

SOMERSAULT

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SIGNALLING RECORD SOCIETY OF VICTORIA INC



Caulfield was resignalled over the weekend of the 25/26 June and the upper quadrant semaphores replaced by colour light signals controlled by a new SSI. A new panel was provided in the existing signalbox. The power signalling was brought into use on 26.11.1933. The power signalbox replaced two large mechanical signalboxes (88 and 103 levers) which dated from the quadruplication from South Yarra in 1915. The provision of upper quadrant semaphores in 1933 was unusual. A contemporary Railway Gazette article stated that this was due to a desire to match the upper quadrant semaphore signalling on the quadruple track from South Yarra and, also, to use up the stock of upper quadrant mechanisms. This photo shows Posts 30 and 31 situated adjacent to the signalbox. Post 30 (left) is cleared for a movement from No 3 Road to the Dandenong line; while Post 31 is cleared for a movement from No 2 Road to the centre line to Frankston. Curiously, this photo could not have been taken until the triplication to Frankston as, prior to that, Medium Speed movements from Nos 2 and 3 Roads shared a common section of track between Points 44 and 45. The 'a' (top) arms on both Posts 30 and 31 are fixed at caution.

Photo: Keith Lambert

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MINUTES OF MEETING HELD FRIDAY JULY 21, 1995.

Present:- A.Jungwirth, W.Brook, J.Churchward, G.Cumming, A.Gostling, W.Johnston, K.Lambert, D.Langley, B.McCurry, J.McLean, R.Murray, P.Silva, R.Smith, A.Waugh & R.Whitehead.

Apologies:- G.Reynolds & L.Savage.

The President, Mr. Alan Jungwirth, took the chair and opened the meeting @ 2012 hrs.

The Chairman welcomed visitor Vance Findlay to the meeting.

Minutes of the May 1995 Meeting:- Accepted as published. D.Langley/J.McLean. Carried.

Matters Arising:- Nil.

Correspondence:- A letter was received from the Ballarat Gold Museum advising of an exhibition of historical material regarding the railways in Ballarat. A copy of the flyer was included in the July 1995 mailout.

A letter was sent to the S.R.S.U.K. congratulating them on their 25th Anniversary.

A letter was received from the S.R.S.U.K. thanking the S.R.S.V.Inc. for the best wishes for the 25th Anniversary and congratulating the S.R.S.V.Inc. on its 20th Anniversary. Also, Peter Binnersley has stood down as Secretary of the S.R.S.U.K. due to work commitments and has been replaced by Malcolm Atherton.

Letters were received from Graeme Reynolds and Warren Doubleday with suggested improvements for the draft document for the operation of the archives.

Andrew Waugh has received a parcel of books from Peter Kay for those people who have ordered them.

D.Langley/J.McLean.

General Business:- Bob Whitehead reported on a visit to Ballarat where he had a meeting with a group of organisations working to create a railway museum complex situated at East Ballarat. The organisations involved are the West Coast Railway, Sovereign Hill, Ballarat Historical Society, Steamrail Ballarat & Ballarat Rail Promotion Group. The group plans to reconstruct part of East Ballarat Loco & the upside building at East Ballarat. The group has a plan for a signalling museum as part of the complex. The purpose of Bob's visit was to gather more information about the proposed signalling museum & inform the group about the activities of the S.R.S.V.Inc. He sought feedback from the meeting & the society.

Andrew Waugh was interested in supporting the proposal for a signalling museum.

Jon Churchward noted that the subject of a signalling museum had been repeatedly discussed & put aside. Jon suggested that the S.R.S.V.Inc. could provide assistance but not financial assistance.

Bruce McCurry said that the S.R.S.V.Inc. had not been short of ideas for a signalling museum over the years and that this proposal was another in a long list.

Bob Whitehead said that the S.R.S.V.Inc. was unlikely to attract funding on its own and that a museum at Seymour was out of the society's scope at the present.

Andrew Waugh suggested that a signalling museum on its own probably would not attract many visitors.

David Langley agreed and said that a signalling museum as part of a larger railway museum at Ballarat may have more potential.

Moved Bob Whitehead, seconded Andrew Waugh, that the proposal be referred to the committee for an early decision.

Moved David Langley, seconded Jon Churchward, that the motion be amended to read archives committee. Carried.

The motion that the proposal be referred to the archives committee for an early decision was then put to the vote. Carried.

Moved Bob Whitehead, seconded Andrew Waugh, that the Secretary write to the Ballarat Group advising of the report received by the S.R.S.V.Inc. and that a submission is to be forwarded in the future. Carried.

Bob Whitehead reported that a senior officer from the P.R.O. at Laverton is to inspect the building at Seymour. Paperwork is to follow to accept temporary sentenced railway records. The archives room has been loaned two PC's to be put to use.

Rod Smith asked if the archives will operate to any standards or P.R.O. rules.

Bob Whitehead replied that the archives is to be operated under the rules of the P.R.O. and established archival rules.

Rod Smith reminded the meeting that the first ever meeting of the S.R.S.V. took place on this night 20 years ago in 1975.

Rod Smith asked about the correct description of light signals. Rod also asked if on long sections of staff & ticket on the new S.G. line when the staff is at the wrong end of the section, is the staff transferred or is a Line Clear Report issued. The answer is that a Train Authority is issued, not a Line Clear Report.

Glenn Cumming noted that one Train Controller had told him of issuing four Train Authorities in one shift on the new S.G. line and that this was not uncommon.

Jack McLean tabled a graph of movements on the new S.G. line on Tuesday 13.06.1995.

Bob Whitehead described plans for two new crossing loops on the North East B.G. The loops will be on the upside of Violet Town, replacing Violet Town and between Bowser & Springhurst to replace Wangaratta. This loop will be close to the site of the old wartime crossing loop known as Boralma and is to be known as Boralma.

Keith Lambert gave details of recent works. At Coburg, No.3 road has been removed & a new down platform is being constructed. Section Authority Working has been formally commissioned between North Geelong "C" Box & Maryborough. Section Authority Working trials are taking place between Maroona & Portland. A new passenger station is in service on the down side of Webb Street level crossing at Narre Warren. Vite Vite Loop has been opened as a staff station. Newport is to get a new signal box on the top of the existing relay room. Work has commenced at Sunshine for the provision of a solid state interlocking. Ringwood signal box to be replaced after Sunshine & Newport have been done. The new station at Traralgon is open for service. A composite electric staff has been provided for the Morwell - Traralgon section.

Jack McLean asked why passenger trains were restricted to running on the East line between Brooklyn & Newport.

David Langley noted that Edwin Maher had presented the weather report on A.B.C. T.V. tonight using a train staff engraved for Cockatoo - Gembrook as his pointer.

Rod Smith advised that the re - enactment troop train would be on display tomorrow.

Syllabus Item:-

The Chairman introduced the syllabus item, in two parts.

The first part was a screening of 12 slides from the collection of Keith Lambert showing Caulfield before and after the resignalling. Keith's slides also showed the emergency control panel at Moorabbin.

The second part was presented by David Langley who screened 25 slides in the form of a "guess where it is" competition. The locations were mainly in Victoria, with a sprinkling of New South

Wales, Queensland & South Australian locations. Rod Smith top scored with 20 out of 25 and Andrew Waugh scored 18 out of 25.

At the conclusion of the syllabus item, the Chairman thanked Keith & David for the entertainment.

Meeting closed @ 2117 hrs.

The next meeting will be on Friday September 15, 1995 at the Uniting Church Hall, Hotham Street, Mont Albert.

SIGNALLING ALTERATIONS

The following alterations were published in WN 23/95 to WN 30/95. The alterations have been edited to conserve space. Dates in parenthesis are the dates of the Weekly Notice.

01.06.1995 Narre Warren - Pakenham

In conjunction with the commissioning of the new passenger platform at Narre Warren on 1.6.95, Diagram 9/95 replaced Diagram 5/91. The principle alterations were:

- 1) Down automatic signals D 1259 and D 1283 and Up automatic signal D 1296 were abolished.
- 2) The operating B arms on Down automatic signal D 1229 and Up automatic signal D 1338 were replaced with fixed marker lights.
- 4) A new Up automatic signal, D 1284, was commissioned. This signal is located 21 metres on the Up side of the new island platform. (SW 307/95, WN 23/95)

01.06.1995 Rochester

On Thursday, 1.6.95, Master Key locks replaced the Plunger Locks on the Main Line points B and E. The Up and Down Home Arrival signals and associated quadrant levers were abolished. Down Home G, provided for movements from No 3 Road to the Main Line was abolished. Rochester is no longer available as a Train Order Crossing Station and it became an Intermediate Siding.

Until the necessary circuit alterations are made it is necessary for Down Home Signal K and the Down Starting Signal to be operated from the push button located on the platform for the passage of all Down trains. For Down movements from No 3 Road to the Main Line, the flashing lights at Northern Highway must be operated from the push button at the crossing. The Starting signal is to be operated from the push button at the Down end points. A notice board will be provided with suitable instructions.

The Annett locked points leading to the Murray Goulburn Siding are temporarily booked out of service. Amend Diagram 4/89, the Book of Signals, and page 61 MTP. (SW 304/95, WN 23/95)

04.06.1995 West Footscray

Commencing Sunday, 4.6.95, the Signalbox hours will be:

Goods Lines

0700 hours Monday to 0700 hours Saturday

Suburban Lines

Switched in as arranged during Signalbox hours

Amend page 17 MTP General Instructions and page A10a Metro WTT Appendix. (O 655/95, WN 23/95)

04.06.1995 Ballarat - Maryborough - Train Control

Commencing on Sunday, 4.6.95, the Train Controller responsible for the North Geelong 'C' - Warrenheip section also took control of the section onwards to Maryborough. (SW 316/95, WN 23/95)

04.06.1995 Morwell - Traralgon

Commencing Sunday, 4.6.95, Up trains are authorised to use Composite Electric Staff working between Traralgon and Morwell. The Composite Staff will be normally kept in the instrument at Traralgon. No Intermediate Block Posts have been established in the section.

Working of Trains

When it is required to send trains in the same direction, the following procedures must be adopted.

Train A

After complying with the relevant Driver in Charge instructions, the Driver of train A must obtain the 'Ticket A' portion of the Composite Staff from the Safeworking Box in the Depot Office. When the train is quite ready to depart, the Driver must forward the APIX message to the Signaller, Morwell. The APIX message must be recorded on an 'outwards' telegram form (Black TL 100) by the Driver. The time of departure must be recorded in the Train Register Book. The train may then depart.

Train B

After complying with the relevant Driver in Charge instructions, the Driver of train B must contact the Signaller, Morwell, and ascertain the position of the previous train. If the train has arrived complete at Morwell, the Signaller, Morwell, must transmit the ACRE message. This message must be recorded by the Driver on the proper 'inwards' telegram form (Red TL 101) and the time that the ACRE message received recorded in the Train Register Book. When the train is quite ready to depart, the Driver must

obtain the 'Ticket B' and 'Staff' portions of the Composite Staff from the Safeworking Box. The time of departure must be recorded in the Train Register Book. The train may then depart.

The Driver of any train which is to proceed on a Ticket portion of the Staff must not depart without first seeing the centre portion marked 'Staff'. A second train must not be permitted to follow between staff stations when a total failure of communications has occurred unless the preceding train has been reported arriving complete and in clear at the staff station in advance. Should the staff portion of the Composite Staff be at the wrong end of the section, arrangements must be made for the staff portion to be transferred by road to the correct end of the section. The Train Register Books at both Traralgon and Morwell must be endorsed accordingly.

Authorised Trains

The following trains are authorised to use the Composite Staff. Variations are only permitted by the express authority of the Superintendent of Safeworking.

Day	Train	Time	Portion
Sunday	9460 ex Traralgon	2340	Ticket A
Monday	9428 ex Traralgon	0130	Ticket B and Staff
	9460 ex Hillside	2055	Ticket A
Tuesday	9428 ex Traralgon	0130	Ticket B and Staff
	9459 ex Tottenham	2325	Complete Composite Staff
	9460 ex Hillside	2055	Ticket A
Wednesday	9428 ex Traralgon	0130	Ticket B and Staff
	9459 ex Tottenham	2325	Complete Composite Staff
	9460 ex Hillside	2055	Ticket A
Thursday	9428 ex Traralgon	0130	Ticket B and Staff
	9459 ex Tottenham	2325	Complete Composite Staff
	9460 ex Hillside	2055	Ticket A
Friday	9428 ex Traralgon	0130	Ticket B and Staff
	9459 ex Tottenham	2325	Complete Composite Staff

The following instructions will apply as to the working of Trains 9428, 9459 and 9460.

Duties of Signaller prior to ceasing duty

Prior to ceasing duty on the previous shift, the Signaller at Traralgon must withdraw the Composite Electric Staff. The Signaller must unlock the Closing Lever with the Annett Key, the signals cleared and the levers secured reverse with the chain provided on the quadrant. All details are to be entered into the Train Register Book. The Train Controller is to be informed that the signals have been cleared, the Composite Staff withdrawn, and the number of the Master Key to be used by train 9428. The Signaller, Morwell, is to be informed that the Composite Staff has been withdrawn. The Staff and 'B' pattern Annett Key must be placed in the safeworking box located in the depot office. The Train Register Book and the Master Key are to be left in the depot office.

Duties of the Driver of trains 9428 and 9460

Upon commencing duty, the Driver must unlock the chain securing the signal levers and restore the levers to normal. The Closing Lever must then be restored to normal and the Annett Key removed. The points leading to the turntable road can then be unlocked and the locomotive shunted to the main line. Once the locomotive is clear of the main line, the Driver must restore the points to the normal position, remove the Annett key, and test the points. The Annett key must then be replaced in the Annett lock on the Closing Lever. The Closing Lever and the signal levers must then be secured reverse with the chain and padlock provided.

The relevant portion(s) of the Composite Staff must be obtained by the Driver who will endorse the Train Register Book with the train number, time of departure, and the portion(s) of the Staff which the train will carry. If the train is to run under the 'Ticket A' or 'Ticket B' portions of the Staff the Driver must send the APIX message to the Signaller, Morwell. The time of departure must be relayed to the Signaller, Morwell, by the Train Controller.

Duties of the Driver of train 9459

Upon arrival at Traralgon, the Driver must place the Composite Staff in the safeworking box in the depot office and take possession of the Master Key. The Driver must also receive a Train Order from the Train Controller before departing for Sale.

Duties of Signaller recommencing duty

Upon recommencing duty, the Signaller must first unlock the signal levers and restore all fixed signals to Stop. The Closing Lever is to be restored to normal and the Annett key removed. The Signaller must then remove the Composite Staff from the Safeworking box and ascertain the position of Train 9459. If the Train Controller confirms that Train 9459 departed Traralgon complete, then the Signaller will confer with the Signaller, Morwell, and replace the Composite Staff in the instrument under the Cancelling signal.

Bank Engines

When it is necessary for Trains 9460 or 9428 to be banked to Moe, Train 9459 should be used to return the bank engine to Traralgon. If this is not possible, the Signaller, Traralgon, must remain on duty for the arrival of either Train 9459 or the light engine.

These instructions supersede SW 93/95 and SW 95/95. Insert on page 35-8 of the Book of Rules.

(SW 308/95, WN 23/95)

05.06.1995 Frankston - Somerville - Long Island Junction - Hastings

Commencing Monday, 5.6.95, the Staff Exchange Box at Somerville is to be used for Trains 9553 and 9556 (Monday - Thursday) and Trains 9555 and 9552 (Tuesday - Saturday).

Permission is granted for the Electric Staffs used for Train 9553 (Mondays - Thursdays) to be used for Train 9556 the same day, and for Trains 9555 and 9552 (Tuesdays - Fridays), and the staffs used for Train 9555 (Saturday) to be used for Train 9552 the same day.

On arrival of Train 9556 at Frankston on Mondays to Fridays, the Signaller, Frankston, must place the staff in the pocket of the Staff Instrument, being particularly careful not to place it into the Instrument. The Staff must be used for Train 9555. On arrival at Long Island Junction, the Drivers of Trains 9555 and 9553 must not place the Somerville - Hastings staff into the Intermediate Electric Staff Instrument, but must retain the staff for the Up journey and exchange it for the Frankston - Somerville staff in the Staff Exchange Box at Somerville. When an Up train arrives at Frankston after using the Staff Exchange Box at Somerville, the Signaller, Frankston, must retain the Staff in the pocket of the Instrument until the Signaller, Somerville, reports for duty. The Staff must then be inserted in the Instrument under the Cancelling signal.

(SW 315/95, WN 23/95)

05.06.1995 Newport South

Standard Gauge trains now operate the level crossing protection equipment at Champion Road and the instructions in SW 220/95 are cancelled as from 5.6.95. The four level crossings listed in SW 220/95 now have operating protection equipment.

(SW 325/95, WN 23/95)

07.06.1995 Portland

On Wednesday, 7.6.95, a private siding was commissioned at Portland serving the Kalari Depot. The loop siding is situated between the Freight Gate/Loco Depot 'Y' points (Points 2), and the West Boundary Road (Henty Highway) overpass. A fenced compound is provided in the siding with gates at each end. There is 214 metres clear standing room within the gates and 249 metres with the gates open.

The points at each end of the siding are secured by 'A' pattern Annett locks and are rodded to Hayes derails. The Annett key is secured in a circuit controller located adjacent to Points 2. Removal of the Annett key secures Signals 1, 4, and 12 at Stop. Post 3 (Signals 3 and 5) is located between the points of this siding.

Operating Procedures

1. The OIC, Portland, must communicate with Kalari and obtain permission to enter the siding.
2. Before entering Kalari Siding the competent employee must obtain the A pattern Annett key from the circuit controller, unlock and reverse the points, unlock and open the siding gates, and activate the flashing light warning system.
3. Kalari employees must not encroach on the siding while the flashing lights are operating. If the company needs to load or unload a vehicle whilst the flashing lights are operating, the Kalari employee must obtain permission from the PTC employee in charge of the shunting. Before granting permission, the competent employee must inform all PTC employees and ensure that they are clear and that shunting operations have ceased. The Kalari employee will inform the competent employee when loading or unloading operations have ceased and shunting may then resume.
4. When shunting operations are completed, the Competent Employee must de-activate the Flashing Light Warning System, close and lock the siding gates, restore and lock the points in the normal position and return the Annett key to the circuit controller.

Amend Diagram 8/94 and insert these instructions following Section 34.41 of the Book of Rules.

(SW 326/95, WN 24/95)

09.06.1995 Spencer Street

On Friday, 9.6.95, a Co-acting signal was provided for Up Automatic Signal 716 on the Through Suburban line. The Co-acting signal is on a separate post adjacent to the signal. Amend Diagram 21/94.

(SW 321/95, WN 24/95)

09.06.1995 Upper Ferntree Gully

On Friday, 9.6.95, a Co-acting signal was provided for Home 22. The Co-acting signal is located on the same post as the existing signal. Amend Diagram 15/91.

(SW 320/95, WN 24/95)

(13.06.1995) Newport - North Geelong - IXL and BP Sidings

The instructions in SW 220/95 regarding the working of these two sidings has been amended by the addition of the words: "Under no circumstances must any movement take place across the Switchlocked Grade Crossings unless the above instructions are complied with."

(SW 306/95, WN 23/95)

(13.06.1995) Violet Town

Diagram 2/95 replaced 28/89. The principle alterations on the diagram were:

- 1) The abolition of No 3 Road and Sidings A and B. Posts 4, 5, 6, and 8 were abolished and the disc was removed from Post 11.
- 2) The Calling on signals on Posts 2 and 11 were abolished.
- 3) The Up and Down Distant signals were fixed at caution
- 4) Roads 2A, 2, and 2B were renamed Road 2.
- 5) The Automatic Staff Exchange apparatus was abolished. (SW 319/95, WN 23/95)

15.06.1995 Traralgon

On Thursday, 15.6.95, the Staff instrument was relocated to the new station building. If it is necessary for a train to pass through the section whilst the instrument is being relocated, the provisions of Rule 29, page 22-30, Book of Rules must be observed. The signal levers will remain on the original platform at this time. (SW 331/95, WN 25/95)

16.06.1995 Traralgon

On Friday, 16.06.1995, interim signalling arrangements for the new passenger platform on No 3 Track were brought into service. The alterations are:

- 1) The plunger locking on Points B and C will be altered to lock the points for No 3 Track.
- 2) No 2 Track and the Maffra Siding will be spiked out of use until B pattern Annett locks are fitted. Temporary scotch blocks will be provided at both ends of No 2 Track and in the Maffra siding.

The signals will be operated from the former platform for movements into No 3 Track, and from levers or key switches at Points B or C for movements into No 1 Track. Trains must not exceed 40 km/h over facing or trailing points when entering or departing from the new platform.

Amend Diagram 20/91. (SW 327/95, WN 25/95)

17.06.1995 North Geelong 'C' - Ballarat - Maryborough

On Saturday, 17.6.95, the Section Authority System is formally recognised as the Safeworking System between North Geelong 'C' Box and Ballarat and North Ballarat Junction and Maryborough. Circulars SW 404/94, 294/95 and 312/95 are cancelled. Amend page 43, MTP Instructions. (SW 368/95, WN 28/95)

17.06.1995 Ballarat

On Saturday, 17.6.95, the following alterations took place:

- 1) Permanent wiring replaced the temporary wiring to the Bungaree Loop control panel.
- 2) Electric detectors were provided to detect hand points D and E in the Ballarat Yard Goods Arrival track normal. These points are detected by Home signals 24, 50, and 52 for movements into the Goods Yard. The position of the points is indicated on the panel.
- 3) The hand operated double compound between points D and E leading from the Goods Arrival track to the Goods Departure track and the sidings was spiked normal.
- 4) Indication lights were provided on the panel to indicated the operation of the level crossing equipment at Gillies Street on the Ararat line.
- 5) Circuit alterations were made to permit low speed moves to be made from Home 8 and Dwarf 14 towards Home 24 with Points 35 reverse. (SW 338/95, WN 25/95)

18.06.1995 Yarraville

On Sunday, 18.6.95, the interlocked gates and associated wickets gates at Anderson Street were replaced with manually controlled Flashing Lights, Boom Barriers, and Pedestrian Gates.

The equipment is manually controlled by the existing gate stop lever. The flashing lights will commence to operate when this 'boom lever' is moved from the full reverse position. When the boom barriers have been proved horizontal, the boom lever can be placed in the normal position. The fixed signals may then be placed at proceed. The boom barriers will rise automatically after the passage of the train through the crossing, provided the home signal levers have been restored to the normal position and the boom lever to the reverse position.

The approach of the train will continue to be indicated to the Signaller by means of the annunciator. The existing approach locking will remain. Amend Diagram 9/87 and page 20 MTP. (SW 328/95, WN 25/95)

(20.06.1995) Newport - North Geelong

The Boom barriers at Maddox Road (Newport South) Kororoit Creek Road (Altona Junction) and Station Road (North Shore) now operate automatically for standard gauge trains. Delete these crossings from the list in SW 220/95. (SW 322/95, 323/95, & 324/95, WN 24/95)

(20.06.1995) Sale

Due to the alterations to the MTP for the service to Hillside, a Train Order which has been issued to Train 8431 may be fulfilled when the fixed signals at Sale have been placed at Stop and the Train Controller advised accordingly. The signals are to remain at stop until No 1 Road is clear, all shunting movements have been completed, and the Annett key has been secured in the duplicate lock on the closing lever. (SW 329/95, WN 24/95)

- 20.06.1995 **Ardeer**
On Tuesday, 20.6.95, and Wednesday, 21.6.95, Automatic signals SA 574 and NA 574, located at Fitzgerald Road, were to be relocated 4 metres in the Down direction. Amend Diagram 2/90.
(SW 335/95, WN 25/95)
- 22.06.1995 **Avenel**
From 22.6.95 No 3 Road was booked out of service. (SW 349/95, WN 26/95)
- 23.06.1995 **Burnley**
On Friday, 23.6.95, a Co-acting signal was provided for BLY 375. The Co-acting signal is located on the right hand side of BLY 375 between the Up and Down Burnley Through lines. The signal is of the Underground style. Amend Diagram 7/89. (SW 343/95, WN 26/95)
- 23.06.1995 **Coburg**
On Friday, 23.6.95, No 3 Track was removed to allow construction of a Down platform. Points 30, Catch 25, and Disc 22 (Post 43) were booked out of service and will be removed.
Amend Diagram 29/88. (SW 346/95, WN 26/95)
- 26.06.1995 **Caulfield**
From Monday, 26.6.95, Diagram 7/95 replaced Diagram 11/93. The principle alterations were:
- 1) The power frame (controlling Caulfield) and the panel (controlling Moorabbin) were replaced by a new panel located in the existing signalbox at Caulfield. The new panel operates an SSL.
 - 2) All power operated semaphores were replaced with colour light signals.
 - 3) Dwarfs 7 and 50 were abolished.
 - 4) A new Dwarf, CFD 709, was provided for Up movements in the Works siding.
 - 5) The diamond crossover was replaced by two separate crossovers (Crossovers 623 and 632).
 - 6) Automatic signals D 319, F 319, and D 362 have been replaced by Home signals CFD 702, CFD 742, and CFD 735 respectively.
 - 7) Dwarf V 23 has been replaced by Home CFD 707 located 10 metres in the Up direction from the platform.
 - 8) Homes 24 and 26 on the signal bridge have been replaced by Homes CFD 747 and CFD 767 located on a ground mast on the left hand side of the track to which they apply
 - 9) Homes CFD 708, CFD 728, and CFD 748 are fitted with 'feather' type point indicators (sic). The indicator on CFD 728 is located on a separate post on the right hand side of the track due to clearance constraints.
 - 10) Home 30 has been replaced by a new post, CFD 748, located 20 metres on the Down side of the platform. Home 53 has been replaced by a new post, CFD 768, located on the left hand side of the track 25 metres from the platform.
- 6) All points and signals have been renumbered. (SW 334/95, WN 25/95)
- 26.06.1995 **Bacchus Marsh**
On Monday, 26.6.95, the following alterations were made at Bacchus Marsh:
- 1) The platform loop was shortened at the Down end. Points 36 were relocated 105 metres towards the platform
 - 2) A crossover, facing for Down traffic, was provided between the main line and No 3 Road on the Down side of Points 36. The crossover is worked by lever 26. The main line end of the crossover is secured by 'Lock Bar Lever' 27 which locks the points 'out both ways'.
 - 3) Post 7 was relocated 100 metres closer to the platform. A disc signal was placed under the Home signal on each dolly. The disc signals apply from No 1 or No 2 Roads to No 3 Road (Siding B) towards Post 9B. The disc on the left hand dolly is worked by lever 29, that on the right hand dolly by lever 37.
 - 4) A new post, Post 8, was provided adjacent to the Down end of Crossover 26. Three disc signals are provided on the Post: the top lefthand disc (Disc 15) applies from Siding B to No 1 Road towards Post 5; the bottom lefthand disc (Disc 22) applies from Siding B to No 2 Road towards Post 5; and the righthand disc (Disc 28) applies from Siding B to No 3 Road towards Post 3.
- Amend Diagram 30/88 and the Book of Signals. (SW 330/95, WN 25/95)
- (27.06.1995) **Warrnambool**
Commencing forthwith, Driver in Charge of Signalling conditions will apply for the arrival of Train 8221 and the departure of Train 8256, Mondays to Fridays.
Prior to ceasing duty, the Signaller must place the Down Home Arrival signal to proceed and secure the lever in the reverse position with the chain provided. The Train Controller must then be informed that the Signaller is ceasing duty and that the arrival home signal has been placed at proceed.
Upon arrival, the Driver of Train 8221 must comply with the instructions in clause E, page 34-28, Book of Rules. Prior to the departure of Train 8256, the Driver must comply with the instructions in clause D, page 34-28 of the Book of Rules. (SW 339/95, WN 25/95)

- 27.06.1995 **Newport - Brooklyn - Sunshine**
Commencing 27.6.95, the following instructions will apply to the operation of passenger trains (whether Broad or Standard Gauge) on the Loop line.
1. Except in case of emergency, passenger trains are not permitted to operate between Newport and Brooklyn on the West line or between Brooklyn and Sunshine.
 2. Before permitting any passenger train to proceed from Tottenham to Newport, the Signaller, Brooklyn, must secure the common blade on the dual gauge points with a point clip to lie for the East line. Similarly, before a passenger train can operate to Tottenham the common blade of the dual gauge points must be secured with a point clip to lie for Tottenham.
- Add to SW 220/95. (SW 254/95, WN 27/95)
- 27.06.1995 **Sale**
On Tuesday, 27.6.95, the points leading from the Oil Siding to the Main Line (in the compound) were disconnected from the rodded connection and spiked to lie for the Dead end. Access to the Oil Siding is now only available via the Dead end spur at the Down end of the station yard. The points in the compound leading from the Freight Siding to the Main Line remain rodded to the Plunger Locked Main Line points. (SW 356/95, WN 27/95)
- 30.07.1995 **Vite Vite**
On Friday, 30.6.95, Vite Vite was opened as a Staff station. The Train Staff and Ticket sections are Berrybank - Vite Vite and Vite Vite - Maroona.
Vite Vite has a crossing loop 1600 metres in clear. The Safeworking cabin is located at the Up end of the loop adjacent to No 2 track. The equipment and method of operation at Vite Vite is identical to that at Manor and Berrybank. Amend SW 220/95. (SW 352/95, WN 26/95)
- 02.07.1995 **Keon Park - Thomastown**
Due to S&C involvement at Caulfield, the alterations described on SW 332/95 took place on Sunday, 2.7.95 between 0001 hours and 1800 hours. These alterations are:
- 1) The control by the Boom Barriers at Settlement Road on Home KPK 104 (located at the Down end of Keon Park platform) was removed. The Boom Barriers now control Down Automatic T 551 located at the level crossing. This alteration avoids Down express trains from being held in the Keon Park platform.
 - 2) Illuminated '65' indicators were added to Up Automatic T 554 and Up Home KPK 107.
- Amend Diagram 3/94. (SW 342/95, WN 25/95)
- 03.07.1995 **Maryborough - Ararat**
On Monday, 3.7.95, the line between Maryborough and Ararat was re-opened as a Construction Siding. The Train Staff and Ticket system has been suspended. Any infrastructure train operating over the line must be accompanied by an Infrastructure representative (the Foreman of the Tie Renewal Gang). The train must be signalled to and from the Construction Siding using the fixed signals, but the Main Line points must only be reversed when the appropriate authority has been obtained from the representative. The Main Line points governing access to the siding have been secured normal with a lockable point clip. The Foreman holds the key to the clip. (SW 360/95 & SW 374/95, WN 27/95 & WN 28/95)
- (04.07.1995) **Melbourne Underground Rail Loop**
No obstruction of any portion of line in any Underground Loop Tunnel is permitted unless Absolute Occupation of the Single Line has been granted by the Signaller at Metrol.
Personnel requiring to enter an Underground Loop Tunnel for inspection purpose may do so after advising the Signaller, Metrol. Where practicable, and without causing delay to trains, Drivers will be advised of the presence of personnel in the tunnel.
Insert on page 35-8 of the Book of Rules. (SW 351/95, WN 26/95)
- (04.07.1995) **Tottenham B Box**
The instructions for Down Standard Gauge trains (SW 220/95) have been modified.
The Train Controller may signal a Down Adelaide line train from West Footscray while a preceeding train is travelling from Tottenham to Brooklyn or from Brooklyn to Newport on the East line provided that the Controller has consulted with the Signaller, Tottenham, and is satisfied that the Down Adelaide train will be the next train and that the Train Staff for the Newport - Manor Loop section is, and will remain, at Newport. In this case, when the 'Train Arrival' signal is received from the Signalbox in advance, the Signaller in the rear must send the 'Is Line Clear?' signal which must be acknowledged by the Signaller in advance if the line is clear in accordance with the rules. Under no circumstances is the Signaller, Newport, to grant 'Line Clear' to Brooklyn unless the Train Staff for the Newport - Manor Loop section is at Newport.
The junction points at Tottenham must not be reversed until a Down Standard Gauge train has stopped. Under no circumstances are the points to be reversed without first obtaining permission from the Standard Gauge Train Controller in Room 1. (SW 353/95, WN 26/95)

(04.07.1995) Traralgon

In conjunction with the track and signalling alterations at Traralgon, the Driver in Charge instructions (SW 308/95) have been modified as follows. These instructions will apply to Trains 9460, 9428, and 9459.

If is necessary for these trains to shunt at Traralgon, the Driver of each train will be responsible for the operation of the fixed signals and plunger locked points. When it is necessary for the plunger locked points to be operated, the Driver must place the signals to Stop and restore the closing lever to the normal position. The Annett key must then be removed. The catch securing the plunger on the main line points must then be unlocked and the plunger withdrawn. The points may then be reversed and the shunting performed. Upon completion of the shunting, the main line points must be set for the main line, the plunger reinserted, and the plunger catch locked with the V5PSW padlock. The Annett key must then be reinserted into the lock on the closing lever and all signals cleared. (SW 344/95, WN 26/95)

06.07.1995 Tottenham

On Thursday, 6.7.95, an electrical device was installed at the Standard Gauge junction points. When the points are reversed the device will short circuit the track circuit and drop the Single Line Block between West Footscray Junction and McIntyre Loop and hold the Departure Signals at danger.

(SW 373/95, WN 28/95)

06.07.1995 Maroona - Portland

On Thursday, 6.7.95, the Train Radio Operating Channel on this line was converted from Channel 2 to Channel 5. Amend page 7 MTP General Instructions.

(SW 367/95, WN 28/95)

07.07.1995 North Dynon - Fruit Shed Sidings

Commencing on Friday, 7.7.95, Specialised Container Transport (SCT) employees can conduct Rail Tractor shunting operations within the confines of the North Dynon Fruit Shed Area and Freight Shed 'H' areas.

To protect these areas two opposing hand operated Derails are provided at the entrance to the Fruit Shed area. Both Derails are placed in the Standard Gauge neck in the rear of Post 90. The Derail preventing movements towards Post 90 (out of the sidings) is secured with a 4D padlock, the key of which is held by SCT staff. The Derail preventing movements into the sidings is secured with a V5PSW padlock. This derail will normally be locked 'on' and must only be taken off when it is necessary for a train to enter the Fruit Shed area and then only under the following conditions. Train Crews requiring shunt the sidings will be responsible for locking and unlocking this Derail. Two Notice Boards are provided to protect the Derails. The Notice Board for inward movements is lettered 'DERAIL' and the other Board 'LIMIT OF TRACTOR SHUNT'. Hand Locking bars are provided to secure the points for movements from the neck to the Fruit Loop. These bars are locked by SCT padlocks and must only be unlocked when it is necessary for SCT Tractor shunting to take place.

Prior to commencing shunting operations, the SCT employee must ensure that there are no locomotives working within the designated area. The employee must then request permission to place the SCT Derail 'on' from the Signaller, West Tower, using the telephone at Post 90. Prior to granting permission the Signaller must ensure that a route has not been set for a movement into the area and sleeve Points 95 lever normal. A note must be made in the Train Register Book. The SCT employee may then lock the SCT Derail on the rail and unlock the hand locking bars.

When shunting has been completed, the hand locking bars relocked and the SCT Derail locked off the rail. The Signaller, West Tower, must then be advised. The sleeve on Points 95 lever may then be removed and the Train Register Book endorsed.

Under no circumstances must the Tractor operate outside the designated area or foul any part of the main line beyond the Derails. The Tractor must not operate when a locomotive is under power in any part of the sidings. Add to page 35-8 of the Book of Rules. (SW 369/95, WN 28/95)

07.07.1995 Newport

On Friday, 7.7.95, the motor operation of Points 45 and Catch 45 was commissioned. Circular SW 317/94 and SW 347/95 are cancelled. (SW 372/95, WN 28/95)

07.07.1995 Maroona - Portland

On Friday, 7.7.95, the Train Order System between Maroona and Portland was suspended to allow trialing of the Section Authority System. Reversion to Train Order Working may only be done under the express authority of the Superintendent Safeworking. (SW 361/95, WN 28/95)

(11.07.1995) West Tower

The two access roads to the Train Wash Plant cross rail tracks. The rear entrance crosses the Outside Goods Lines, while the front entrance crosses the Wagon Storage Yard, Engine Tracks, TNT Contrains Siding and the Outside Goods Lines. Both crossings are equipped with hand operated boom barriers which are normally locked horizontal by a 1P/15P padlock.

Prior to passing over the crossing the employee must gain permission from the Signaller, West Tower.

NEW SOUTH WALES RAIL SAFETY ACT 1993

David Donald

In late 1993 the NSW Parliament passed the Rail Safety Act. The following article details some of the more important provisions of the Act, as well as giving the overall purpose and application of the Act.

The Act states that its object is to "promote the safe construction, operation and maintenance of railways" (Section 3 (1)), and that this is to be achieved through:

- (a) the establishment of a scheme for the accreditation of owners and operators of railways and for the certification of the competency of railway employees performing railway safety work;
- (b) the development, and monitoring, of safety performance standards for and with respect to the safe construction, operation and maintenance of railways; and
- (c) the carrying out of regular safety compliance inspections, the reporting of notifiable occurrences, the holding of inquiries into railway accidents and other incidents and the adoption of other measures aimed at securing rail safety. (Section 3 (2))

For the purposes of the Act, the following definitions apply:

- **railway:** a guided system designed to transport passengers or freight, on a railway track, together with its infrastructure and associated sidings, and includes a heavy railway, light railway, inclined railway, monorail or tramway;
- **infrastructure of a railway:** consists of those facilities that are necessary to enable a railway to operate safely and includes railway track, associated track structures, over track structures, tunnels, bridges, stations, platforms, signalling systems, train control systems, communication systems, overhead electrical power supply systems, workshops and associated plant, machinery and equipment;
- **rolling stock:** any vehicle that operates on or uses a railway track, including a locomotive, carriage, rail car, rail motor, light rail vehicle, train, tram, light inspection vehicle, road/rail vehicle, trolley, wagon or monorail vehicle but does not include a vehicle designed to operate both on and off a railway track or tracks when the vehicle is not operating on a railway track or tracks;
- **owner:** a person who is responsible (whether by reason of ownership, control or management) for the construction and maintenance, or the construction or maintenance, of infrastructure of a railway;
- **operator:** a person who is responsible for the operation of a railway; and
- **operate:** for the purposes of the Act, means to operate or move, or to cause the operation or moving of, by any means, any rolling stock on a

railway, and includes to operate a railway service if the operator of the service operates or moves, or causes the operation or moving of, rolling stock.

Under Section 8, it is stated that the Act applies to:

- any railway within, or partly within, the State of NSW with a railway track gauge equal to or greater than 600 mm;
- any other system designed to transport passengers or freight or both and declared by the regulations to be railway under the Act;
- and to the operation of any such railway.

There are a number of different types of "railways" to which the act does not apply, and these include such things as: an underground (or predominantly) mining railway and to which the provisions of various Coal Mining Acts or Regulations apply; a railway operated at an amusement park for which a certificate of exemption is held; and an aerial cable operated transportation system.

Section 9 of the Act binds "the Crown in right of New South Wales and, in so far as the legislative power of Parliament permits, the Crown in all its other capacities," and goes on to state, under Subsection 2:

In particular, this Act, in so far as it applies to the safe construction, operation and maintenance of railways, applies to any such construction, operation and maintenance carried on by Australian National Railways, the National Rail Corporation Limited or the State Rail Authority or otherwise carried on by the State, the Commonwealth or another State or a Territory.

The whole purpose of the Act is to ensure that a person who owns or operates a railway must be accredited to own or operate that railway, and they are guilty of an offence of the Act if they are not. The Act states (S. 12 (1)) that the purpose of the accreditation process is to attest:

- (a) that the accredited person is (or, in the case of an accredited corporation, the directors and managers of the corporation, designated in accordance with section 21, are) considered to be of good repute and in all other respects fit and proper to be responsible for the safe construction and maintenance, or construction or maintenance, of a railway (in the case of an owner) or the safe operation of a railway and the safe construction and maintenance, or construction or maintenance, of rolling stock (in the case of an operator) or both (owner and operator);
- (b) that the standards proposed by the accredited person for the construction and maintenance, or construction or maintenance, of railway (owner) or the operation of a railway and the construction and maintenance, or construction or maintenance, of rolling stock (operator) or both (owner and operator) have been accepted by the Director-General.

Subsection 2 goes on to further state:

In particular, accreditation under this Division attests that the accredited person has demonstrated the competency and capacity to meet the standards submitted by the accredited persons, and accepted by the Director-General [...], for the purposes of the safe construction, operation and maintenance of a railway, relating to the following:

- (a) financial viability;
- (b) managerial and technical competency;
- (c) suitability of rolling stock;
- (d) appropriateness of safeworking systems;
- (e) availability and competency of railway employees;
- (f) availability and adequacy of infrastructure generally and, in particular, railway track, associated track structures, signalling systems and other relevant facilities;
- (g) public risk insurance, to the degree and in the manner required by the Director-General in respect of a railway of the kind specified in the accreditation.

An applicant for accreditation is required to submit a comprehensive safety management plan that:

- identifies any significant potential risks that may arise from the construction and maintenance of the railway specified, or from the operation of the railway, and the maintenance and/or construction of the rolling stock; and
- specifies the systems, audits, expertise and resources that are to be employed to address these risks.

Following accreditation, this safety management plan must be revised annually and the revised edition submitted to the Director-General.

Sections 15 to 49 detail the procedures required in relation to seeking accreditation, the information that has to be supplied, the requirement to certify various types of employees, the administration fee structure and so on. The only important section is 16 which states that a person seeking accreditation as an owner "must demonstrate by the submission of appropriate standards with which the applicant agrees to comply, [...] that the applicant possesses the competency and capacity to safely construct and maintain, or construct or maintain, the railway specified in the application, with the same requirement applying to an application who is going to operate a railway."

Part 3 (Sections 50 - 63) of the Act is entitled "Safety Compliance Inspections, Reporting of Occurrences Inquiries and other Safety Measures," and details a whole series of requirements in relation to such things as:

- safety compliance inspections (50);
- the capacity of the Director-General to direct remedial safety work to be undertaken as a result of inspections and his ability to arrange for the work to be undertaken under certain circumstances (51);
- directions by the Director-General to an accredited person to submit a program for the

remediation of work identified as needing to be done as a result of inspections;

- the need to submit annual safety reports dealing with the general conduct of railway operations (55);
- the reporting of notifiable occurrences to the Director-General, including the circumstances and time frames under which same must be done (56).

As the Act is virtually a self-regulation arrangement, Section 58 details the methodology to be used by individual "accredited persons" to inquire into railway accidents and incidents affecting the safe construction, operation and maintenance of railways. Sections 59 and 60 relate to the training and the health and fitness of employees engaged in railway safety work, and their capacity and capability to perform the functions for which they are certified. Section 61 continues the theme of health and fitness of employees in that it relates to employees under the influence of alcohol and drugs, and allows for the random testing for drugs and alcohol of such employees.

Part 4 of the Act is entitled "Enforcement", and relates to the powers of officers authorised under the Act to conduct inspections, undertake investigations, enter property, and so on, and then continues on with items relating to "Offences and Proceedings". Section 78 makes it an offence for anyone to tamper with or disable the "safety equipment of a railway or of a unit or units of rolling stock" or "the interlocking system of a railway" (which is defined as "any lever or collection of levers, or electrical and mechanical devices, or electrical devices, that operate or control points or signals, or signals, at locations where trains can be directed from one track to another and that are interlocked to prevent conflicting movements of trains"). There is also a requirement under Section 80 for a person reasonably suspected by a police officer or authorised officer to be committing or to have committed an offence against the Act or regulations to supply name and residential address, and is guilty of an offence if they refuse or give false information.

Sections 91 to 103 relates to general administration of the Act, with Section 97 making special reference to the Darling Harbour monorail transport system, and the need for any person operating or owning such a system to be accredited under the Act.

Section 100 relates to the ability of the Governor to make Regulations relating to the Act, with Subsection 2 indicating that these may be in respect of such things as:

- the safe operation and maintenance of historic or preserved rolling stock;
- the safe construction, operation and maintenance of sidings;
- the functions, training, health and fitness of railway employees;
- the regulation of the conduct of passengers and other persons on railways;
- the exclusion of persons, animals or freight from railways;
- tampering with, or damaging, railways;
- the unauthorised use of railways and rolling stock;
- trespass on railways;
- the opening and closing of railway gates;

- the regulation of vehicles, animals and pedestrians crossing railway tracks;
- the regulation of level-crossings;
- the loading and unloading of freight on railways.

That ends the Act proper, and that which follows falls within a series of Schedules providing more information and details on certain Sections of the Act (notably 56 - "Notifiable Occurrences"; and 61 - "Railway Employees - Alcohol or Other Drugs").

Schedule 1 provides detailed information on "Notifiable Occurrences", dividing this Schedule into occurrences "directly affecting persons", and then those "affecting railway infrastructure or rolling stock".

An accredited person is required to notify:

- any accident or incident involving the death of a person while that person was on or in the proximity of railway tracks or other infrastructure and the cause of death. This applies to the death of any person: passenger, employee, trespassers, or members of general public;
- any accident or incident involving a permanent incapacitating injury to any person whilst that person was on or in the proximity of railway tracks or other infrastructure;
- any accident or incident involving a temporary incapacitating injury to any person on or in the proximity of railway tracks or other infrastructure;
- and then details all situations where people could be injured. These include being assaulted on railway premises, struck by objects thrown at or from trains, receives an electric shock, etc.

The next section of Schedule 1 details all the situations (there are some twenty-nine items mentioned) where occurrences "affecting railway infrastructure or rolling stock" have to be notified, with some of these being:

- collisions resulting from safeworking irregularities (e.g. involving clearance points, crew performance, shunting irregularities, signal passed at stop, protection of a work site, single line working irregularities etc);
- collisions resulting from wrong side signal failures;
- collisions after derailments;
- derailments resulting from rolling stock equipment irregularities (e.g. collapsed or defective wheel bearings, faulty wheels or axles, faulty brakes);
- derailments resulting from safeworking irregularities (e.g. involving crew performance, shunting irregularities, signal manipulation, incorrect route setting, signal passed at stop, protection of a work site, uncleaned points);
- derailments resulting from signal equipment irregularities (e.g involving multiple signal indications, vandalism, etc);
- fires;
- explosions;
- equipment failures - failure of an axle, bearing, wheel or tyre on a train, tram or other unit of rolling stock which results in the vehicle being unfit to travel'

- failure of signal structures or fixed signalling electrical systems - any such situation which endangers or could endanger the safe operation of a railway; and
- trains or rail vehicles passing signals at stop - any incident involving a train or rail vehicle passing a signal at stop which endangers or could endanger the safe operation of the railway.

Schedule 2, involving some twenty-three separate sections, provides full details on the procedures to be followed for the testing etc of employees for alcohol and other drugs, the admissibility of evidence, and then the offences involved and prosecution of those found to be affected by such substances. I am not going to detail all the requirements under this particular Schedule, except to say that any person who is engaged in railway safety work (and that naturally includes train crews) are guilty of an offence if they are under the influence of alcohol or other drugs whilst on duty, and an "accredited person" is entitled to have any person suspected of being so under the influence tested in accordance with the provision of the Schedule, in very much the same way that the police carry out random breath testing of motorists. From my understanding, it is not all that unusual for members of the NSW Police Service to be asked to carry out the testing on behalf of rail operators.

The implications of the Act are quite widespread for rail owners/operators whose sole activities are in NSW (such as State Rail, and all its derivatives), for those who operate into NSW (such as Australian National, National Rail, and V/Line), for the private operators (such as Silverton Tramways, BHP, Manildra Mills, etc), and for the historical and museum groups (3801 Limited, Zig Zag Railway, RTM, Lachlan Valley Railway, and other groups).

The major advantage of the Act is that it means that the NSW Government can open up disused branchlines to private operators (the "Shortline" concept). All owners and operators are required to meet the standards and provisions of the Act and thus there is no reason why such organisations cannot operate within NSW. These potential future owners/operators might become the "big winners" from the introduction of such an Act, despite the obligations and requirements that have to be met under its various provisions. With the major thrust of the Act coming from the accident on Cowan Bank involving 3801 a few years ago, it also means that the Government can impose upon all rail owners and operators a certain standard of safety and compliance, which is fair and equal for all within the state (irrespective of size, or nature of operations). Hopefully this will ensure the safety of the rail system, the safety of those that use the system (irrespective of the nature of that system or the service within that system), and the safety of those that come in contact with the railway system in some form (either as a user, as a maintainer, or in the construction area).

As a member of the Operations Management Group within the Zig Zag Railway (ZZR), I am aware of the

(Continued on Page 93)

REMOTE CONTROL OPERATION OF MALDON JUNCTION

Andrew Waugh

Introduction

Interlocking has never been common in the USA. Main line points were (and to a lesser extent are) often only secured by a padlocked switch stand. Members of the train crew operated the points as required. A diverging movement meant the train had to come to a stand (or nearly to a stand) whilst the head end brakeman left the locomotive, unlocked the switchstand, and threw the points. Once the train was in the clear on the siding the rear brakeman was responsible for relining the points for the main line. The delay caused to freight trains by operation of points in this fashion was expensive. By the early twenties, the American Railroad Association (A.R.A.) estimated that the per hour cost of freight trains ranged from \$12 for a local freight train to \$18 for long freights of over 100 cars; even more if the trains required double headers or overtime working. The delay was increased where the points were on a curve or gradient, or if the train broke in two when starting.

One solution adopted in the early twenties was 'Remote Control Switch Operation'. In these schemes one or two remote points would be equipped with point motors and signals provided for movements over these points. Suggested applications were the remote ends of crossing loops, the end of double track, or a distant entry to a yard. Such simple layouts could be worked by very small power frames; often as small as one lever. A special frame known as the 'Table Interlocker' was developed for these applications. In November 1923 the A.R.A. investigated 84 installations of table interlockers and found that the average cost of an installation was \$6,079 while the (estimated) average saving per year was \$6,787.

In Victoria, locations where goods trains were delayed on the main line while the train crew operated points were rare, so the savings to be made in train operation costs were not significant. However, savings were possible by abolishing small signalboxes and saving the salaries of the signalmen. Two installations

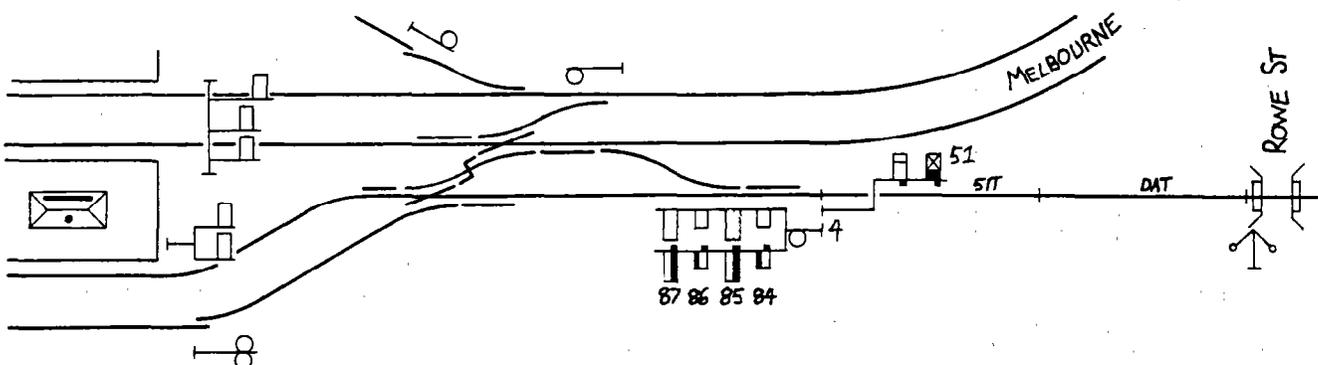
of 'Remote Control Switch Operation' were made by the Victorian Railways. The first was at Goulbourn Junction (near Seymour) in 1925 where the double track line from Melbourne ended on the south side of the Goulbourn River. The second was at Maldon Junction in 1926.

When the Bendigo line was opened in 1862 it served the central Victorian gold town of Castlemaine by turning westwards at Elphinstone and following Forest Creek down to its junction with Barkers Creek. The line then turned north and, passing through Castlemaine station, followed Barkers Creek towards Bendigo. When the Maryborough line was opened in 1874 it formed a trailing junction just to the south of Castlemaine station. The line then followed Barkers Creek and then Campbells Creek south to the Loddon River. The Castlemaine to Maldon line was opened in 1884 from a junction on the Maryborough line roughly one mile from Castlemaine station. The usual practice in Victoria was to avoid such outlying junctions by providing a parallel route back into the junction station. This was not done in this case, apparently due to the high cost of earthworks necessary. Instead, a small 9 lever signalbox was provided at the junction. This box was variously known as 'Maldon Junction' and 'Castlemaine 'C' Box'.

On 28 November 1926 this signalbox was abolished and Maldon Junction was worked from Castlemaine 'A' Box. This article will describe how this was achieved.

Description of the Junction Arrangements

The signalling arrangements between Castlemaine and Maldon Junction when the junction was remotely controlled are shown in figure 1. Castlemaine yard is at the left hand end of the diagram. The signals on Post 4 controlled the entrance of trains from the main (Melbourne) and branch lines into the yard. On the left hand side, the top arm (Home 87) controlled moves from the branch line to No 3 Road (the Maryborough



platform at the rear of the island platform). The lower home signal (Home 85) similarly controlled movements to No 2 Road (the Down Main line). The arms on the right hand doll of Post 4 controlled the same movements from the Down Main Line. All four Home signals were fitted with signal reversers, as the two platform roads were track circuited, and Call-on arms were provided on Post 4. The disc under the bracket controlled moves from the branch to No 4 Road.

Entry into the single line section between Castlemaine and Maldon Junction was controlled by Post 51, a three position upper quadrant home signal. Both the 'a' (top) and 'b' (bottom) arms worked; the signal showing 'Clear Normal Speed' if the Maryborough route was set at Maldon Junction and 'Reduce to Medium Speed' if the Maldon route was set. Drivers were instructed to ensure that the correct aspect for the line their train was to take was displayed on Post 51 before they left Castlemaine. As will be shown latter this was because there was no simple way to change the route at Maldon Junction after a train had entered the single line section. Post 51 was worked from a lever in the mechanical frame at Castlemaine 'A' box. It was a stick signal, that is, the operating lever had to be returned to normal and reversed again before it would clear for a second train. No low speed light was provided on Post 51 as it authorised entry into a single line section.

In the 1447 yard single line section between Post 51 and Maldon Junction there were four DC track circuits: 51T, DAT, UAT, and A51T. The DAT and UAT track circuits were the Down and Up (respectively) approach track circuits for the Wig Wag signal at Rowe Street which was installed on 21 June 1927.

Maldon Junction was worked from a small two lever power frame placed in Castlemaine 'A' box. The two levers were 'numbered' 'A' and 'B'. Both levers normally stood vertically in the 'C' (centre) position and could be moved left to the 'L' position or right to the 'R' position. Lever 'A' worked all three home signals at Maldon Junction and was moved to the 'R' position to clear the Down Home signal (AR) and to the 'L' position to clear the Up Home signals AL or UAL (which signal actually cleared depended on the position of the points).

Lever 'B' worked the junction points; the 'L' position being the normal position for the Maryborough line and 'R' the reverse position for the Maldon line.

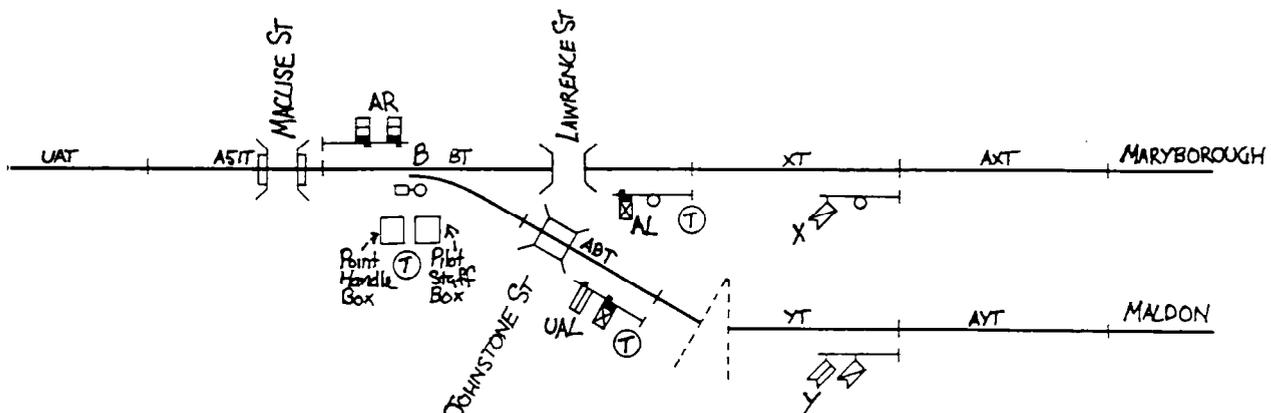
Signal AR was an upper quadrant signal with two operating arms. The normal speed arm cleared for moves to Maryborough while the medium speed arm cleared for moves to Maldon. As there was no signal in advance of AR on either line, neither arm could show a warning (45 degree) aspect.

Movements from Maryborough or Maldon towards Castlemaine were controlled by Posts AL and UAL (respectively). Movements over the junction from the Maldon line were at medium speed, consequently the upper ('a') arm of UAL was fixed at stop. Since movements from the Maryborough line were at normal speed the 'b' arm on Post AL was similarly fixed at 'stop'. A fixed 'b' 'arm' in Victoria was not usually equipped with a semaphore arm. Instead, as here with Post UAL, a red marker light was provided. The aspects displayed by Posts AL and UAL depended on the signals displayed on Post 4, the arrival homes at Castlemaine. If either Home 85 (Single line to Down Main line platform) or Home 87 (Single line to Maryborough platform) was clear, a Clear aspect would be display by AL or UAL. If Homes 85 and 87 were both at stop, AL or UAL would display a warning aspect.

None of the home signals AR, AL, or UAL, were provided with low speed lights as all three signals governed the entrance to a single line section.

Situated 493 yards from Post AL was the repeating signal X. Fitted with a yellow fishtailed arm over a fixed yellow marker light, Post X repeated the indication on Post AL. When AL was at Stop, Post X showed 'Warning' (arm at 45 degrees, or yellow over yellow). When AL was cleared, Post X would show 'Proceed' (arm at 90 degrees or green over yellow). Post X was track controlled; as an Up train passed the Post it would drop from 'Proceed' to 'Caution'. Post X could not show 'Stop'.

Post Y was the equivalent repeating signal for Post UAL on the Maldon line. The only difference was that the upper arm was fixed at the 45 degree position and the lower arm moved, showing yellow over yellow



when UAL was at danger and yellow over green when UAL was clear. This was presumably intended to ensure the Drivers realised they were approaching a medium speed aspect. Unfortunately, the 'yellow over green' repeating aspect did not exist in the rulebook!¹

The Table Interlocker

A sectional drawing of a single unit table interlocker is shown in figure 2. The table interlocker at Castlemaine was a 'Desk Circuit Controller GRS Type' similar in appearance to the diagram.

The front of the interlocker is shown in the left hand view, which has been partially cut away to show the connection between the lever and the mechanical locking. The single lever was located on the centre line of the unit and is shown in the 'C' or central position. Above the lever can be seen the four indication shutters.

The right hand view is a section along the centre line of the interlocker. The lever shaft was only a few inches long. Mounted on the end of the shaft was a locking segment or quadrant (marked 32 in the drawing). The lever lock was the large electromagnet immediately above the '41' in the drawing. The pole piece was at the right hand end of the coil, and the armature ran over the top of the coil to the latch (marked 41) which worked in notches cut in the locking quadrant.

Mounted at the rear of the unit were the circuit controllers. Six were provided, mounted on a vertical shaft. This shaft was operated by the lever via bevel wheels (seen best in the cutaway front view) and a push/pull rod. If more contacts were needed, a second set could be bolted on underneath (shown dashed in the side view), but this was not necessary at Castlemaine.

Above the lever lock in the side view, two of the four electro-mechanical indicators can be seen. These were simple electromagnets with a light banner mounted on the end of the armature. Two indications were printed on the banner, and energising or de-energising the electromagnet caused one or other of the indications to be visible through the windows in the front of the interlocker.

These components formed the table interlocker itself. Where several units were mounted together to form an interlocking frame, the units were mounted on a cast iron base which contained the mechanical interlocking between the levers. The base can be seen on the drawings extending beyond the front of the unit interlocker itself.

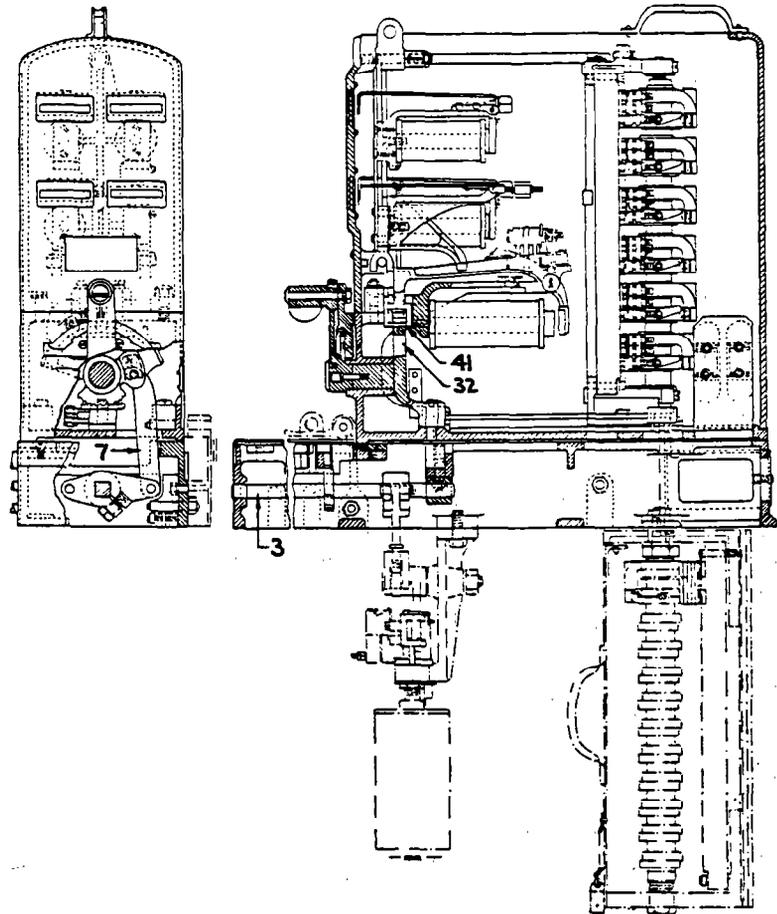


Figure 2. Cross section of a single unit Table Interlocker. The single handle is shown in the centre position and can be moved either to the left or the right. The lever lock is immediately above the lever, as can be seen in the right hand view. Above the lever lock are four smaller relays which operate the indicators on the front of the apparatus. At the back of the machine is the vertical row of electrical contacts. A single unit was a small, self contained interlocking machine. Multiple units could be bolted together side by side. Mechanical interlocking was provided between the units and this was housed under the shelf in the front of the machine. (Drawing from American Railway Signaling Principles and Practices, Chapter XIX, Electric Interlocking, page 35)

The mechanical interlocking between units was of the form known in the U.S. as 'S&F type locking'. Despite the name, this form of locking had only the most tenuous link with the British signalling contractors Saxby and Farmer. The Saxby and Farmer 'Rocker' frame was adopted as a de-facto standard in the U.S., though the original form of locking was replaced by a form of tappet locking. An isometric view of this form of locking is shown in figure 3. The lever was connected to a Locking Shaft (25) (the Locking Shaft is numbered 3 in figure 2). As the lever is moved, the shaft turned the Locking Bar Driver (20) which drove the longitudinal Locking Bar (27). Rivetted to the Locking Bar were Dogs. The movement of the Dog forced the Cross-Locking (26) against the second Dog which was connected to another lever. Apart from the Maldon Junction table interlocker, this form of locking was also used in the Westinghouse frame at Flinders Street D Box.

With only two levers, the interlocking in the Table Interlocker at Castlemaine was very simple. The locking

¹ See Regulation 57 in the 1919 or 1966 rulebooks. It could be argued that yellow over green was 'Reduce to Medium Speed' (Regulation 56), but this Regulation only applied to Home or Automatic signals.

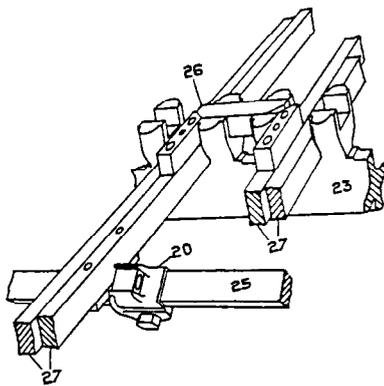


Figure 3 (Top Left) An isometric view of the S&F Type locking fitted to the Table Interlocker. The numbered parts are: 20: Locking Bar Driver; 23: Locking Bracket; 25: Locking Shaft; 26: Cross-locking; and 27: Longitudinal locking bar. Figure 4 (Bottom Left) The locking chart for the Table Interlocker at Castlemaine. The diagram is drawn looking down on the locking bed. The solid vertical lines are the Locking Shafts, the solid circles the Locking Bar Drivers, the horizontal bars the Locking Bars, the shapes the Dogs, and the vertical shape the Cross-locking

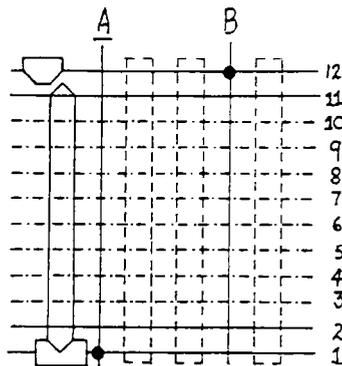


table is given below and the locking chart shown in figure 4.

Lever	Locks
AR	B (B)
AL	B (B)
B	

The locking was straightforward: Lever A when turned to the left or the right locked Lever B in the normal or reverse position. The locking chart is shown in Figure 4. The chart is shown looking down on the locking bed. The two solid vertical lines under the 'A' and 'B' represent the Locking Shafts (25 on figure 3). The solid horizontal lines represent the Locking Bars. There were spaces for 12 bars, though only four were fitted and only bars 1 and 12 were in use. The solid circles show the Locking Bar Drivers. The two shaped dogs and the single Cross-locking are fitted on the left.

(To be continued)

NEW SOUTH WALES RAIL SAFETY ACT 1993

(Continued from Page 89)

time that it took ZZR to ensure that it had all its documentation, policies, procedures and practices formally determined, and written out. (These existed in the past but not in a truly formalised manner.) Putting all these policies and procedures into action also took time. These policies and procedures included: the training and certifying of all employees and volunteer members involved in rail operations in safeworking procedures; the institution of formal incident reporting and investigation procedures; and all matters relating to rolling stock maintenance. This particular activity is an on-going process due to the need to ensure that all the obligations of the Railway, and the requirements of the Act, are fully met, and that the Railway neither breaches nor can be breached for failing to meet the terms of its accreditation.

It should be noted, finally, that the procedures noted under the Act, especially in the realms of incident reporting and investigation, matters relating to training and competency of employees, and so on, are primarily

of a self-regulatory nature. The Department of Transport, responsible for the overall implementation, regulation and compliance with the requirements and regulations of the Act, only "steps in" when the "accredited person" fails to meet their obligations under the Act.

Since the implementation of the Act is largely self regulation, there is a constant review of all policies and procedures on the ZZR. This includes the training and degree of competency of operational personnel, refinement of reporting procedures, and the whole area of rolling stock maintenance. At the same time, there is constant liaison with the relevant section in the Department of Transport to ensure that the Department interprets the requirements of the Act, and the regulations and requirements set down by the Department in relation to accreditation, with regard to the circumstances and the nature of the Zig Zag Railway.

SIGNALLING ALTERATIONS

(Continued from Page 86)

Before granting permission, the Signaller must ensure that the line is clear and that all signals governing movements over the crossing are at Stop and the signal levers sleeved normal. The name of the employee requesting permission must be recorded in the Train Register Book and whether permission was granted or refused.

After permission has been granted to use the road crossing, the employee must first unlock and raise the barrier on the far side of the crossing. The barrier on the near side of the crossing may then be operated.

The barriers must be lowered and relocked once the vehicles have cleared the crossing and the Signaller, West Tower, informed.

Insert as a new instruction on page 35-8 of the Book of Rules. (SW 359/95, WN 27/95)

(18.07.1995) **Footscray - Spotswood**

Diagram 1/95 replaced Diagram 9/87. (SW 365/95, WN 28/95)

(18.07.1995) **Ruthven - Epping**

Diagram 13/95 replaced Diagram 3/94. (SW 364/95, WN 28/95)

(18.07.1995) **Paisley - Working of BP Siding**

If the Train Staff for the section Newport - Manor Loop is at Newport, the Signaller may permit a train requiring to shunt at the BP Siding to depart from Newport. After showing the Staff to the Driver of the train, the Staff must be locked away.

If the Train Staff is at Manor Loop, or if a Down Standard Gauge Train is travelling on the Train Staff towards Manor Loop, the Signaller, Newport, may obtain permission for a train to shunt the BP Siding in accordance with Rules 5 and 7, Section 21, Book of Rules. After the train returns complete from the BP Siding, the Signaller, Newport, must send the code word AWAK whereupon the Signaller, Manor Loop, may release the Train Staff.

Should a Down Standard Gauge train be unnecessarily delayed whilst a Broad Gauge train is locked away at the BP Siding, the Standard Gauge train may be permitted to proceed to Manor Loop, but only after the Signaller, Newport, has informed the Driver of the train at the BP Siding of the circumstances. The Broad Gauge train must not be permitted to depart from the Siding until either

- 1) the Signaller, Newport, has been informed by the Driver of the train locked away in the Siding that a 'Roll By Inspection' has been performed on the Standard Gauge train, and the Standard Gauge train is clear on the Down side of the Grade Crossing and is proceeding towards Manor Loop; or
- 2) the Signaller, Newport, is informed by the Signaller, Manor Loop, that the Standard Gauge train has arrived complete.

Should an Up Standard Gauge train be unnecessarily delayed under similar circumstances, the Signaller, Newport, may send the code word AWAK. The Signaller, Manor Loop, can then release the Train Staff and permit the train to depart. The Signaller, Newport, must not give permission for the Broad Gauge train to depart from the BP siding until the Standard Gauge train has passed, complete, over the Grade Crossing. This may be checked either by a roll by inspection, or upon arrival at Newport, in a similar fashion to 1) and 2) above.

This instruction supersedes the instructions contained in SW 306/95. (SW 366/95, WN 28/95)

(18.07.1995) **Paisley - Werribee**

Diagram 15/95 replaced Diagram 27/90. The new diagram shows the Standard Gauge line, including Manor Loop. The diagram has been brought up to date, including the abolition of the platforms at Paisley and Galvin, the abolition of the SEC siding at Paisley, and Sidings A, B, and No 4 Track at Laverton, the abolition of the 5P keyswitches at Galvin platform, and the relocation of the panel at Werribee to the island platform. (SW 363/95, WN 28/95)

(18.07.1995) **Little River - Corio**

Diagram 20/95 replaced Diagram 16/94. The new diagram shows the Standard Gauge line. (SW 362/95, WN 28/95)

(18.07.1995) **Lal Lal Intermediate Siding**

This siding is provided with fixed signals operated from a lever frame within the station building.

When it is necessary for a train to work at Lal Lal Intermediate Siding, the Train Controller (in conjunction with the Manager, Western Operations) must arrange for a Signaller to be in attendance at Lal Lal 30 minutes prior to the arrival of the train. The Signaller must confer with the Train Controller upon arrival at Lal Lal and obtain permission to place the signals to stop. After permission has been granted, the closing lever and the signal levers may be placed to the normal position.

When all train movements at Lal Lal have been completed and the train has departed, the Signaller must clear the signals and reverse the closing lever. The Train Controller must then be advised.

The Train Register Book must be endorsed every time that permission is granted to place the signals to stop and again when advice is given to the Train Controller that the signals have been cleared.

(SW 371/95, WN 28/95)

(18.07.1995) **Woodend**

Diagram 6/95 replaced Diagram 16/40. The new diagram shows the situation after the provision of the new signalbay on the platform on 14.3.95. Post 9 has been relocated opposite Post 6.

(SW 357/95, WN 28/95)

(18.07.1995) **Wangaratta**

Diagram 18/95 replaced Diagram 34/90. (SW 358/95, WN 28/95)