rather over 3 years at the time of the accident. On being informed of the accident, he made his way immediately to the site, checked that all lines were protected and that the overhead line current had been switched off. He then assisted in dealing with the passengers, including their entrainment in a DMU adjacent to the site of the collision and their onward movement to Glasgow Central Station.

51. Mr. Dingwall said that during his period at Rutherglen he had never seen a train run round on the Down Slow line in a similar manner to the cement train involved in the accident. As the supervisor in charge of the area in which the accident occurred he would only have carried out this move as a last resort; he would have used the other alternatives, such as the Up Clydesdale line or the Bridgeton run round first.

52. *Signal and Telecommunications Supervisor A. Aitken* was on duty at the Glasgow Central Signalling Centre on the morning of the accident. At 09.45 he was told that a collision had occurred near Rutherglen and he went to the signal box where he observed that Track Circuits 475, 476, 477, 514, 515, and 545 were all showing occupied. Points Nos. 961 and 957 were indicated in the reverse position, while Points Nos. 962 and 963 were indicated in the normal position: all the individual point control switches were in the central position. The route was set from Signal G 831 on the Down Slow line to G 815 on the Down Fast line and the 2J15 was displayed in the train describer berth at Signal G 815.

53. He then made his way to the scene of the accident where he met *Mr. J. A. Simpson, Maintenance Assistant to the Divisional Signal and Telecommunications Engineer*. Together they carried out very full tests on all the signalling equipment associated with the accident. They first checked that all the location cabinets and Rutherglen relay room were secure and that there was no sign of vandalism. They then checked the earth detection equipment in the relay room and found that none of the electrical circuits were leaking to earth.

54. No further tests could be carried out until the wreckage from the accident was removed, whereupon Mr. Simpson and Mr. Aitken carried out a full functional test of the signalling involved in the accident, in all cases finding the controls to be in accordance with the signalling scheme plan and the control tables. Mr. Simpson explained to me in great detail the very full tests that were carried out: the results of the tests are summarised below:

(a) With the route set from Signal G 831 to Signal G 815 none of the routes from Signal G 824 could be cleared.

(b) With the route set from Signal G 824 to Signal G 832, none of the routes from Signal G 831 could be cleared.

(c) With the route set from Signal G 824 to Signal G 828, none of the routes from Signal G 831 could be cleared.

(d) The approach locking release time for all routes of Signal G 824 was tested and found to be 30 seconds.

(e) The approach locking release time for Signal G 831, Route 1 was tested and found to be 2 minutes.

(f) Points No. 961 were set in the reverse position by means of the point switch and none of the routes from Signal G 824 could be cleared. Similarly, with the points normal, the route from Signal G 831 to G 815 could not be cleared.

(g) The route holding of Signal G 831, Route 1, by the occupation of track circuits was found to be correct.

(h) The aspect of Signal G 831 was correctly replaced to Red by the occupation of Track Circuit 481.

(k) The replacement of Signal G 824 by Track Circuit 476 occupied and cleared was found to be correct.

(l) The effect of breaking the normal detection of Points No. 961 on the aspect of Signal G 824 was that the signal aspect was replaced to Danger.

(m) The effect of breaking the reverse detection of Points No. 961 on the aspect of Signal G 831 when the route was set to Signal G 815 was that Signal G 831 immediately displayed a Red aspect.

Mr. Simpson confirmed that he was completely satisfied from the results of the tests he carried out that the signalling equipment was functioning correctly at the time of the accident and could not have contributed to it.

55. Mr. Simpson agreed that if there had been a temporary false feed in the second white aspect of Signal G 824, it would have been possible for that aspect to be illuminated, but he had found no evidence of a false feed taking place during his exhaustive inspection and testing. He also pointed out that, even if this had occurred, the red aspect would still have been illuminated. Thus to obtain a proceed aspect of two white lights, not only would there have had to be a false feed to the second white light but there would have had to be a failure of the red aspect at the same time. No evidence had been found of either of these occurring.

56. Mr. Simpson told me that on examining Signal G 824 he found it to be a ground position light shunting signal focussed for short range sighting only. When he observed it on the day of the accident at Danger, he was able to see the red light clearly at about 50 yards and the white light at a considerably greater range. The aspects were clean at the time of the accident but an anti-vandal cage was fitted over them which might have reduced their brilliance slightly. The fact that the signal was mounted at an angle to enable the driver in a locomotive standing close to the signal to see the aspects obviously also limited the range at which the signal could be sighted. The bulbs used in Signal G 824 were 110 volt, 40 watts, in the red aspect and 110 volt, 25 watts, in each of the white aspects.

57. *Mr. G. Errington, the Carriage and Wagon Outdoor Superintendent, Chief Mechanical and Electrical Engineer's Department*, told me that he had examined the brakes of the cement train after the accident. The main reservoir pipe cock at the leading end of the first wagon was found to be half closed and that on the rear of locomotive closed, but in both cases marks on the handles and castings showed that they had been forced into these positions by the collision. All other cocks on the train were in the correct open position. A full brake test was subsequently carried out on all the wagons. The brakes of all vehicles were found to release correctly and, when a full service brake application was made, all brakes were applied. All blocks and pads were found to be hard on the wheels and all were in good condition. No brakes leaked off within 15 minutes of the application.

58. Mr. Errington was unable to report on the condition of the brakes of locomotive No. 47553 at my public Inquiry, but subsequently the Chief Mechanical and Electrical Engineer informed me that tests carried out on the brake equipment indicated that it was functioning correctly up to the time of the collision.

59. *Mr. C. Campbell, the Train Timing and Loading Assistant to the Chief Mechanical and Electrical Engineer*, said that the brake selection switch of the locomotive of the cement train was found to be in the 'Passenger-Air' position after the accident. He explained that the effect of it being in the 'Passenger' position instead of 'Goods' was to apply the brakes of the locomotive more rapidly, but it in no way affected the timing of the application of the brakes on the wagons. The fact that the switch was in the 'Passenger' condition had been taken into account when calculating braking distances.

60. Theoretical speed and braking calculations showed that the maximum speed the cement train could have reached prior to passing Signal G 824 was in the region of 30 mile/h and that an emergency brake application would have brought the train to a stand in between 300 and 320 yards. If the train had been travelling at 10 mile/h the braking distance would have been between 70 and 100 yards.

61. *Mr. W. J. Graham, the Rules and Signalling Officer, Scottish Region*, confirmed that the signalling on the Down Slow line on the Glasgow side of Crossover No. 962 was purely for movements in the Down direction, apart from Signal G 824. This signal had been provided in connection with the entrance and exit facilities at the Shawfield end of Polmadie Motive Power Depot, and was intended for a setting back movement of a locomotive from the Down Slow line to the Up Slow line or back along the Down Slow line towards Rutherglen Station. Any such movement would have been contained between Signals G 813 and G 824. The signalling had not been provided to run round full length trains nor was it ever intended for such movements.

62. Mr. Graham agreed that the use of the Down Slow line for running round, as on the day of the accident, was contrary to the General Appendix Regulation concerning wrong direction movements where Track Circuit Block is in operation (see paragraph 14). In general it was not usual to lay down procedures for running round; signalmen were expected to carry them out where the signalling facilities permitted the moves to be made. In the area between Rutherglen and Polmadie he would have expected run round moves to be confined to the Down and Up Clydesdale lines.

Conclusions

63. This collision was caused by Driver Baxter driving the Northfleet–Uddingston cement train, 6S45, past Subsidiary Signal G 824 at Danger until it struck the Hamilton–Glasgow Central EMU passenger train, 2J15, as the latter was crossing from the Down Slow to Down Fast line on Nos 957 and 961 crossovers some 180 ft beyond the signal.

64. Driver Baxter's evidence concerning the aspect that Signal G 824 was displaying varied throughout my Inquiry. Initially he stated that the signal was clear as he approached it, that he opened the locomotive's controller, passed the signal and then made an emergency brake application on observing that the points ahead of him were set for the route from the Down Slow line to the Down Fast line. Later Baxter agreed that, when he first observed the signal, it was displaying a Red and White aspect, but that when he next looked at the signal it was displaying a proceed aspect of two white lights. From tests carried out both by the Railway Officers and myself, I am satisfied that on a sunny morning, as on the day of the accident, with the sun shining from behind the signal, Baxter would have been able to see the White aspect of Signal G 824 from 190–200 yards, but the Red aspect not until he was 50–60 yards from the signal. If one accepts Baxter's evidence about first seeing the signal at Danger with the Red and White aspects illuminated, he would have

been travelling at 10 mile/h, have been unable to stop at the signal, indeed it is likely that he would have come to a stand some 20–50 yards beyond it. If only a partial application of the brakes had been made, the train would have come to a stand foul of the crossover and a collision would still have occurred.

71. I am informed by the Officers of the British Railways Board that they are attempting to provide a position light shunt signal with an improved optical performance, but this may take an appreciable time and, in addition, it is doubtful if retrospective action will be taken to replace all existing signals. While welcoming the possible provision of an improved signal, therefore, I consider that action should be taken to improve the safety of the present arrangements. I recommend that where ground position light signals are properly used to control moves from a considerable distance behind the signals there should be appropriate overlaps beyond the signals to guard against a train failing to be brought to a stand at such a signal.

72. Finally, I believe that, in view of the ever increasing number of company and block trains, and of changing traffic patterns generally which in many cases require trains to be reversed en route, the signalling at these points should be examined to establish that all regular movements are properly signalled. Signalmen should be forbidden to carry out regular run round movements at places not signalled for such movements unless special permission has been obtained from higher authority.

I have the honour to be,

Sir,

Your obedient Servant,

P. M. OLVER
Major

The Permanent Secretary,
Department of the Environment.

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COLLISION NEAR RUTHERGLEN STATION - SCOTTISH REGION ON 31st. MAY 1975

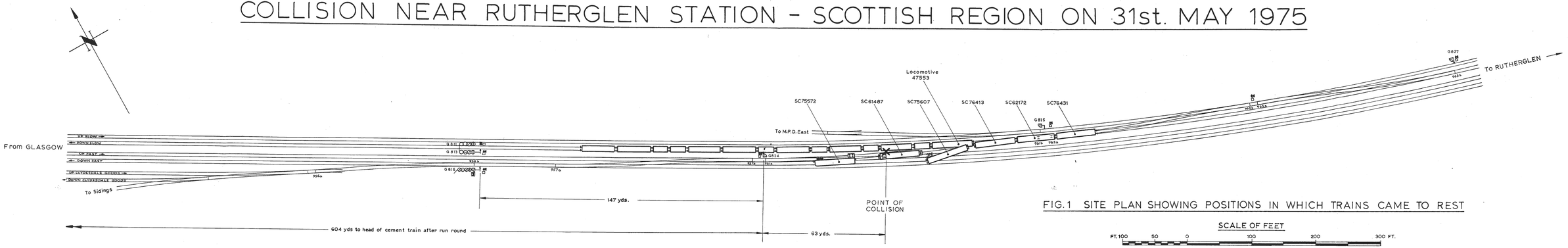

FIG.1 SITE PLAN SHOWING POSITIONS IN WHICH TRAINS CAME TO REST

SCALE OF FEET

FT. 100 50 0 100 200 300 FT.

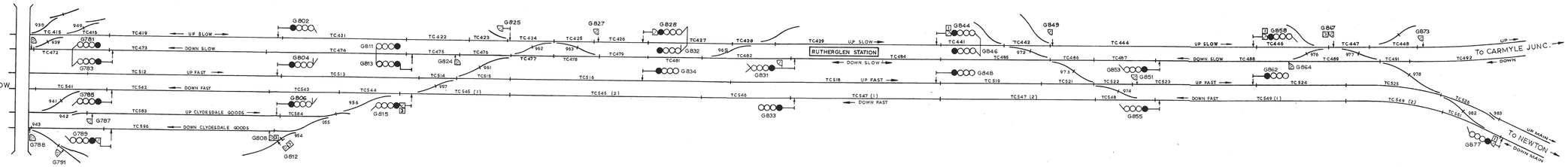

FIG.2 PLAN SHOWING DETAILS OF SIGNALLING IN RUTHERGLEN - POLMADIE AREA

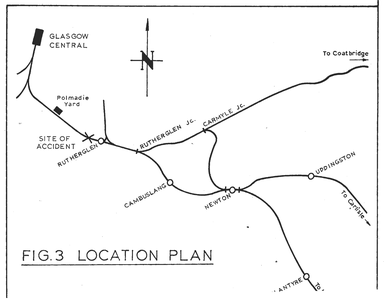

FIG.3 LOCATION PLAN