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MINUTES OF MEETING HELD FRIDAY 15 JULY 2022, AT THE SURREY HILLS NEIGHBOURHOOD CENTRE, 1 BEDFORD AVENUE, SURREY HILLS, VICTORIA.

The SRSV meeting scheduled for Friday 15 July 2022 was held on site at Surrey Hills and was broadcast as an online meeting on the internet using the 'ZOOM' application.

Present: – (On site). Glenn Cumming, Graeme Dunn, Chris Gordon, Judy Gordon, Andrew Gostling, David Jones, Keith Lambert, David Langley, Colin Rutledge, Laurie Savage, Rod Smith and Rob Weiss. (12)
 (Online). Ken Ashman, Phil Barker, Robert Bremner, Brett Cleak, John Dennis, Michael Formaini, Peter Gerandt, Graeme Henderson, Bill Johnston, David Langberg (on a railway platform somewhere in southern France), Neil Lewis, Andrew McLean, Eddie Oliver, Peter Silva, David Stosser, Bob Taaffe and Andrew Waugh. (17)

Apologies: – Michael Menzies.

Visitor: – James Bird and Floyd Bromley.

The President, Mr. David Langley, took the chair and opened the meeting at 20:08 hours.

Minutes of the May 2022 Meeting: – Accepted as read. Laurie Savage / Rod Smith. Carried.

Business Arising: – Andrew Gostling noted that he asked about the provision of a route indicator at Lilydale and it was Chris Gordon who provided the details.

Correspondence: – The invoice for the issues of "Signalling Record" for 2021 was received from the SRSUK and payment was sent. Rob Weiss / Graeme Dunn. Carried.

Reports: – Nil.

General Business: –

David Langley and Rod Smith spoke about the recent death of long standing SRSV member Jon "Churchie" Churchward. The SRSV was represented at the funeral.

Laurie Savage sighted an "N" class loco at Warncoort Loop earlier today and asked if anyone knew why it was there.

Andrew Waugh spoke about the recent derailment of a Velocity railcar at Goornong, caused by a collision with a truck at a level crossing (Holmes Road 194.827 km). A 60 km/h speed restriction for trains at that location meant that injuries to passengers were minimal. The level crossing is protected by "Frangible Gates" installed in 2013.

(Front cover) Ballarat B signal box at Lydiard St, Ballarat, is the oldest intact signal box in Victoria. It was opened in May 1885 and was the first signal box in Ballarat. The current frame, of 35 levers, was installed in February 1890, and is a No 5 Pattern Rocker frames, obsolete even in 1890. Changes to the layout then occurred in 1892, 1910, 1913, and 1990. The signalling at Ballarat was concentrated in a new panel in July 1992, however, Ballarat B was retained to work the interlocked gates at Lydiard St due to a heritage dispute. At some point in the dispute the gates were secured across Lydiard St, effectively closing the crossing and the box. In November 2000 the gate gear was reconditioned and restored to service. In April 2001 the gates were motorised and control was transferred to the panel. The signal box and frame were retained as a back-up in case of a failure of the new system, and this was used at least once in 2005. Any remaining purpose for the box was removed in a dramatic fashion on 30 May 2020 when the interlocked gates were demolished by a run-away VLocity. This photo was taken on 2 April 1992. Photo: Andrew Waugh

This item led to a discussion about Frangible Gates at level crossings including the arrangements for opening and closing the gates and crossing the line. Did the truck have permission to cross the line? Were the gates locked?

This item was then followed by a lengthy discussion about different forms of level crossing protection.

Andrew Waugh described level crossing removal works at Glenhuntly. The Down Line is currently out of use and will be restored to service at the end of August 2022.

Keith Lambert provided details about various projects in the Metropolitan District. A summary of the discussion follows: –

- The new single line between Thornbury – Regent using the new elevated Up Line is now in use.
- Caulfield Signal Box has been abolished and Caulfield is now controlled from Kananook Signal Control Centre.
- Passenger platforms between Albion – Sunbury are being extended to cater for the High Capacity Metro Trains (HCMT).

Chris Gordon advised that the new track layout at Sunbury is expected to be brought into use in early September 2022.

Laurie Savage described the new signalling arrangements at Winchelsea with new Home Signals and new Repeating Signals.

This item led to a discussion about the new signalling arrangements between Geelong – Warncoort Loop.

Rod Smith described level crossing removal works at Surrey Hills.

David Langley discussed the telephone block working on the North East Broad Gauge Line between Craigieburn – Seymour.

Keith Lambert noted that rules for telephone block working are included in the current version of the Victorian rule book.

Rob Weiss asked if there had been any progress with the online access to "Somersault". The President advised that the SRSV Committee had agreed to proceed with option 3B (make freely available online only issues of "Somersault" older than two calendar years) as shown in the issues paper authored by Rob Weiss.

Rob Weiss mentioned that he had recently used the SRSV archives index online while travelling in Victoria.

Phil Barker reported that testing of Level 2 European Train Control System (ETCS) on the Shorncliffe Line in Brisbane commenced on Wednesday 6 July 2022.

Phil Barker provided an update on operations on the BRAVUS rail system (also known as Carmichael Rail) in Central Queensland. The rail operator is the Bowen Rail Company. The use of Train Orders has been replaced by Remote Control Signalling (RCS) using a Siemens Westcad system. The train control centre is in Bowen with a standby facility in Townsville. The line speed limit is 80 km/h. Two crossing loops are provided with more planned for the future. Simultaneous arrivals at the crossing loops are not permitted. Level crossings are controlled by grade crossing predictors (GCP). Five (5) trains are in use with more planned for the future.

Ken Ashman provided additional details for the planned signalling works at the North end of Te Rapa in New Zealand.

Syllabus Item: – The President introduced Member Keith Lambert to present the Syllabus Item.

Keith presented a selection of 20 digital images from Victoria in the form of a "Where is it" type quiz.

The images came from a variety of sources and featured a variety of locations, both country and metropolitan, and from different eras.

Opportunity was provided to view the images and determine the location of each image.

A very enjoyable activity. Congratulations to Andrew Waugh who scored 20 of 20.

At the completion of the Syllabus Item, the President thanked Keith for the entertainment.

The images viewed were as follows: (1) Flinders Street "B" Box; (2) Coburg; (3) Woodend; (4) Warrenheip; (5) Frankston; (6) Box Hill; (7) Cranbourne with 'Red Hen' railcars; (8) Williamstown; (9) Port Melbourne; (10) Reservoir; (11) Edithvale; (12) Newport, sidings at the Up end; (13) Westona; (14) North Melbourne Junction; (15) Cave Hill Siding at Lilydale; (16) Hurstbridge; (17) Korong Vale; (18) Newport – North Williamstown; (19) Seymour; & (20) Spencer Street South End

Meeting closed at 22:50 hours.

The next meeting will be on Friday 16 September, 2022 at the Surrey Hills Neighbourhood Centre, Bedford Avenue, Surrey Hills, Victoria, commencing at 20:00 hours (8.00pm).

SIGNALLING ALTERATIONS

The following alterations were published in WN 22/22 to WN 30/22, and ETRB A circulars. The alterations have been edited to conserve space. Dates in parenthesis are the dates of publication, which may not be the date of the alterations.

- 14.06.2022 Nagambie, Murchison East, and Mooroopna (SW 124/22, WN 23)**
 On Tuesday, 14.6., the platform extension to 180 metres was brought into service at each station (see SW 217/21).
 Amend Diagrams 30/22 (Mangalore – Nagambie) & 28/22 (Murchison East – Toolamba)
- 20.06.2022 Colac (SW 132/22, WN 24)**
 Between Monday, 20.6., and Thursday, 30.6., the points leading to the turntable were abolished. The WSA lever and out of service point locking were removed. The points had been secured out of use on SW 70/08. Diagram 50/22 (Birregurra – Colac) replaced 72/20.
- (21.06.2022) Pyramid (SW 127/22, WN 24)**
 A friction buffer stop and line side fencing have been provided at the Up end of No 2 Road. No 2 Road is still not available for use.
 Diagram 58/22 (Pyramid – Kerang) replaced 4/22.
- (21.06.2022) Seymour – Toolamba (SW 126/22, WN 24)**
 Diagrams 62/22 (Mangalore – Nagambie) & 60/22 (Murchison East – Toolamba) replaced 30/22 & 28/20 respectively.
- 26.06.2022 Donald (SW 133/22 & SW 139/22, WN 24 & 25)**
 On Sunday, 26.4., boom barriers were provided at the flashing lights at Sunraysia Hwy (336.190 km). Axle counter operation replaced predictor operation. A healthy state indicator and yellow whistle boards were provided. The Predictor Boards were abolished.
 Axle counter track circuits were provided between 335.146 km and the Sunraysia Hwy, the Sunraysia Hwy and Points K (Up end of Down track at Donald Loop); and Points K and 336.954 km (Down end of Up track at Donald Loop). There will be no local axle counter reset functions for any of these axle counter sections, or the island track at Sunraysia Hwy. On or off tracking of road rail vehicles at Sunraysia Hwy is not permitted.
 The existing Up and Down Repeating signals DON1 and DON2 were abolished, together with the existing Up and Down Location Boards. The Down Notice Board at Repeating signal DON1 was abolished.
 Down Home DON6 and Up Homes DON10 and DON26 were provided. Homes DON6 and DON10 protect the Sunraysia Hwy and are normally at Stop and track cancel with the passage of a train. DON26 will normally be at proceed and does not track cancel. Up Banner Indicator DON10BI was provided. DON10BI will repeat the clear aspect using green LEDs.
 Operation of the Sunraysia Hwy protection equipment is driver initiated using the train radio. Boards indicating the controlling channel ('SIG CON 1' and 'SIG CON 2') are provided at locations where the radio control is effective.
 Two 'radio acknowledge indication lights' are mounted on a new signal mast on the Down side of the line at 336.170 km near the Sunraysia Hwy. These lights show a white light when the Homes DON6 or DON10 have been called by the radio control, and a call has been placed on the Active Advance Warning Signs (AAWS) on the Sunraysia Hwy, but the level crossing protection equipment has not yet operated.
 Ground controls for Sunraysia Hwy are provided at Homes DON6 & DON10, and Points K, B, and F. The existing key switch for the operation of Sunraysia Hwy was abolished.
 Controls and indications are also provided for Home DON10 at the signal and at Points K, for Home DON6 at the signal, and Homes DON6 and DON26 at Points B and F. The controls take the form of a spring loaded unit levers in locked boxes.
 Operating Procedure 88 (Donald) was reissued, and SW 289/18 was cancelled. Operating Procedure 137 (Radio Controlled Signalling) was reissued, and SW 27/21 was cancelled
 Diagram 38/22 (Sutherland – Watchem) replaced 92/19.
- 30.06.2022 Albion (SW 612/22, WN 24)**
 On Thursday, 30.6., Platforms 1 & 2 were extended by 12 metres at the Up end. Automatic ALB22 was consequently relocated 10 metres in the Up direction and on the right hand side of the Up track.
 Diagram 19/22 (Albion – St Albans) replaced 17/16.

30.06.2022 Sydenham – Calder Park**(SW 612/22, WN 24)**

On Thursday, 30.6., the following signalling alterations took place

Watergardens/Sydenham

- The platforms were extended to accommodate a 7 car HCMT. Platform 1 was extended 15 metres at the Down end, and Platforms 2 & 3 by 12 metres at the Down end.
- Most of the turnouts at the Down end of the platforms were relocated slightly in the Down direction to make room for the platform extension and partially renumbered. Crossover SDM625 was relocated 40 metres and renumbered SDM615. Crossover SDM605 was relocated 20 metres. Points SDM615 were relocated 118 metres and renumbered SDM624U. Derailer SDM615 was renumbered SDM624. Derail SDM614 was relocated 70 metres and equipped with an electro-hydraulic point machine.
- Most of the signals at the Down end of the platforms were relocated slightly in the Down direction: Home SMD715 (33 metres); Home SDM705 (7 metres); Dwarf SDM734 (48 metres); Dwarf SDM724 (79 metres); & Dwarf SDM714 (70 metres).
- The train stabling gates were replaced. Each siding now has a single leaf gate.
- Sidings A and B were extended at the Down end to accommodate each accommodate three 7 car HCMT sets. The sidings now extend beyond the Melton Hwy overbridge. Siding A was extended 231 metres (total length now 524 metres), and Siding B was extended 229 metres (to 531 metres). The Down line was slewed to the west on the Down side of Melton Hwy to make room.
- A new maintenance crossing was provided at 24.213 km to provide access to the sidings.
- Road/rail vehicle pad SDM1 was relocated 105 metres in the Down direction.
- Axle counters were provided between the Up end of the platforms and 25.124 km (Down line) and 25.157 km (Up line)

Calder Park

- Three additional stabling roads (Nos 10, 11, & 12) were provided. Each is 524 metres in length and can stable three 7 car HCMT sets. The lead to these sidings, known as the Arrival and Departure Road, junctions from the lead to Sidings 4 to 6. Dwarfs CPV784, CPV786, & CPV788 were provided. Friction buffers and buffer stop lights were provided in each siding. Points CPV650, CPV684, CPV686 were provided. Derails CPV684, CPV686, & CPV688 were provided
- Derail CPV654 in the lead from Sidings 4 to 6 was removed. Rollout protection is now provided by Derails CPV654, CPV656, & CPV658 in the Sidings.
- Sidings 1 to 6 were extended 22 metres to provide room to stable two 7 car HCMT sets per road.
- The connection to the future Light Service Facility was provided. Points CPV638 and Catch CPV638 were provided, but secured normal.
- The Holding Road was renamed Holding Road 1, and an additional Holding Road 2 was provided. A second connection to the main lines was provided at the Up end using 80 km/h turnouts (the original connection used 65 km/h turnouts). A run-off track was provided at the Up end with friction buffers and buffer stop lights.
- Catch CPV615 was replaced by Points CPV615D. Crossovers CPV606 & CPV639 were provided. Points CPV640, CPR642, & CPV648 were provided. Derail CPV636 was provided.
- Automatic CPV717 was converted to a controlled Home.
- Axle counters were provided in the sidings between 26.237 km (clearance point at Up end of Holding Road 1) and the buffer stops in the sidings.
- Note that none of the diagrams show Holden Rd level crossing, Down Automatic M281, or Up Home CPV704.

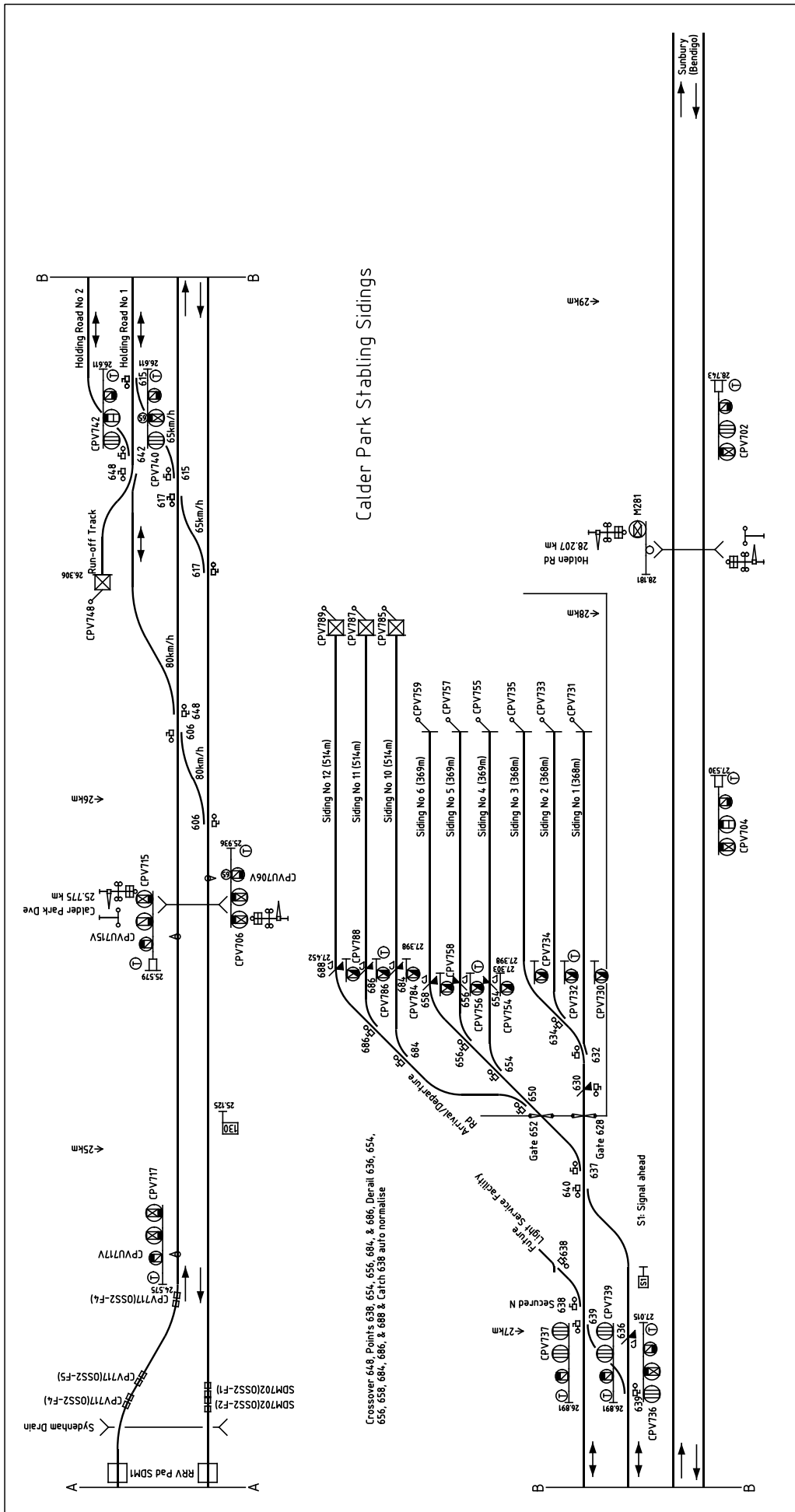
All points are worked by dual control point machines, and all derails by electro-hydraulic point machines. The station limits will be for the combined Watergardens/Calder Park and will extend on the Down line between Home SMD719 and Automatic M281, and on the Up line between SDM606 and Home CPV702. Diagrams 21/22 (Keilor Plains – Sydenham), 33/22 (Calder Park Stabling Siding), & 31/22 (Diggers Rest – Clarkefield) replaced 73/20 (Keilor Plains – Sydenham) & 25/22 (Watergardens – Clarkefield).

30.06.2022 Sunbury**(SW 612/22, WN 24)**

On Thursday, 30.6., the following signalling alterations took place

- Gap Road underpass (38.024 km) was provided.
- The roll out track was extended by 214 metres giving a total length of 339 metres. A friction buffer stop was provided at 38.009 km and baulks at 37.943 km and 37.975 km.

Points SBY03D was relocated 26 metres in the Up direction.



- 01.07.2022 Caulfield** (SW 617/22, SWP 4/22, WN 25)
 At 2359 hours on Friday, 1.7., Caulfield signal box was abolished. Control of the area from Caulfield to Cheltenham (excluding Glenhuntly) was transferred to the new Moorabbin panel at Kananook signal control centre. There was no change to the signalling arrangements. The local panel remains in the relay room at Moorabbin and can be switched if required.
 The new panel is provided with a Voice Communication System (VCS) console, a DTRS radio console, and signal post telephone lines at Caulfield and Moorabbin. The local train radio and the dedicated Safeworking Local Train Radio at Caulfield signal box were decommissioned.
 Operating Procedure 1 (Caulfield – Moorabbin – Cheltenham, Control of rail traffic movements) was reissued.
 Diagram 57/22 (Caulfield) replaced 3/21.
- (05.07.2022) Bannockburn - Warrenheip** (SW 141/22, WN 26)
 Diagram 60/21 (Bannockburn – Warrenheip) replaced 4/99 a/c abolition of signalling at Meredith and provision of boom barriers at Staughton St.
- (05.07.2022) Meredith** (SW 141/22, WN 26)
 The key switch for resetting the island axle counter section at Staughton St (114.127 km) is now available for use as staff training has been completed. On/off tracking of rail vehicles is now permitted at Staughton St under Operating Procedure 133 (Modified Location).
- (05.07.2022) Creswick** (SW 141/22, WN 26)
 Diagram 12/22 (Creswick) replaced 146/12 a/c provision of boom barriers at level crossings. Note the chainage of Armstrong St was altered to 173.761 km, Victoria St to 174.685 km, Johns Rd to 176.682 km, and Gillies Rd to 180.669 km.
 The key switch for resetting the island axle counter section at Gillies Rd (180.669 km) is now available for use as staff training has been completed. On/off tracking of rail vehicles is now permitted at Gillies Rd under Operating Procedure 133 (Modified Location).
- (05.07.2022) Clunes** (SW 141/22, WN 26)
 Diagram 10/22 (Clunes) replaced 148/12 a/c provision of boom barriers at level crossings. Note the chainage of Learmonth Rd was altered to 193.363 km, Kilkenny Lane to 193.549 km, Cemetery Rd to 194.903 km, & Golf Course Rd to 197.328 km. The name of Beckworth Court Rd was changed to Golf Course Rd.
 The key switches for resetting the island axle counter section at Cemetery Rd (194.904 km) & Beckworth Rd (197.329 km) are now available for use as staff training has been completed. On/off tracking of rail vehicles is now permitted at both crossings under Operating Procedure 133 (Modified Location).
- (05.07.2022) Talbot** (SW 141/22, WN 26)
 Diagram 18/22 (Talbot) replaced 100/13 a/c provision of boom barriers at various level crossings. Note the chainage of Ballarat – Maryborough Rd was altered to 209.260 km and Scandinavian Cres to 209.531 km. The name of Carisbrook - Talbot Rd was changed to Landrigan Rd.
- 11.07.2022 Hallam** (SW 614/22, WN 26)
 On Monday, 11.7., Automatic D1108 and Uncontrolled Homes D1133 & D1152 were abolished. Controlled Homes DNG757 (35.329 km), DNG734 (36.044 km), and DNG759 (36.607 km) were provided.
 The Stopping/Express function for routes from Home DNG710 to Automatic D610 was removed.
 The TCMS indications were updated to reflect the BEW1 RRV Pad and the Clyde Road underpass at Berwick
 Diagram 41/22 (Dandenong – Hallam) replaced 13/22.
- (12.07.2022) Sunshine** (SW 147/22, WN 27)
 Condition monitoring (WCM) equipment was provided on the Down RRL line on the Up side of Points 833.
 Diagram 39/22 (Sunshine) replace 76/14.
- (12.07.2022) Albion – St Albans** (SW 632/22, WN 27)
 Diagram 59/22 (Albion – St Albans) replaced 19/22 as in service.
- 15.07.2022 Ballarat** (SW 138/22, WN 25)
 Between Friday, 2.7., and Friday, 15.7., Crossover 25 was renewed slightly in the Down direction (Points 225U were relocated 6 metres in the Down direction, and Points 25D 13 metres). The dual control point machines were renewed. Up Dwarf 30 was relocated 3 metres closer to the sidings.
 During this time the Independent Track and the Loco Track between a point adjacent to BAT40 and the baulks on Roads 1, 2, & 3 in the Car Shed was out of use.

- 16.07.2022 Huntly** (SW 148/22, WN 27)
 On Saturday, 16.7., the new station (176.494 km) was opened for passenger traffic.
 The platform is 180 metres in length and is situated on the Down side of the line between 176.404 km and 176.584 km.
 Diagram 76/22 (Epsom – Elmore) replaced 74/21.
- 17.07.2022 Raywood** (SW 149/22 & SW 157/22, WN 27 & 28)
 On Sunday, 17.7., the new station (192.884 km) was opened for passenger traffic.
 The platform is 180 metres in length and is situated on the Up side of the line between 192.794 km and 192.974 km.
 Diagram 74/22 (Eaglehawk - Raywood) replaced 46/17.
- 18.07.2022 Donald** (SW /22, WN 28)
 On Monday, 18.7., points were provided in No 3 Road at 337.170 (Up end) and 337.530 km (Down end) for the future No 2 Road. Both points will be equipped with WSa levers and secured to lie for No 3 Road.
 Amend Diagram 38/20 (Sutherland – Watchem)
- 18.07.2022 Arcadia** (SW 150/22, WN 27)
 On Monday, 18.7., boom barriers were provided at the passive crossing at Noonans Rd (154.806 km).
 Operation will be by axle counters. Healthy state indicators, yellow whistle boards, and remote monitoring equipment were provided.
 A reset key switch for the crossing track is not provided and road/rail vehicles cannot on/off track at this crossing.
 Amend Diagram 60/22 (Murchison East – Toolamba)
- (19.07.2022) Traralgon** (SW 161/22, WN 28)
 Operating Procedure 130 (Traralgon) was reissued and SW 98/08 and SW 225/19 were cancelled. The key change is that the unlocking spanner for the turntable was transferred from the Traralgon Yard Signaller to the Locomotive Restoration Group on Thursday, 14.7. Additional changes have been made to reflect as in service practices.
- 19.07.2022 North Geelong Yard** (TON 347/22, WN 29)
 On Tuesday, 19.7., No 1 Road was booked out of service due to poor sleeper condition.
- 19.07.2022 Warrnambool** (TON 338/22, WN 28)
 On Tuesday, 19.7., the Turntable and Turntable Rd (266.982 km to 267.000 km) was booked out of use due to turntable and track condition.
- 19.07.2022 Ardeer** (SW 160/22, WN 28)
 Between Friday, 15.7., and Tuesday, 19.7., the level crossing at Fitzgerald Rd (16.002 km) was closed for both road traffic and pedestrians. It was replaced by an overpass located on the Up side of the former crossing.
 The traffic lights at the former intersection of Fitzgerald Rd and Forrest St were removed, but the level crossing equipment will remain operational.
 Amend Diagram 52/21 (Ardeer – Rockbank)
- 20.07.2022 Arcadia** (SW 151/22, WN 27)
 On Wednesday, 20.7., boom barriers were provided at the passive crossing at Ross Rd (162.137 km).
 Operation will be by axle counters. Healthy state indicators, yellow whistle boards, and remote monitoring equipment were provided.
 A reset key switch for the crossing track is provided and road/rail vehicles can on/off track at this crossing in accordance with Operating Procedure 133 (Modified Location).
 Amend Diagram 60/22 (Murchison East – Toolamba)
- 21.07.2022 Ouyen** (SW 170/22, WN 29)
 On Thursday, 21.7., the Signaller will be relocated from the station office. The corridor master keys, Annett key, Train Register Book, and Safeworking forms will be relocated to a locked cabinet. The Signaller will not have access to the telephone services, and the primary contact for the Signaller will be by the V/Line Team Leader at Swan Hill.
 Train crews on trains departing for the Murrayville line will not have access to the Train Register Book when the Signaller is not in attendance. The train crew must advise the Train Controller of the time of departure from Ouyen, and the Signaller must obtain the time and enter it in the Train Register Book when commencing duty. The Signaller must be in attendance if a train crew is required to return a corridor Master Key.

- 23.07.2022 Arcadia** (SW 154/22, WN 27)
 On Saturday, 23.7., the boom barriers at Kennedys Rd (157.634 km) were converted to operate by axle counters. Healthy state indicators, yellow whistle boards, and remote monitoring equipment were provided.
 A reset key switch for the crossing track is not provided and road/rail vehicles cannot on/off track at this crossing.
 Amend Diagram 60/22 (Murchison East – Toolamba)
- 24.07.2022 Melbourne Yard** (SW 162/22 & 169/22, WN 28 & 29)
 Between Saturday, 16.7., and Sunday, 24.7., the Thompson point machines on Points MYD139 and MYD143 in the Engine Tracks were replaced by M23A dual control point machines and U5A detectors as part of track renewals. Up Home MYD124 was relocated 1.6 metres in the Up direction, and Down Dwarf MYD262 was relocated 2.4 metres in the Up direction.
 Diagram 61/22 (Melbourne Yard) replaced 51/21.
- 24.07.2022 Arcadia** (SW 155/22, WN 27)
 On Sunday, 24.7., boom barriers were provided at the passive crossing at Quirks Rd (155.742 km). Operation will be by axle counters. Healthy state indicators, yellow whistle boards, and remote monitoring equipment were provided.
 A reset key switch for the crossing track is not provided and road/rail vehicles cannot on/off track at this crossing.
 Amend Diagram 60/22 (Murchison East – Toolamba)
- 25.07.2022 Surrey Hills** (SW 649/22, WN 29)
 On Monday, 25.7., the boom barrier and flashing light masts at Union Rd were completely renewed. The boom barrier mechanisms were replaced by Western Cullen Hayes mechanisms. The flashing lights were upgraded to LEDs. Note that the crossing was closed to road traffic from 1.7. to 15.8.
 Amend Diagram 79/13 (Canterbury – Laburnum).
- 25.07.2022 Mont Albert** (SW 649/22, WN 29)
 On Monday, 25.7., the boom barrier and flashing light masts at Mont Albert Rd were completely renewed. The boom barrier mechanisms were replaced by Western Cullen Hayes mechanisms. The flashing lights were upgraded to LEDs.
 The pedestrian crossing on the Down side of the crossing was permanently closed and the automatic gates were removed.
 Amend Diagram 79/13 (Canterbury – Laburnum).
- 25.07.2022 Frankston** (SW 645/22, WN 28)
 On Monday, 25.7., the boom gate mechanisms and bells were upgraded at Moorooduc Hwy (Mcmahons Rd).
- (26.07.2022) East Richmond – Glenferrie** (SW 661/22, WN 28)
 Diagram 35/22 (East Richmond – Glenferrie) replaced 39/16 as in service.
- 26.07.2022 North Geelong** (TON 357/22 & 358/22, WN 30)
 On Tuesday, 26.7., No 1 Road in North Geelong East Yard has been booked out of service due to poor track condition. No 2 Road in the North Geelong East Yard has been booked back into service. The points at each end of No 1 Road have been secured toward No 2 Road.
 TON 40/18 has been cancelled.
- 26.07.2022 Beaufort - Ararat** (SW 166/22 & 167/22, WN 29)
 On Tuesday, 26.7., boom barriers were provided at the flashing lights at Old Shirley Rd (147.862 km) & Streatham Rd (175.942 km). Operation will be by axle counters. Healthy state indicators and yellow whistle boards were provided.
 A reset key switch for the crossing track at Old Shirley Rd is provided and road/rail vehicles can on/off track at this crossing under Operating Procedure 133 (Modified Location).
 A reset key switch for the crossing track at Streatham Rd is not provided and road/rail vehicles cannot on/off track at this crossing.
 Amend Diagram 22/20 (Wendouree – Ararat)

End£

BALLARAT B SIGNAL BOX

Andrew Waugh

The tall signal box at the western end of Ballarat, known as Lydiard St or Ballarat B, has stood for 137 years. This makes it the oldest extant signal box in Victoria.

Non-interlocked days

While the line to Ballarat was opened in 1862, photographs suggest that the railway did not extend west of Lydiard St, Ballarat, until construction started on the lines to the areas to the north and west of Ballarat. The first section of the Maryborough line, between Ballarat and Creswick, was opened for passenger traffic on 7 July 1874. The first section of the Ararat line, to Beaufort, was opened just over a month later on 11 August 1874. Both were worked by Staff & Ticket from opening with single sections Ballarat – Creswick and Ballarat – Beaufort. The Argus was clear that there was only a single line between Ballarat and the junction of the two lines at McArthur St upon opening of the Beaufort line, noting “there is some difficulty in working the lines with only a single line of rails”. Exactly how this short single line section was worked having two separate staffs applying over it is not recorded. Nor do I know when a second line was laid between Lydiard St and McArthur St, but it probably occurred fairly early. When it did occur the junction at McArthur St was abolished and the two lines back into Ballarat were worked as two single lines.

Very small snippets of information survive about the layout at the west end of Ballarat station at this period. The main platform was the northern one; the current one storey buildings there are the original station offices. The south (current main platform) originally had no facilities at all and was probably used for the arrival of trains. Subsequently two relatively small buildings were provided on the south platform, with one housing a booking hall and office. There were, of course, hand gates at Lydiard St, and a photograph shows that there were only two lines through the crossing. In June 1881 the Traffic Branch recommended that the dead end of No 2 Road at the Down end be connected to No 1 Departure Road, but there is no record of this occurring, or exactly what this entailed. Possibly related to this, however, was a request three months later for ironwork for a home signal from the Maryborough line, and at the beginning of October 1881 a “second” semaphore was ready for use. Again, the details are obscure. Was the other, ‘first’, semaphore also at the Down end, or was it the station semaphore for trains arriving from Melbourne? Another possibility is that the second semaphore was an auxiliary semaphore.

Interlocking

The driver for interlocking at Lydiard St seems to have been the level crossing. In September 1882 the Traffic Branch asked that the gates at Lydiard Street be interlocked. Plans were supplied in March 1883 by McKenzie & Holland, but the project was deferred in January 1884 due to lack of funds in the annual allocation.

Work recommenced in the new financial year and twelve 40 foot piles were ordered for the box in August 1884. The signal box itself was ready in January 1885, but the interlocking had only been ordered in December 1884 and presumably was not ready.

The interlocking was brought into use on 11 May 1885 – the first signal box in Ballarat. It contained a 30 lever No 5 pattern frame with 23 working levers. According to the Interlocking Register the name of the box at this time was ‘Lydiard St Crossing’; emphasising the purpose of the box.

Tiny details are known of the signalling – it appears that a repeater was provided from the semaphore “on the Down side of the line”, and a gong was provided.

At this time the lines beyond Lydiard St were still the two parallel single lines; one towards Ararat and the other to Maryborough and both lines were worked by Staff & Ticket. This probably explains the height of the signal box – to give the best possible view of approaching trains over the adjacent Armstrong St bridge.

At this time consideration was being given to establishing a junction at North Ballarat and working the two single lines as double track. This may have been initiated by the provision of the signal box at Lydiard St, and could have been tied up with the provision of the Doveton St sidings to relieve Ballarat yard. Doveton St siding was opened around the middle of January 1883, and was only connected to the Ararat line. At this time, it appears to have only been a single siding parallel to the main line. The connection to Phoenix Foundry was provided shortly after. By August 1884 the Traffic Branch were suggesting that the wood traffic be moved from Ballarat yard to Doveton St; by early 1885 this had firmed up into a proposal for an extensive timber pile structure of 31 fifteen foot openings extending south of Market St. This was (partially?) completed around September 1885, however track was still being laid in late 1886 and tenders for some of the allotments were being called in November 1886.

For whatever reason, in May 1884 the ‘Heads of Branches Board’ recommended that the two single lines between Lydiard St and the physical divergence of the two lines be converted to a double line and block working be established. This was approved in May 1885; the delay again due to lack of funds. The signal box at McArthur St and the double line were ready at the beginning of September 1885, but were not opened at this time. The diagram for the double line and the junction was issued at the end of December 1885, but still the work was not brought into use. Part of the delay appears to have been caused by a delay in connecting the points to Doveton St sidings to the frame at McArthur St. On 13 January 1886 the Signal Engineer reported that the new signal box, interlocking, etc, had been completed and was ready for opening. But the double line still was not brought into service.

The double line was finally brought into use on 22 March 1886 with the opening of McArthur St signal box

(later North Ballarat 'C' box). The double line between Lydiard St and McArthur St was henceforward worked by double line block using Winters instruments – a situation that remained for 104 years. The provision of the double line naturally involved alterations to the frame at Lydiard St, but what they were is not known. It is known that an additional lever became spare with this work. If the WTT is to be believed, the Staff & Ticket working beyond McArthur St was still worked from Ballarat. Such overcarrying the Staff was not uncommon, and allowed the safeworking to be supervised by the Stationmaster.

A Down Advance Starting signal at Armstrong St was brought into use on 28 April 1886, but no change in the number of working levers was recorded. Perhaps this had been planned for but had not been installed. This signal was probably the starting signal just beyond the Armstrong St bridge or its predecessor.

In June 1886 the Traffic Branch recommended the provision of controlled wickets at Lydiard St. Surprisingly, for such a busy road, these were never provided and the pedestrian crossings remained uncontrolled for the life of the box.

The connections at the Melbourne end of the platforms were interlocked on 5 April 1886 when 'Ballarat Middle' signal box was opened (this was also known as 'Middle Cabin', 'Ballarat Yard' and, later, as Ballarat 'A' box). Initially this box was only slightly larger than Lydiard St with a 35 lever frame. No alterations were recorded at Lydiard St with the provision of the Middle Cabin. On 23 December 1886, an additional signal was provided at Lydiard St in connection with the provision of a crossover from the Down line to the Up platform (No 4 Road) at Middle Cabin. Lydiard St now had 23 working levers.

A plan of the proposed new Down side station buildings prepared in late 1886 shows that there were four tracks between the two platforms. The inner two roads were sidings and ended at the footbridge with catch points and a connection to the adjacent platform road. There were two tracks – the platform roads - across Lydiard St.

On 27 December 1888 a single track horse tramway was opened in Lydiard St across the railway line. Construction of the line had commenced in April 1888 but the opening of the line had been delayed by slow delivery of the iron work for the crossings. This line, incidentally, ran north along Lydiard St and then west along McArthur St, crossing the railway line a second time at McArthur St signal box. No signalling or catch points appear to have been provided for the new tramway at either crossing. No

doubt the trams were viewed as little different to the other horse drawn traffic in Lydiard St.

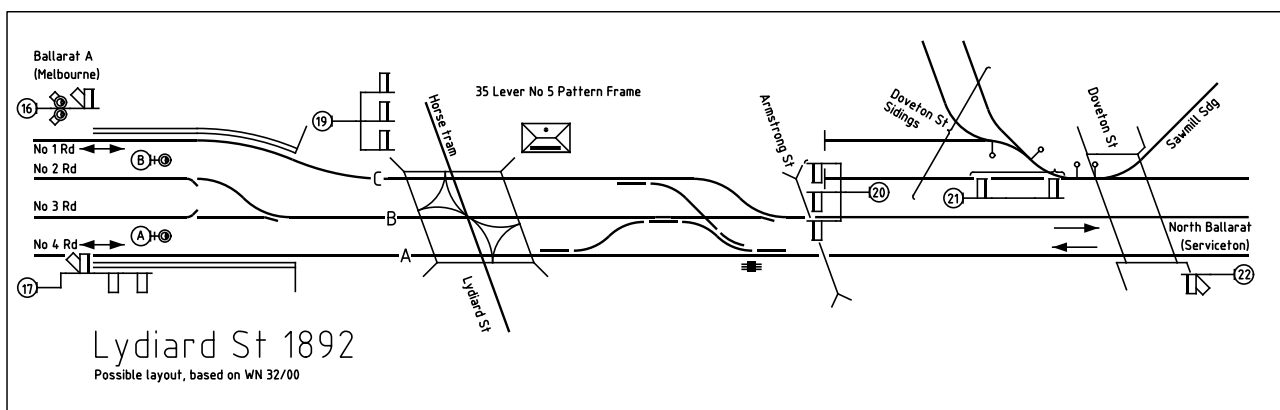
New signals (plural) were provided at Lydiard Street on 21 June 1889, but no details are known beyond the fact that only one additional lever was used. Conversely, a new facing point lock was provided at Lydiard Street on 12 September 1889 but there were no recorded changes to the number of levers.

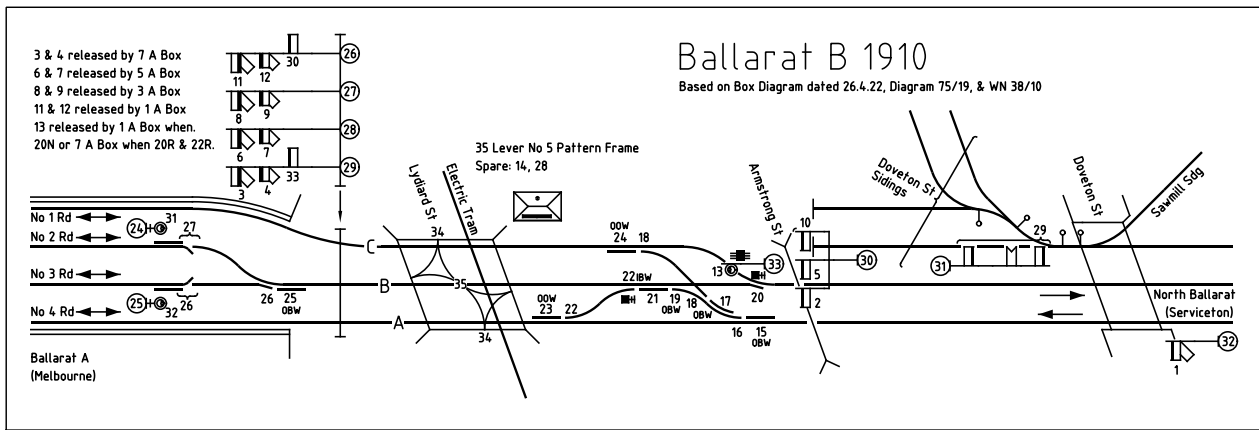
The second frame

On 23 February 1890 a new 35 lever frame was fixed at Lydiard St. This frame had 30 working levers, six more than the previous frame, which suggests some track and signal alterations but, yet again, details are lacking. It is quite likely that all these alterations in 1889/90 are connected with the construction of the grand new station buildings on the south platform. These were commenced in late 1888 and were in use by September 1890. After construction of this building the south platform became the main platform, as it remains today.

The track and signal arrangements become clearer in 1892. On 10 April 1892 "new signals" were provided at Middle Cabin (this related to a new crossover and associated signals) and three working levers at Lydiard St became spare. The probable layout at this time is shown in the diagram. The basis for this diagram is a list of signals from 1900 (no known alterations occurred between 1892 and 1900). The Interlocking Register states that in 1899 the frame contained 9 signal levers, 4 control levers, 7 point levers, 5 lockbar levers, 1 gate stop lever, 1 gate wheel, and 8 spaces. Note that there was no control lever at this time for Down movements along No 3 Road; the discs on Post 16 controlled movements from the Shed Road to Nos 1 & 2 Roads. That there was only five lockbar levers suggests that the points at the junction of Nos 2 & 3 Roads were not equipped with a lockbar at this time, and it is possible that neither were the catch points in Nos 2 & 3 Roads. It is to be noted that while Lydiard St controlled the signals at A box leading into the platform roads, A box had no control over the corresponding signals at Lydiard St.

By April 1898 a special instruction in force at Lydiard St required the Signaller to have "a clear line at his station before giving 'Line Clear' to McArthur-street Box, and must maintain the clear line until the arrival of the train" (at this time it was general practice to accept trains if the line was clear to the Home signal under the 'Section Clear but Station or Junction Blocked' signal). This instruction was still in the 1902 General Appendix, but by





1908 Lydiard St had been declared as a "Terminal" station meaning that everyone understood that normal acceptance only meant the line was clear to the Home signals. Also in the 1908 General Appendix was a special instruction that Up trains or engines must not be routed through Nos 2 or 3 Roads except when both Nos 1 & 4 Roads were blocked, and then only with a proper understanding with the Signaller at 'A' box and the Yardman.

By 1898 Lydiard St signal box was also known as "Ballarat 'B' Box", with Middle (or Yard) cabin as Ballarat 'A' Box, and McArthur St as North Ballarat 'C' box. For clarity, we will use these names henceforward.

The horse tramway was replaced by an electric tramline on 30 August 1905, but no change to the signalling of the tramline took place. Unlike the Melbourne tramway crossings, neither tramway catch points or signals were ever provided at Ballarat 'B'. Just as occurred with the horse line earlier, the opening was delayed due to the late delivery of the railway crossings. The horse tramway crossing at North Ballarat 'C' was taken out of use at this time; the new electric line being extended northwards along Lydiard St to the Ballarat cemetery. The tramline along McArthur St was replaced by a new line along Drummond St north and McArthur St, avoiding the North Ballarat 'C' crossing.

In July 1907 Post 20 was relocated 30 yards further out, which suggests the Up Home signals must have been originally located very close to the Armstrong St bridge.

Resignalling due to the new Ballarat 'A' signal box

In 1910 there were major signalling alterations at Ballarat B in connection with the provision of the new 118 lever Ballarat A box. The alterations primarily concerned the control of trains between the two boxes. This was when the splendid signal bridge was provided at Ballarat 'B' between the train shed and the level crossing. This signal bridge was unusual; it would have been more typical for the Up signals on the signal bridge to be provided at the site of Posts 30/30A, but perhaps the poor sighting at this location probably meant that the signal bridge was simpler and cheaper.

The first recorded change at Ballarat 'B' in connection with this work came into service on 28 August 1910. The Interlocking Register implies that the frame was fully rearranged at this time, but that eight of the signals worked from it were not yet in service and one signal and one

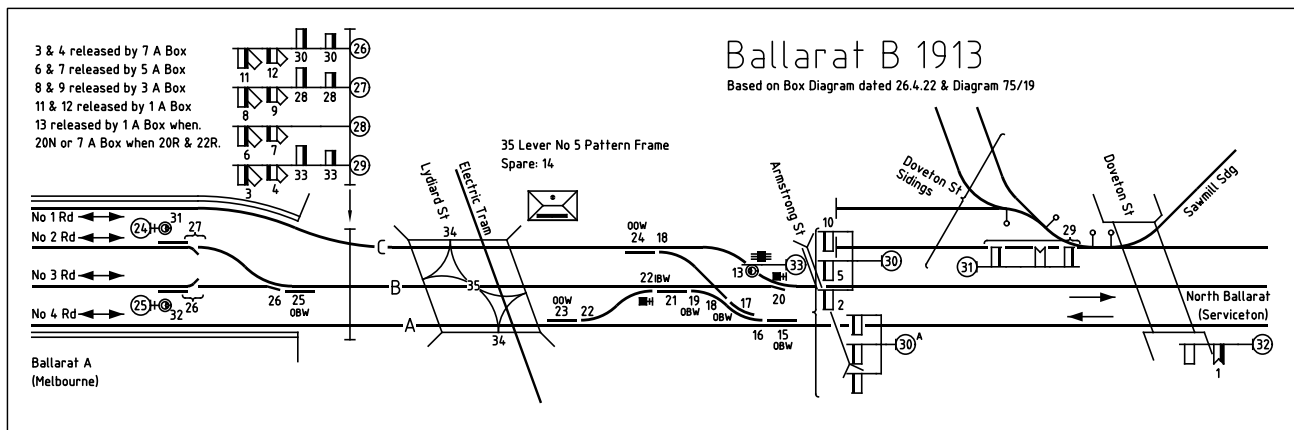
control were temporarily in use. Unfortunately, this alteration did not go through the Weekly Notice and so the details of the signalling are not known. However, I would suspect that the eight signals not yet in use were the Up signals on the new signal bridge, the temporary signal was a Down signal on the signal bridge for moves from 'B' (replacing the middle arm on the old Post 19), and the control was to control Down moves along No 1 Road.

The new Ballarat 'A' box was brought into service on 18 September 1910 and the revised signalling at Ballarat 'B' was brought fully into service. The diagram shows the new signalling at Ballarat 'B', except that Disc 13 and the two point indicators on Points 20 and 22D were not initially provided.

The key change at Ballarat 'B' was in the control and signalling of the four roads between the platforms. Previously, as has been noted, Ballarat 'B' mechanically controlled the Down signals governing moves into the roads between the platforms. Now the control was reversed and converted to electro-mechanical operation. Ballarat 'B' now had no control over the signalling of Down movements. Instead, the new Ballarat 'A' box controlled Up movements at Ballarat 'B'. A control lever was provided in Ballarat 'A' to accept movements on each of the four roads. Reversing a control lever electrically released the appropriate home and calling-on signals on the signal bridge at Ballarat 'B' for that road. The control lever was back-locked until the reversed signal lever was restored to the normal position. The four roads were also track circuited, and the home could only be cleared if the track through the station was clear, otherwise the calling-on arm could be cleared.

Exactly how these controls were implemented is a bit vague. A locking sketch from 1929 shows that the signal levers were each provided with a lever lock that released the lever from the normal position; it is assumed that this implemented the release from Ballarat 'A'. This would have been sufficient for the track control as well, with the lever lock for each home requiring the track to be clear before lifting. This was the approach initially taken at Seymour, for example, in controlling movements along the back platform. However, by 1910 the Reid's reverser was available and is more likely that the homes on the signal bridge were equipped with a reverser controlled by the track circuit.

As already mentioned, a minor addition took place on 22 December 1910 when Disc 13 (Post 33) was provided to



control setback moves from the Down main line, together with point indicators on Points 20 and 22D. Previously these set back moves would have been controlled by hand signal from the box.

Post 30 was a tall post, on the wrong side of the line, and on the top of the cutting. The visibility for train crews stopped at the signal at the bottom of the cutting must not have been great, particularly at night. At the beginning of June 1911 co-acting signals for Post 30 were provided. These co-acting signals were provided on a short three doll bracket on the left hand side of the line tucked up in the cutting near the Armstrong St bridge.

Track locking

At the end of April 1913 track locking was provided between Ballarat East and North Ballarat. At Ballarat 'B', track circuiting was provided on A, B, and C tracks between the signal bridge and Post 31 (in addition to the four roads between the platforms track circuiting in 1910). It appears that the Up line was track circuited between North Ballarat 'C' and Ballarat 'B', but not the Down line beyond Post 31. An additional Home, Home 28, was provided on Post 27 (this avoided trying to track lock the two ground discs 31 and 32). Homes 28, 30 and 33 were provided with reversers and calling-on arms provided underneath them. There were too few spaces in the frame to work these calling-on arms by separate levers. Instead, they were worked by the same levers as the Homes immediately above them; electrical selection by reversers was used to select which arm cleared depending on track occupancy. An Up Distant was provided on Post 32 replacing the controlled Home – note that this was fitted with a reverser, but the homes on Posts 30/30A were not.

The General Appendix of 1913 had changed the acceptance conditions of Up trains again. Ballarat 'B' had been withdrawn as a block terminal. Now, to accept an Up train, the Signaller had to have a clear line to the gates, with the points set for that line. This instruction remained in force until the end of block working.

The locking sketch reveals a number of unusual features of the locking at Ballarat 'B' which would date from this time, if not from 1910.

The Up distant could be cleared for moves to either platform (No 1 Rd or No 4 Rd). Until 8 November 1937 the distant could be cleared for moves to any of the four roads through the platform. This was probably the last location in Victoria where the distant could be cleared for multiple roads, and the facility lasted right up to the end (though it may not have been used in later years).

A second oddity is that Homes 2, 5, and 10 were released by the inner Home signals (3, 6/8, or 11 respectively). Clearance of these inner Homes required the appropriate control lever in 'A' box reversed and the gates closed to road traffic. An Up train receiving a clear signal at Post 30/30A would consequently be guaranteed to have a clear route right into one of the roads between the platforms. Homes 2, 5, and 10 were not released by the calling-on signals (4, 7/9, or 12), and so a train would never pass Posts 30/30A and be signalled into the station on a calling-on. A Home signal releasing another Home signal was very rare in Victoria. Of course, Drivers would not be aware of any of this and would have had to control their train prepared to stop at the signal bridge.

A third oddity was the controls for setback Disc 13. This was released by the control lever for No 1 Road when Points 20 was normal, or by the control lever for No 4 Road when Points 20 and Crossover 22 were reversed. The locking sketch makes no mention of the signal being released by the control levers for Nos 2 or 3 Road, despite the signal applying to moves to those Roads. Disc 13 was also not released by the homes on the signal bridge. Unlike Homes 2, 5 and 10, Disc 13 could be reversed for a movement up to and stand at the signal bridge.

Finally, notice the numbering of the lead from the Up line to No 1 Road. The Up end of the single compound is worked by lever 19, instead of 16 (to make a crossover with the points in the Down line) as you would expect. This is a very old practice and had long ceased being used by 1910. This suggests that the track layout was 19th century; possibly dating from 1892.

(To be continued)

THE DEVELOPMENT OF THE US TRAIN ORDER SYSTEM

(Continued from Vol 45 No 4)

Adoption of the Standard Code

The new Standard Code was quickly adopted. In October 1888 the committee on train rules reported that it had been adopted by roads controlling about 30,000 miles of road, and that 79 railroad companies operating around 49,000 miles were committed to the code¹. The committee had to plead with companies not to destroy the integrity of the rules by renumbering them or altering them unnecessarily. By the April 1889 meeting, 64 roads (39,132 miles) had adopted the code². This was just over one third of the membership of the Convention by roads and mileage (171 roads operating 118,257 miles). Not all roads were adopting the Standard Code – it was noted that the Chicago & Northwestern Railroad issued a new rulebook on 1 May 1889 which made “no attempt to conform to the Uniform Code, although the code of signals now generally conforms”.³ By October 1889, 79 roads were operating under the Standard Code (52,267 miles).⁴ At the end of October 1889 the Pennsylvania Railroad adopted a new book of rules that was based on the Standard Code.⁵ By the April 1890 convention, the Standard Code had been adopted by 93 companies (65,734 miles) – by way of comparison, the membership of the Association was 172 companies working 124,000 miles⁶. By October 1891 it was in use on 109 roads working 75,939 miles⁷. In October 1896 it was noted that the Standard Code had been adopted by 133 roads working 97,221 miles. Another 25 roads, operating 18,903 miles were reported as intending to adopt it⁸.

At the end of 1889 the Railroad Gazette editorialised about the benefits of the Standard Code⁹:

The standard code is notable chiefly for the simplicity and directness of its language, the uniformity of its style and the logical arrangement of subjects. As compared with nearly all other codes worthy of comparison with it, it is noteworthy for its omission of non-essentials. Individual codes have been compiled by such poor hands, or, when they embodied work good in itself, have been so carelessly put together, that they have mostly become absolutely “below grade.” As literary productions they are not to be compared with the work of a very ordinary superintendent. One of the greatest faults of managers in this direction has been that of using codes which a half dozen of their predecessors had pasted together, using material from a great many sources. An appreciation of these points will at once make clear the fact that the standard code has many points of

superiority, even if its rules be not all perfect practically. [...]

The Railroad Gazette, therefore, has commended the spirit of the Time Convention and its committee, making mention of the great advance marked by even imperfect work in this line, as compared with the condition formerly existing. In the mere matter of getting the consensus of opinion and pointing out the great faults of time-tables got up by old methods, the convention did a great and difficult work. The problem is so large and so complicated that even a moderate degree of progress is to be regarded as highly satisfactory. We think careful readers of these columns will agree that this has been the uppermost motive apparent in our criticisms. The difficult nature of the work may be partially appreciated by reference to any one of a score of the rules. Many separate articles, each embracing discussion and criticism of a single rule, have appeared in these columns, both from contributors and editorially. [...] The discussions in the convention, as well as those in the committee, which often took up several hours on one point, are further evidence in the same line.

We have a standard code, and it is greatly superior to all except a very few of those previously existing. It is an improvement probably on any individual code made before its appearance, without exception. But no superintendent is warranted in putting it in use without making sure that it is at least equally safe with his former rules nor without carefully studying it on general principles; and, last but not least, the merit of the code is especially shown in the facility with which individual views of superintendents can be added to the rules or can be employed for amending them, without impairing the essential advantages of uniformity, as outlined at the beginning of this note.

It is perhaps not surprising that the focus of the editor of the Railroad Gazette was on the value of clear writing and a clear exposition of the rules. The President of the American Railway Association¹⁰ had a completely different view of the value of the Standard Code when he addressed the members of the association in his presidential address in 1892¹¹:

Although its adoption called in many instances for a decided departure from established customs, the manifest advantage of uniform rules and the

¹ Railroad Gazette, 12 October 1888 p674.

² Railroad Gazette, 12 April 1889 p241

³ Railroad Gazette, 5 April 1889 p229

⁴ Railroad Gazette, 11 October 1889 p656

⁵ Railroad Gazette, 25 October 1889 p691

⁶ Railroad Gazette, 11 April 1890 p243

⁷ Railroad Gazette, 16 October 1891 p727

⁸ Railroad Gazette 16 October 1896 p715

⁹ Railroad Gazette, 20 December 1889, p839-40

¹⁰ As the General Time Convention had renamed itself in 1891.

¹¹ “Uniform Rules for Working the Block System”, Railroad Gazette, 14 October 1892 p761-2

merits of the code itself have prevailed over all opposition. To-day it is referred to in our courts of law as embodying the best modern practice, and the railroad company that ignores it handicaps itself in any litigation involving the reasonableness of train rules, or a failure on the part of employees to observe them.

So, the view of senior management was that the value of the Standard Code was primarily that it reduced the chance of adverse legal decisions in the event of an accident causing death, injury, or property damage.

Refining the Standard Code

If the General Time Convention thought that drafting and agreeing on a Standard Code was the end of the matter, they were very quickly disillusioned.

At the April 1888 meeting, the Convention appointed a standing committee on train rules to report on all questions affecting the Standard Code¹². One important task this committee carried out was providing formal interpretations of the Code in response to questions raised by members. These interpretations were formally reported on at the bi-annual sessions of the association.

However, the major work of the Train Rule committee was the revision and extension of the Standard Code. This work was almost continuous over about 15 years commencing in 1892; the result was a version of the Standard Code that was stable until the end of the Timetable and Train Order working. At the start of this work in October 1892 the President, H.S. Haines¹³, outlined the goals of the Standard Code:

Such a code should be applicable to the train service of all roads operated under what may be called the American method, and should contain all rules necessary to the movement of trains with safety. These rules should be expressed as briefly as is compatible with a clear understanding of them, and the same word should invariably mean the same thing¹⁴.

Haines then went on to explain that the core of the Standard Code should be those rules applicable to all US railroads – which were largely single track and worked by Timetable and Train Order operation. To this core “should be added rules for operating double-track roads and such others as may be required for operating roads with exceptionally heavy traffic.” It was considered that the Standard Code was deficient as it did not contain any rules governing the use of double track lines, still less did it cover the use of manual or automatic block signalling, or interlocking. However, the challenge was that there was currently no agreement on the best approaches to rules covering these topics.

It was clear that the Association’s priority was revision of the basic Standard Code, particularly relating to the

movement of trains by Timetable and Train Orders. This resulted in significant revisions to the basic Standard Code in October 1895, April 1899, April 1902, and April 1906. None of these revisions changed the basic principles of train operation, the focus was on refinement, tightening the rules, and making them clearer.

The October 1895 revision appears to have been the most contentious, with argument between those who wanted a Standard Code to be prescriptive and those that preferred the code to focus on principles and leave individual railroads to add detail that would suit their operations. The focus of this dispute was Rule 99, the flagging rule that dealt with protection of a train when stopped. The original rule was prescriptive, including specifying when the train should be protected, how far the flagmen should go back, how they were to protect the train, and when they could return. Many felt this was overly prescriptive – how the crew protected depended on where the train was. A railroad operating in the mid-west where the lines were dead straight for miles could ‘safely’ have a less prescribed flagging rule than a mountain road with restricted sight lines. But behind this concern was probably precisely the legal issues that were the benefit of a Standard Code. Rear end collisions were a very common accident under Timetable and Train Order operation, and flagging was often a factor. Roads that weakened the prescriptive Standard Code also weakened their legal protection.

At the April 1895 meeting, the Train Rules committee threw down the gauntlet to the association members¹⁵. Robert Pitcairn, on behalf of the committee, opened the debate by specifically requesting that the meeting adopt the revised rules at this convention as stocks of the printed copies of the existing rules were almost exhausted, and a number of railroads were delaying reissuing their rulebooks until the Standard Code had been amended. The committee asked that debate commence with Rule 99, the flagging rule, which they had aggressively pruned back to first principles in accordance with the wishes of the meeting a year earlier. The new rule simply stated that the flagman must protect his train immediately the need arose and may return to his train when recalled. The committee stated that it was the responsibility of individual railroads to elaborate Rule 99 in their own rulebooks to suit their own needs. Whether this was a bluff or not, the Association agreed to adopt the revision. However, these amendments did not cover the rules on train orders. These were not presented until the October 1895 meeting when they were also adopted¹⁶. A decade later, Pitcairn referred to the committee’s win in the battle over Rule 99 as a notable achievement.

The focus of the April 1899 revision was expressed by the president of the ARA in the October 1896 meeting^{17,18}.

¹² Proceedings of the General Time Convention, v1 (1886-93) p160

¹³ Haines was the Vice-President of the Charleston & Savannah Railroad.

¹⁴ Proceedings of the American Railway Association, v1 (1886-1893) p558. Railroad Gazette, 14 October 1892 p764 & 761-3

¹⁵ Proceedings of the American Railway Association, v2 (1894-1898) p208-238, Railroad Gazette 26 April 1895 p261-2

¹⁶ Proceedings of the American Railway Association, v2 (1894-1898) p313-20, Railroad Gazette 25 October 1895 p697, 29 November 1895 p788

¹⁷ Railroad Gazette 16 October 1886 p715

¹⁸ In April 1897, Thomas Tait, Assistant General Manager, Canadian Pacific Railway had been selected to one of the places on the Train Rule Committee. Tait remained a member of the

After noting that the existing rules had already reconciled diverse practices and opinion, the "aim now is toward greater simplicity, conciseness and elasticity, as well as a closer adaptation to conditions some of which have more recently arisen." The challenge in creating this revision was that "experience teaches the need of deliberation, not only in ascertaining the principle of every rule and definition, but in selecting the language which embodies that principle, and impels us to weigh our utterances not only clause by clause and paragraph by paragraph, but sentence by sentence and word by word. This was perhaps not sufficiently recognized by any of us at first. By some indeed the nice distinctions, which sometime provoke wearisome debate, were not only regarded as pedantic, but rather condemned as bars to progress." The resulting wearisome debate took two and a half years. The key change in this revision was the addition of definitions to the beginning of the Standard Code, allowing a simplification of the rules.¹⁹

One interesting point is that some railroads did not wait for the final version. In January 1899, for example, the Chesapeake & Ohio adopted a revised code of train rules that closely followed the October 1898 draft²⁰.

The April 1899 revision of the Standard Code was still explicitly for operation of trains over single track. The Train Rules committee now turned its attention to the operation of double track lines by means of Timetable and Train Order operation²¹. The result was the April 1902 version of the Standard Code. The double track rules were explicitly derived from the single track rules, retaining the same structure and text where-ever possible. Where it was necessary for a rule to differ on a double track (e.g. on double track there was no superiority by direction), the equivalent double track rule had the same number as the single track rule prefixed by the letter 'D'. The new version of the Standard Code, including double line rules, had been published by October 1902²².

The Railroad Gazette usually noted new rulebooks issued by the major railroads, and in June 1902 reviewed the position²³:

An examination of these half-dozen new [rulebooks published by railroads] will give one a good idea of the extent to which uniformity now prevails, as a result of what the American Railway Association has done during the last 15 years. In one sense it prevails widely; looked at in another

way the code shows a great deal of diversity. As everybody knows, a great change has been accomplished. The arrangement of nearly all the rules, the form of a great majority, and the substance of a good many will now be found the same on nearly all important railroads. This is a permanent benefit. Its importance can be fully appreciated only by making a comparison between the present time and 1885. But perfect uniformity is practically impossible, and no one expects it. Each railroad superintendent is responsible for the results of his own management, and there is no power to compel him to adopt any code, or rule, or a single word, contrary to his own judgment. This liberty of action is, of course, not only necessary; but is beneficial, for it has resulted in progress. But it has also introduced much unnecessary diversity, and thereby seems to have thwarted progress; and as we have had occasion before now to observe, some of the good work done in the earlier editions of the standard code has been undone by later revisions²⁴. Valuable work which has been done in framing well phrased rules has been nullified simply by the summary rejection of the rules, because, apparently, the committee was extremely reluctant to recommend anything that was not sure, in advance, to receive unanimous approval. But the standard code, now considerably shorter than it was at first, seems at last to be generally accepted; and permanent uniformity of this reduced number of rules may be considered as assured. The degree in which uniformity has been attained, and the principles, practices and notions which modify it or make it impossible are well illustrated in Rule 99, the flagging rule. The reader who will get the codes of the roads named in the preceding paragraph and compare them in this feature will find as many different rules as there are roads. [...]

The April 1906 version revised the text of the Standard Code substantially, but again not the underlying principles. Interestingly, the Train Rules committee formally involved outsiders in this revision. A sub-committee was formed of experienced train dispatchers²⁵ to provide advice on train order operation. In carrying out this revision, the Train Rule committee met for 15 days (12

committee until early 1903 when he took up his position as Chief Commissioner of the Victorian Railways. Proceedings of the American Railway Association, v2 (1894-1898) p511-2, Proceedings of the American Railway Association, v4 (1903-6), April 1903 session, p9

¹⁹ Proceedings of the American Railway Association, v2 (1894-1898) p696-747. Pages 766-854 give the draft rules in two forms: the first as proposed, the second with the old and new wording next to each other. Railroad Gazette 21 October 1898 p758, Proceedings of the American Railway Association, v3 (1899-1902), April 1899 session, p9-106

²⁰ Railroad Gazette 20 January 1899 p46-7

²¹ Proceedings of the American Railway Association, v3 (1899-1902), October 1901 session, p422-7 (debate) & 458-514 (draft double track rules compared with existing single track rules),

Railroad Gazette 1 November 1901 p755, Proceedings of the American Railway Association, v3 (1899-1902), April 1902 Session, p 525-46, Railroad Gazette 2 May 1902 p325

²² Proceedings of the American Railway Association, v3 (1899-1902), October 1902 Session, p 1037

²³ Railroad Gazette 6 June 1902 p414

²⁴ Here the Railroad Gazette was referring to the 1895 changes to Rule 99; the editors strongly felt, and expressed their opinion, that the change from a prescriptive rule to one based on principles, was a retrograde step.

²⁵ The dispatchers on this sub-committee were F.G. Sherman (Supt Telegraph Central Railroad of New Jersey); W.H. Graves (Chicago & North-Western Railway); J.F. Mackie (Chicago, Rock Island & Pacific Railway) and H.M. Tompkins (Asst Supt Lake Shore & Michigan Southern Railway)

days jointly with the sub-committee), and the sub-committee met separately for 22 days. The draft rules were also submitted to 100 "superintendents and sub-officers" for comment. The result of all this consultation was that the new Standard Code was adopted unanimously and without question or revision at the April 1906 meeting²⁶. The focus of the alterations was to "produce a Code of Rules in accordance with the latest practice of railway operations, which would at once give our railway service the safest means of operation combined with the greatest facility in movements." The Railroad Gazette noted that there were few or no radical changes, but many rules had been put in clearer language and some changes in practice.²⁷

H.W. Foreman subsequently wrote a lengthy series of articles for the Railroad Gazette on how individual railroads should amplify the standard rules to suit their needs²⁸. These articles were based on work Foreman had undertaken in revising the Nashville, Chattanooga & St Louis Railroad rulebook based on the 1906 Standard Code. The Railroad Gazette noted that the practices of this road had been "very old fashioned" and it was the last road to use a single order system²⁹. Another late adopter of the Standard Code was the Michigan Central which announced that it would do so in June 1905 so as to be more uniform with the other roads in the New York Central system.³⁰

During the 15 year period to 1906, the Train Rule committee was also involved in extensions to the basic Standard Code to reflect the more sophisticated train operating methods that were being adopted by some railroads, particularly those with heavier traffic.

In 1893 the Train Rule committee joined with the Committee on Safety Appliances³¹ to form a joint committee to examine the question of interlocking and block signalling³². Rules for block working were adopted in April 1896. The Safety Appliances committee continued to consider interlocking during the rest of 1896 and 1897, and the results, including rules, were adopted in October

1897³³. The block signalling rules were then harmonised with the new interlocking rules³⁴.

The October 1903 ARA meeting adopted new rules governing the movement of trains with the current of traffic by means of block signals³⁵. Pitcairn described the purpose of these rules: "First, it was to do away with the necessity for stopping trains to receive orders. Second, to do away with the necessity for side-tracking freight trains until absolutely necessary, and by these two means to greatly increase the usefulness of two tracks by more nearly working them to their capacity. Simply, it is substituting the signal for a train order."³⁶ The committee intended that the rules be used on railroads that were properly interlocked, with signals controlling the entry and exit of sidings, but they could be used on ordinary block signalled railroads where the exit of sidings was not controlled by signals. Interestingly enough, Pitcairn was quite explicit as to the source of the new rules "We are indebted to Mr Rice for successfully developing this method of moving trains on the Chicago, Burlington & Quincy Railroad", and the value of the rules "And greater work has been done to-day, or will be done if you approve of these regulations. You will save the railroads of this country millions upon millions of dollars. In my experience on the Pennsylvania Railroad it was utterly impossible to move our traffic on a double track until some bright superintendent adopted this method, although afraid to ask permission to use it."

The committee went on to draft rules for the movement against the current of traffic by means of block signals. These were adopted in April 1904 without debate³⁷. They continued to develop rules for the operation of trains on three and four tracks. These rules were presented and adopted in April 1905 (these primarily concerned the whistle signals to send out and call in flagmen, and the use of special end-of-train markers)³⁸.

(To be continued)

²⁶ Proceedings of the American Railway Association, v4 (1903-6), April 1906, p544-591, Railroad Gazette 4 May 1906 p448 & p458.

²⁷ Railroad Gazette 4 May 1906 p448 & p458.

²⁸ Railroad Gazette, 10 August 1906 p114-6, 17 August 1906 p135-6, 24 August 1906 p155-6, & 31 August 1906 p174-6

²⁹ Railroad Gazette, 31 August 1906 p171-2

³⁰ Railroad Gazette, 23 June 1905 p201g

³¹ The committee on Safety Appliances was primarily concerned with continuous brakes, automatic couplers, etc.

³² Block signalling encompassed manual block working (by morse telegraph), controlled manual block working (lock and block), and automatic block signalling.

³³ Proceedings of the American Railway Association, v2 (1894-1898) p559-64

³⁴ Proceedings of the American Railway Association, v2 (1894-1898) p666

³⁵ Railroad Gazette, 6 November 1903 p794

³⁶ Proceedings of the American Railway Association, v4 (1903-6), October 1903, p129-133

³⁷ Proceedings of the American Railway Association, v4 (1903-6), April 1904, p232-3

³⁸ Proceedings of the American Railway Association, v4 (1903-6), April 1905, p356-8, Railroad Gazette 14 April 1905 p343 & 19 May 1905 p569