

# SOMERSAULT

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SIGNALLING RECORD SOCIETY OF VICTORIA INC



*The Down end of Bombo (NSW). The town of Kiama is on the other side of the ridge which is pierced by the 1546 foot Kiama tunnel. The signal in the foreground is the 'Down Starting Loop to Main' (lever 22). The arm and light are of 'medium size', smaller than main line signals, indicating that this is a 'Crossing and Refuge Loop Signal'. Bracketed out from the post at roughly the skyline level is the 'Dead-end Signal' (lever 15) which applies from the loop line straight ahead into the Storage Siding. This is a centre pivoted arm with a white horizontal stripe. The spectacles (red and green) are formed as part of the arm. To the right of the post is the bracket post holding the Up Home signals (levers 2 and 5) at the other end of the crossover. This is of the 'tubular steel bracket' type and the extremely short left hand doll can be seen. The Kiama Down Distant can be seen in the background at the extreme left,*

*Photo: Andrew Waugh*

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Deadline for September 1994 issue is 24 July

## MINUTES OF ANNUAL GENERAL MEETING HELD FRIDAY MARCH 18, 1994

- Present:-** A.Jungwirth, W.Brook, J.Churchward, G.Cumming, A.Gostling, K.Lambert, D.Langley, B.McCurry, J.McLean, R.Murray, C.Rutledge, P.Silva, A.Waugh & R.Whitehead.
- Apologies:-** A.Cohn, D.Harrison, W.Johnston, G.O'Flynn, G.Reynolds, L.Savage & R.Smith.
- The President, Mr. Alan Jungwirth, took the chair and opened the meeting @ 2025 hrs.
- Minutes of the 1993 Annual General Meeting:-** Accepted as published. J.McLean/ A.Waugh.
- Matters Arising:-** Nil.
- President's Report:-** Alan Jungwirth reported that the society had enjoyed another good year. A.Waugh/J.McLean. Carried.
- Treasurer's Report:-** Colin Rutledge reported that the audited statements were not complete. Colin gave a brief report noting that cash reserves had increased but that lost 5 members had not rejoined. C.Rutledge/R.Whitehead. Carried.
- Auditor's Report:-** Unable to present report due to the audit not having been completed.
- Editorial Report:-** Andrew Waugh reported that all six issues of "Somersault" had been published during the year. A plea was made for more articles especially reminiscences of signalling staff. The 1978 volume of "Somersault" is to be re - published during the year. A.Waugh/D.Langley. Carried.
- Tours Report:-** Glenn Cumming reported on the successful tour held during the year. Jon Churchward asked about the financial performance of the tour, but an answer was not available due to the absence of the audited financial statements. G.Cumming/ A.Waugh. Carried.
- Elections:-** The following written nominations were received :-  
**President:-** A.Jungwirth, nominated by K.Lambert and seconded by G.Cumming.  
**Vice President:-** D.Langley, nominated by J.McLean and seconded by G.Cumming.  
**Secretary:-** G.Cumming, nominated by A.Jungwirth and seconded by K.Lambert.  
 The following verbal nominations were received:-  
**Treasurer:-** C.Rutledge, nominated by D.Langley and seconded by R.Whitehead.  
**Committeeman:-** J.McLean, nominated by A.Jungwirth and seconded by D.Langley.  
**Committeeman:-** G.Inglis, nominated by J.McLean and seconded by W.Brook.  
 There being no further nominations, all nominees were duly elected to their positions.
- General Business:-** Jack McLean made the following statement to the meeting.

"Gentlemen.

It is considered the right thing in polite society and other places to thank members for their contribution to the success of the group they belong to, sometimes indeed for the very continuance of the group.

Gratitude, the cynics say, is a pre-requisite for the continuance of past favours.

We pass Votes of Thanks for routine matters and we record tributes in magazines.

But in exceptional circumstances it seems that we wish also to show outsiders that our group recognises its debt to an exceptional member. That is why we accorded Alan McKenna a Life Membership, and David Langley's efforts in keeping "Somersault" afloat for more than a decade was equally obvious.

Our relatively new Constitution as an Incorporated body restricts the granting of a Life Membership to an Annual Meeting. And so, tonight I draw your attention to our friend and President Alan Jungwirth.

One of Alan's achievements has been his service as Vice President over a number of years under that hard to get on with President. Some time back I likened it to the Prince of Wales and Queen Victoria. Jungi has an extensive knowledge of railway signalling both practical and theoretical. He has a prodigious collection of artefacts, including an example of Jungi's Lock which saved the Railway a lot of time re-designing.

He spent more than a decade ( with Keith Lambert ) in compiling an Index to the Weekly Notice. The punched paper tape people probably would not believe the use their machinery has been put to.

He was Chairman ( and often the only member ) of the Country Tours Sub-Committee and he not only ran a dozen or more tours personally or in absentia, but I also wish to record the days of pre-planning, the use of his beloved bus and his state wide knowledge of Pierce and Crump, somewhere.

Jungi was also Syllabus Officer for a long time and scouted far and wide for extra mural speakers as well as applying pressure to insiders to entertain and educate us at our meetings.

From my experience, the only people the Poms believe exist are those that go to Pomland. Jungi's several visits to the "Old Country" have certainly smoothed out some of the problems caused by the "Tyranny of Distance".

Just as he and Jim Brough nominated me for the Honour to ensure that I would continue as President ( or so they said ), and I did so, Jungi can look forward to a similar extension to his time as President.

I personally thank Jungi for his help to me on the subject of railway signalling, and I thank him for his able back stop to my Presidency for a number of years.

I sense that my list of his accomplishments is not complete and not a long list, but I remember that he did these things for a LONG TIME.

It is my very great pleasure to propose that Alan Jungwirth be appointed Life Member of the Signalling Record Society Victoria Inc for his outstanding contribution to its well being and healthy continuance."

The proposal was seconded by David Langley. The motion was carried unanimously and was followed by acclamation from those present.

At this point, both Alan Jungwirth and Jack McLean left the room and David Langley took the chair.

Colin Rutledge noted that the benefits of Life Membership were not clearly stated.

After some discussion, Peter Silva moved the following motion "All Life Members be accorded the privilege of Vic & U.K. membership from hereon". Seconded by Colin Rutledge. Carried.

Alan Jungwirth and Jack McLean returned to the room and David Langley vacated the chair.

Alan Jungwirth took the chair.

Meeting adjourned @ 2112 hrs.

The Annual General Meeting was adjourned until 20 May, 1994.

## MINUTES OF RESUMED ANNUAL GENERAL MEETING HELD FRIDAY MAY 20, 1994

Present:- A.Jungwirth, W.Brook, J.Churchward, G.Cumming, A.Gostling, W.Johnston, K.Lambert, B.McCurry, J.McLean, R.Murray, C.Rutledge, P.Silva, R.Whitehead & B.Wooding.

Apologies:- D.Langley, G.O'Flynn, T.Penn & A.Waugh.

The President, Mr. Alan Jungwirth, took the chair and opened the meeting @ 2021 hrs.

Financial Statements:- Colin Rutledge presented the financial statements for 1993. Colin noted that income had increased, but expenses had remained constant, resulting in a surplus for the year of \$1,239.63 as opposed to a deficit in 1992 of \$344.86. However, not all invoices for the U.K. magazine had been received.  
C.Rutledge/R.Whitehead. Carried.

Bob Whitehead asked about the interest earned on the General Account and whether the society can invest part of this account for more interest. Colin Rutledge replied that this had been considered but he noted that the Investment Account has a fixed rate while the rate for the General Account has been moving upwards.

Auditor's Report:- The Auditor presented his report. J.Churchward/P.Silva. Carried.

General Business:- The President thanked the Treasurer and the Auditor for their efforts.

Meeting closed @ 2033 hrs.

## MINUTES OF MEETING HELD FRIDAY FEBRUARY 17, 1995.

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

Apologies:- G.O'Flynn.

The President, Mr. Alan Jungwirth, took the chair and opened the meeting @ 2030 hrs.

The President welcomed visitor Bill McKerrecher to the meeting.

Minutes of the November 1994 Meeting:- Accepted as published. J.McLean/A.Waugh.

Matters Arising:- Nil.

Correspondence:- A letter has been received from Peter Kay advising of the availability of the reprint of the Rayner - Wilson book "Power Railway Signalling". Anyone wishing to order any books from Peter Kay should contact Andrew Waugh if they are interested in being part of a group order.

A letter has been sent to the Keeper of Public Records seeking appointment of the S.R.S.V.Inc Archives as a "Deposit for Temporary Sentenced Public Transport Corporation Records".

D.Langley/B.McCurry.

General Business:- The Secretary reported that the next meeting of the S.R.S.V.Inc had been moved to Friday 24 March, 1995. The Annual General Meeting will be held on the same night. The change in date is necessary due to the clash with the 20th Anniversary Tour.

Nominations are now open for all positions on the committee for the next year.

Bob Whitehead reported on progress with the archives. A small number of members visited on the open day. Some sorting of material has taken place and some more renovations are required on one of the rooms. The Keeper of Public Records has requested further details about the activities of the S.R.S.V.Inc Archives.

Jack McLean spoke about a single line collision on the British North Borneo Railway ( now the Sabah State Railway ) as related by Jim Harvey. Jack gave a description of the safeworking system in use at the time.

Jack McLean has been doing more research on the Maldon and Shelbourne lines. A railway official arranged to meet a deputation of locals on the platform at Pollard at 12.29 on Wednesday. Jack later discovered that this was the time when the regular mixed train was due to arrive. A commissioners special stayed overnight at Shelbourne. Does this mean that Shelbourne Junction was open as a staff station for two days in a row ?

Jack McLean wants to know who has his copy of the Clapham Junction railway crash report and can he have it back.

Andrew Waugh reported on his recent trip to Britain and Europe. The railway museum at Utrecht has a very good working signalling display.

Keith Lambert spoke about the demise of Dandenong Signal Box, replaced by a control panel in the new station building and a solid state interlocking. The Cranbourne line signalling is due to be commissioned next week.

The signal box on the up platform at Wallan has been abolished and replaced by a frame in the station office on the down platform.

The commissioning of the new signals and interlocking at Caulfield has been deferred until 5 May, 1995.

The Tocumwal line re - opened for traffic on Monday 6 February, 1995. 50,000 tonnes of grain are to be railed to Tocumwal from South Australia for use as stock feed in the Riverina.

Bob Whitehead spoke about recent works in South Australia as part of the Melbourne - Adelaide S.G. project between Goodwood and Belair. New B.G. crossing loops for the suburban service are to be commissioned on 5 March, 1995.

Discussion took place on the rail crash at Waterfall in New South Wales.

Section Authority Working is being trialed between North Geelong and Warrenheip with miniature electric staff working suspended. As a result, Lal Lal crossing loop is out of use and a block point has been provided at Lal Lal, but not at the crossing loop.

S.G. trains are now scheduled to run between Wodonga Coal Sidings and Bandiana as a result of the Bandiana superfreighter now running on S.G. No regular B.G. trains run between Wodonga and Bandiana.

Miniature electric staff remains in use between Ballarat and Ararat, but after the S.G. line to Adelaide opens, the fate of the line is not known.

It has been proposed to provide an S.G. connection to Dunolly for grain traffic to Portland.

A committee has been formed at Ararat as the first step in the preservation of the signal box and the down distant bracket signal.

Bob Whitehead addressed the meeting on a proposal to establish a museum for railway signalling. He believed that now was the time to act as much old equipment was being replaced. Bob sought (a) the support of the S.R.S.V.Inc for the proposal and (b) official support for the proposal. Bob compared Victoria to other states regarding efforts to preserve signalling equipment. Moved Bob Whitehead, seconded Andrew Waugh, that a letter be sent to the Minister for Transport seeking his support in principle for the proposal for the establishment of a railway signalling museum. Carried.

Jon Churchward asked what happened to a list of signalling equipment to be retained prepared by the S.R.S.V.Inc some years ago at the request of V/Line. It is not known what the outcome was.

#### Syllabus Item:-

The Chairman introduced the syllabus item, which was in two parts.

First part was a screening of 12 slides by Keith Lambert in the form of a "then and now" look at Dandenong Signal Box and the yard at Korong Vale.

Second part was a presentation of slides featuring signalling and signal boxes in northern New South Wales and southern Queensland taken on an S.R.S.N.S.W. tour in October 1991. Glenn Cumming provided the narration.

At the conclusion of the Syllabus Item, the Chairman thanked Keith, Alan & Glenn for the entertainment.

Meeting closed @ 2215 hrs.

The next meeting will be on Friday March 24, 1995 at the Uniting Church Hall, Hotham Street, Mont Albert.

## SIGNALLING ALTERATIONS

*The following alterations were published in WN 1/95 to WN 6/95. The alterations have been edited to conserve space. Dates in parenthesis are the dates of the Weekly Notice.*

### 15.12.1994 Nyora - Leongatha

Commencing at 1600 hours, 15.12.94, the Public Transport Corporation relinquished control of the line between Nyora and Leongatha to the South Gippsland Railway.

A set of catch points, facing to Up trains, has been installed in the Main Line 406 metres on the Up side of the Up end Plunger locked points at Nyora. The catch points are locked by special 'D' locks. Keys are in the possession of the Road Foreman, Warragul; the Manager, Freight Planning; and the Superintendent of Safeworking. 'Commence Train Order Working' and 'End Train Order Working' boards will be placed on the Up side of the catch points.

The portion of line between ABB Siding and Nyora will be worked under the Rules for Train Order Working. The line from Nyora to Leongatha will be worked under the Tourist Railways Train Staff and Ticket System and supplementary instructions contained in the Tourist Railway Rules and General Instructions 1994. The staff sections are Nyora - Korumburra and Korumburra - Leongatha.

The PTC has the right to operate trains beyond Nyora after giving proper notice to the South Gippsland Railway. PTC trains beyond Nyora will be crewed by PTC crews, but must stop at the 'End Train Order Working' Board and will be piloted beyond Nyora by a qualified Tourist Railway Officer.

Train Controllers must not give permission for track inspections beyond the catch points at Nyora. PTC employees operating track inspection vehicles may on and off track at the Poowong Road Level Crossing,

but must check whether a Signaller is in attendance at Nyora station. If Nyora is attended, permission must be obtained to proceed between the catch points and Poowong Road (or vice versa). If Nyora is unattended, the Track Inspector may proceed cautiously between the catch points and Poowong Road (or vice versa).

Amend page 100, MTP General Instructions. (SW 402/94, WN 1/95)

18.12.1994

**Lara**

On Sunday 18.12.94, Points 13 and the associated catch points were abolished, together with Dwarf 28 and Hand Points 'A'. Amend Diagram 10/89 and page 19 MTP General Instructions.

(SW 393/94, WN 1/95)

19.12.1994

**West Tower**

On Monday 19.12.94 Dwarfs 128 and 132 were relocated. Dwarf 132 was relocated 22 metres in the Down direction. This signal is mounted on a tall mast located on the right hand side (Down side) of the line. Dwarf 128 was relocated in the Down direction to a new position adjacent to Dwarf 132. This signal is mounted on a short mast (in lieu of the former tall mast). Amend Diagram 14/89.

(SW 398/94, WN 1/95)

21.12.1994

**West Tower**

On Wednesday, 21.12.94 the following alterations took place:

- i) Dwarf 136 (situated at Dynon Link Road) was renumbered 136B.
- ii) No 7 Arrival Track was taken out of service. Points 191, 231, 233, and 235 were spiked normal and Dwarfs 160 and 310 were booked out of service. A baulk was provided at the Up end of Points 235.

Amend Diagram 14/89 and 17/94.

(SW 400/94 & SW 402/94, WN 1/95)

23.12.1994

**Camperdown**

On Friday 23.12.94, Camperdown was reopened as a Permanent Train Order Crossing Station. The sections are Colac - Camperdown and Camperdown - Warnambool. Camperdown will be attended by West Coast Rail employees who have been suitably trained and qualified in the rules for Train Order Working and operations at Camperdown.

(SW 403/94, WN 1/95)

24.12.1995

**Newport - Altona Junction - Westona - Laverton**

Commencing 0001 hours Saturday, 24.12.94, the Signaller, Newport, will be regarded as the Train Controller for the sections between Altona Junction and Laverton on the direct line and via Altona and is responsible for the routing of trains and the issuing of caution orders.

In the event of a failure of a Home signal in this area, the following instructions must be observed:

1. The Driver must immediately contact the Signaller at Newport by the post telephone.
2. The Driver must advise the Signaller of his or her name and grade, the number of the Home signal displaying stop, the train number, originating station, and destination of train.
3. The Signaller must ensure that the points are properly set and locked for the movement of the train by checking the indications on the signal control panel.
4. If the indications are that the points are properly set for the movement, the Signaller must instruct the Driver to examine the points.
5. The Driver must examine the points and advise the Signaller.
6. The Signaller must then complete the appropriate Signaller's Caution Order form and read the order to the Driver. The Signaller's name must be given to the Driver

Caution Order form 2377 is to be used for the failure of signals 206, 208, 214, 216, or 222 at Altona Junction; 230 or 232 at Paisley; WTP 701 and WTO 710 at Westona; LAV 2, LAV 4 (for movement to Holding Loop), LAV 8, LAV 12, LAV 14, LAV 16 (for movement to Holding Loop), LAV 20, LAV 28 (for movement to Holding Loop), LAV 32 and LAV 36 at Laverton.

Caution Order form 2367 is to be used for the failure of signals 210 or 212 at Altona Junction; 220 or 224 at Paisley; WTO 704 or WTO 705 at Westona; and LAV 4 (for movements to East Line), LAV 16 (for movements to the East or West lines), LAV 28 (for movements to the East or West line) and LAV 34 at Laverton.

The Train Controller, Transport House, will be responsible for the issuing of Caution Orders (2367) for signals LAV 6, LAV 18 and LAV 26 at Laverton. The Train Controller must carry out the instructions as described above for the Signaller at Newport.

Signallers and Train Controllers must fill out copies of the appropriate Caution Orders, and must give Drivers their names for record purposes. Filled out Caution Orders must be retained in the book provided until it is completed and then forwarded to the Superintendent of Safeworking. It will not be necessary for Drivers to have hard copies of the Caution Order issued to them. All messages received and sent over the post telephones connected to Newport Signalbox are automatically recorded.

Insert as a new instruction following Section 35, Book of Rules.

(SW 397/94, WN 1/95)

29.12.1994

**North Geelong C - Warrenheip**

operation of trains on this section. If it is necessary to return to Electric Staff working, this may only be done on the express authority of the Superintendent Safeworking.

It is essential that the Train Controller inform the Signaller at each attended location of all train and track vehicle movements.

*North Geelong "C"*

"COMMENCE SECTION AUTHORITY WORKING" and "END SECTION AUTHORITY WORKING" boards have been provided at Post 40. The existing telephone cabin at Post 52 has been equipped with an ISDN phone and secured with a V5PSW lock.

The Signaller must use the local radio to inform the Drivers of Up trains that their train has arrived complete after observing that the train has arrived complete via the closed circuit television provided at Post 44.

*Gheringhap*

"COMMENCE SECTION AUTHORITY WORKING" and "END SECTION AUTHORITY WORKING" boards have been provided at the Home signal on the Cressy line. A cabinet provided with a Telecom phone has been provided outside the station building.

Gheringhap is a Switch In-Switch Out location.

Gheringhap must be attended for all movements to and from the Secondary (Cressy) line and for trains crossing, passing, or shunting. Whenever Gheringhap is attended it must be switched in (in the workstation). Whilst attended and switched in, the normal position of the signals is at stop. The Signaller must use the local radio to inform the Drivers of all trains when their trains have arrived complete and are in clear.

Trains entering the Section Authority System from the Secondary corridor may enter the station yard under the protection of fixed signals, but not proceed beyond station limits unless issued with an authority for the forward section.

When coming on duty, the Signaller must contact the Train Controller and request permission to test the fixed signals before switching in. When going off duty, the Signaller must advise the Train Controller that the fixed signals have been cleared for an Up or Down train (as required) and the time Gheringhap will next be attended.

The signals can only be cleared in one direction for one train only when the station is switched out. A Signaller must attend if it is necessary for a second train to pass through Gheringhap. The points must be secured for the Primary line whilst unattended.

*Meredith*

A cabinet provided with a Telecom phone and secured with a V5PSW lock has been provided outside the station building.

Meredith is a Switch In-Switch Out location.

Meredith must be attended for all trains crossing, passing, or shunting. Whenever Meredith is attended it must be switched in (in the workstation). Whilst attended and switched in, the normal position of the signals is at stop. The Signaller must inform the Drivers of all trains when their trains have arrived complete and are in clear via the local radio.

When coming on duty, the Signaller must contact the Train Controller and request permission to test the fixed signals before switching in. When going off duty, the Signaller must advise the Train Controller that the fixed signals have been cleared for an Up or Down train (as required) and the time Meredith will next be attended.

The points must be secured for the main line and the fixed signals secured at proceed for both Up and Down trains.

*Lethbridge Block Point*

Lethbridge Block Point was commissioned at KP 97. Up and Down location boards have been provided 1000 metres from the Block Point Location in each direction. Bi-Directional TAILS has been provided. A cabin, equipped with a Telecom phone and secured with a V5PSW lock has been provided.

Drivers may relinquish their authorities, in accordance with the rules, after receiving the Train Arrival TAILS message, but will require a 'Next' authority for the forward section to proceed past the Block Point.

*Lal Lal Block Point*

Lal Lal Block Point was commissioned at KP 137.440. Details are as for Lethbridge Block Point.

*Warrenheip*

A "COMMENCE SECTION AUTHORITY WORKING" board has been provided at the fouling point at the Up end of the crossing loop. Up trains must not proceed past the fouling point until they are in possession of an authority for the section Warrenheip - Lal Lal Block Point. A cabin, equipped with an ISDN phone and secured by a V5PSW lock has been provided at the Up end of the crossing loop.

An "END SECTION AUTHORITY WORKING" board has been provided at Post 6. End of train detection by TAILS has been provided for Down trains at the Up end fouling point. Drivers must not relinquish

their authorities after receiving the Train Arrival TAILS message until advised by the Signaller, Warrenheip, that their train is complete.

#### Block Hours

It is proposed that Meredith and Gheringhap will be attended as per the current block hours:

#### Gheringhap

Sunday..... Closed  
 Monday, Wednesday..... 0530 hours to 1430 hours and 1605 hours to 0005 hours  
 Tuesday..... 0320 hours to 1400 hours and 1605 hours to 0005 hours  
 Thursday..... 0320 hours to 0930 hours, 1030 hours to 1530 hours and 1605 hours to 0005 hours  
 Friday..... 0530 hours to 0920 hours, 1200 hours to 2000 hours and 2200 hours to 0500 hours  
 Saturday..... 0820 hours to 1420 hours

#### Meredith

Saturday, Sunday..... Closed  
 Monday..... 0300 hours to 1230 hours and 1555 hours to 2355 hours  
 Tuesday..... 0320 hours to 1230 hours and 1350 hours to 2350 hours  
 Wednesday, Friday..... 0530 hours to 1230 hours and 1555 hours to 2355 hours  
 Thursday..... 0320 hours to 1230 hours and 1450 hours to 2350 hours

Both Gheringhap and Meredith may be attended at other times as arranged (SW 387/94, WN 1/95)

01.01.1995

#### Oakleigh and Springvale

Commencing Sunday 1.1.95, the Signalbox hours for Oakleigh and Springvale will be:

#### Oakleigh

Monday to Saturday..... 0615 hours to 2015 hours each day  
 Sunday..... 0840 hours to 2200 hours

#### Springvale

Monday to Friday..... 0500 hours to 2100 hours each day  
 Saturday and Sunday..... Switched out

Amend page A9, Metro WTT Appendix

(O.1489/94, WN 1/95)

01.01.1995

#### Gheringhap - Maroona

From 0001 hours on 1.1.95, the Cressy line from Post 7 at Gheringhap to the Down Home at Maroona was closed for gauge conversion and will be worked as a works siding.

All rail vehicle movements into or out of the Cressy Works Siding Line will be under the direct control of the Rail Safeworking Co-ordinator. A Signaller must be on duty for any movements of work trains or track vehicles to or from the works siding. Movements from the works siding into Gheringhap or Maroona will be controlled by fixed signals.

At Gheringhap, the Rail Safeworking Co-ordinator must obtain permission from the Signaller at Gheringhap for all movements from 'B' Siding to 'A' siding and/or the Up Home signal from the Cressy Siding Line. Drivers of trains entering or departing Gheringhap must be qualified in the PTC Section Authority Safeworking System. (SW 407/94, WN 1/95)

03.01.1995

#### Maroona

On Tuesday 3.1.95, the Portland line was classified as the Primary Corridor. Points H were secured to lie for the Portland line. A Signaller must be in attendance when trains are to cross and will be required to reverse the fixed signals for the passage of trains. The fixed signals may only be placed to proceed in one direction. (SW 1/95, WN 2/95)

08.01.1995

#### Tottenham "B" Signalbox

Commencing Sunday 8.1.95, the Signalbox hours for Tottenham "B" will be 2300 hours Sunday until 0700 the following Saturday. Amend page A9, Metro WTT Appendix and page 17 MTP General Instructions(O.17/95)

(10.01.1995)

#### Section Authority System

Add the following as a new Rule II following section 19.37 of the Book of Rules:

II Section Authority System Operation of Sprinter Rail Cars

In Section Authority Working the Driver of a Sprinter Rail Car may only relinquish the Current Authority for the rear section when:

- a) A single unit Sprinter has passed and is clear of the location applicable in the Section Authority
- b) A multi unit Sprinter has been confirmed complete by:
  1. A roll-by inspection carried out when a cross has been completed;
  2. A competent employee informing the Driver the train is complete. (The competent employee may be the train Conductor ensuring that all units are attached when pass through a Block Point or a Crossing Station.)
- 3) Where the Driver receives the "Train Complete" message where electronic end-of-train detectors are provided. (SW 406/94, WN 1/95)

**(10.01.1995) Warrenheip**

The TAILS installations for Down trains at Warrenheip will be disabled until further notice. The Signaller, Warrenheip, must observe the passage of each train as required in Section 10.18, Rule 30, of the Book of Rules. In the case of Down trains, the Signaller must, when the train has passed the Signalbox complete and is proceeding towards Ballarat, inform the Driver accordingly. The Driver may then return the Rear Section Authority to the workstation. (SW 409/95, WN 1/95)

**14.01.1995 Dandenong**

On Saturday 14.01.95 the following alterations took affect:

- No 3 Track was slewed to its final alignment and temporary work carried out to raise the platform to its final height.
- Home U45 was recommissioned, but was fixed at the stop position. The baulk at the Down end of No 3 track was relocated in the Down direction to the Down side of Post U45. The temporary overhead isolator in No 3 track was removed.
- No 1 platform is 159 metres in length, measured from the Up end. An additional 35 metres at the Down end will remain closed and is fenced off from No 3 track.
- The baulks in Nos 4, 5, and 6 tracks were relocated from their present position to a point clear of the Down end points for each track.

These tracks (including No 3?) will remain dead until the new Dandenong Signal Control Panel is commissioned. (SW 12/95, WN 2/95)

**(17.01.1995) Tottenham "B" - Brooklyn - Newport**

Circular SW 272/94 (Standard Gauge Movements of Works Trains over the Dual Gauge Lines) has been replaced by SW 7/95. The new instructions expand on the actions taken by the Train Controller before permission can be given for a Standard Gauge train to move to or from the Standard Gauge main line:

1. An Operations Officer must be in attendance and confer with the Standard Gauge Train Controller to ensure that the single line section West Footscray Junction - McIntyre Loop is clear of all trains and track machines/vehicles.

Once the section is ascertained as being clear, the Train Controller must apply Blocking Commands to the Home Departure signals at McIntyre Loop and West Footscray Junction. Once this has been carried out, the Train Controller must inform the Operations Officer accordingly. The Blocking Commands must not be removed until:

- (a) The train/track machine is in clear on the Tottenham "B" - Brooklyn line in the rear of Post 8G.
- (b) The Operations Office has advised that all applicable points have been restored to the normal position and secured for the Standard Gauge main line.

Similar instructions apply for movements from the Brooklyn line. (SW 7/95, WN 2/95)

**(17.01.1995) Trawalla - Buangor**

The use of the Staff Exchange Boxes at Trawalla and Buangor is authorised for the following trains:

Trawalla.....9169 Monday to Friday and 9150 Saturday  
Buangor.....9145 Sunday, 9150 Monday, and 9169 Monday to Saturday

(SW 3/95, WN 2/95)

**(24.01.1995) South Kensington**

Signalling Diagram 17/94 replaced 14/93

(SW 309/94, WN 3/95)

**(24.01.1995) Gheringhap - Maroona**

In conjunction with the handover to the NRC of the line between Gheringhap to Maroona, all level crossing protection equipment between these two locations was de-activated and will remain out of use for the duration of the gauge conversion period. The level crossings affected are: Hamilton Highway at 95.922 km (Inverleigh), 138.062 km (Cressy) - including removal of the boom barriers, 146.560 km (Berrybank), and 175.342 km (Derrinallum); the Glenelg Highway at 213.365 km (Westmere) and Helendoite Road at 244.086 km (Maroona). (SW 13/95, WN 3/95)

**(31.01.1995) Speed over Facing Points held by hand**

Commencing forthwith, the speed restriction of all locomotives or trains operating over facing points held by hand was lowered from 25 km/h to 15 km/h. Amend page 11, MTP. (O 39/95, WN 4/95)

**(31.01.1995) Section Authority System**

Replace Section 19, Rule 4, clause (d) by

**(d) Text Test**

A Text Test must be conducted on the Locomotive Safeworking Display Units on each end of each locomotive prior to entering traffic.

In the case of Sprinter Rail Cars running in multiple, a Text Test must be conducted on the Locomotive Safeworking Display Units on the front of the leading end of the first Sprinter car and the rear of the trailing Sprinter rail car.

The Driver must request a Text Test message and check that each space on the screen displays a number, letter or symbol. The Driver must press the Acknowledge button to scroll the Text Test to the top screen, and again confirm that each space displays a number, letter or symbol.

If the Text Test fails, the Driver must inform the Train Controller who must arrange for the locomotive to be worked to a locomotive servicing depot.  
 If the Text Test fails on the leading locomotive or Sprinter rail car and no replacement Locomotive Safeworking Display Unit is available, the train must be worked on Electronic Manual Authorities.

Replaces Section 19, Rule 5, clauses (e) and (f) as follows:

(e) **Depart Button Instructions**

At each Crossing Station or Block Point, the driver must:

- (1) confirm the train has departed complete.
- (2) press the Departure Button twice to confirm the departure

The Train Controller must:

- (1) confirm the location report to update the Electronic Train Graph
- (2) access any alarm for out of course running
- (3) contact the Driver

(f) **Failure of Departure Button**

The Driver must

- (1) contact the Train Controller
- (2) confirm the time the train departed complete
- (3) ELECTRONIC MANUAL - dictate the Security Code for the completed section

The Train Controller must:

- (1) repeat back the location and time at which the report is being made
- (2) update the Electronic Train Graph to the time stated by the Driver
- (3) confirm that the Electronic Graph has updated

(SW 23/95, WN 4/95)

(31.01.1995) **Gheringhap and Meredith**

The block hours for Gheringhap and Meredith will be:

**Gheringhap**

Monday, Wednesdays, Fridays.....0510 hours to 1250 hours & 1620 hours to 0020 the next day  
 Tuesday, Thursday.....0410 hours until 1330 hours & 1620 hours until 0020 hours the next day  
 Saturdays.....0400 hours to 0920 hours

**Meredith**

Monday, Wednesdays, Fridays.....0720 hours to 2350 hours  
 Tuesday, Thursday.....0340 hours to 1140 hours and 1450 hours to 2320 hours

These hours will be reviewed when Section Authority System testing is completed. Should there be any alterations to these hours, the Train Controller, Central, must ensure all Drivers are informed.

(SW 19/95, WN 4/95)

31.01.1995 **West Tower**

On Monday 31.1.95 a 4D padlock was fitted to the Hand Locking Bar on the hand points leading from 'D' Balloon to the Webb Dock Line. The key to the padlock is secured to the Train Staff for the West Tower - Webb Dock section. Spare keys are retained by the Superintendent of Safeworking and the Operations Officer, Central Region.

It is necessary for the Hand Locking Bar to be unlocked and the points reversed for movements to the Webb Dock Line. Vehicles are not permitted to stand on the Webb Dock Line unless they are attached to a locomotive.

Insert on page 35-8 of the Book of Rules.

(SW 43/95, WN 6/95)

31.01.1995 **Wallan**

On Tuesday, 31.1.95, between the hours of 0800 and 1630 the existing Signalbox located on the Up platform was abolished and a new Signalbox

located within the station building on the Down platform was commissioned. A new 10 lever mechanical interlocking frame was provided, together with an illuminated track diagram. Posts 4 and 12 were abolished. The Home signals on Posts were converted from semaphore signals to light signals. The posts at Wallan were renumbered. Lever 5 operates the closing (switching) lever and lever 6 is equipped with an Annett lock which holds the key to unlock the crossover points.

Post	Particulars	Lever
1	Down Distant	10
2	Up Starting	4
3	Down Home arrival	9
4	Up Home departure	3
5	Down Home departure	8
6	Up Home arrival signal	2
7	Up Distant	1

Amend Diagram 28/91

(SW 21/95, WN 5/95)

31.01.1995 **Merbein**

On Monday 30.1.95 between 0800 hours and 1600 hours a new siding will be commissioned on the Down side of Merbein station at 853.850 km.

The main line points are equipped with a W5a lever and a Hand Locking Bar and padlock. Hand operated Hayes derails are provided at both ends of the siding. The clear length of the siding is 280 metres.

Amend page 44, MTP General Instructions. (SW 31/95, WN 5/95)

01.02.1995 **Woodend**

On Wednesday, 1.2.95, Post 9 was relocated in the Up direction to a position 200 metres from the main line crossover at the Down end of Woodend platform. Amend Diagram 16/40. (SW 29/95, WN 5/95)

02.02.1995 **Woodend**

On Thursday, 2.2.95, Post 6 was relocated in the Up direction to a position 200 metres from the main line crossover at the Down end of Woodend platform. Amend Diagram 16/40. (SW 29/95, WN 5/95)

02.02.1995 **Strathmerton**

From 0900 hours Thursday 2.2.1995 to 1500 hours Friday 3.2.95 the following signalling arrangements were made:

- All signals will be abolished except for the Up Home arrival from the Cobram line. The abolished signals are the: Down Home arrival (semaphore); Up Home departure (light); the Down Home departures (semaphore) at the junction; the Down Home departure (light) on Tocumwal line; the Up Inner Home Arrival (semaphore) and Up Outer Home arrival (light) on the Tocumwal line.
- The plunder locks on the points leading to No 2 Road at each end of the yard and on the junction points will be replaced by large pattern Master Key locks. The junction points will normally lie for the Tocumwal line.
- The Up Home (semaphore) from the Cobram line will be retained and will be worked from the quadrant lever located at the junction points. This signal will be interlocked with the junction points and cannot be cleared unless the points are set for the Cobram line.
- The Flashing Light signals at the Goulburn Valley Highway level crossing at the Up end of the yard will be altered to operate from a level crossing predictor. Standard Predictor signs will be provided. Push buttons will be retained to activate the Flashing Lights as required for shunting movements.

The Location Boards will be retained in their present position. (SW 22/95, WN 5/95)

04.02.1995 **Spencer Street No 2 Box (Metrol)**

On Saturday 4.2.95 the following track and signal alterations took place:

- † Points 628 and 652 (East Yard track to Up and Down Main Goods lines) were abolished.
- † Dwarfs 719 and 752 and Home 728 were abolished.
- † Controlled automatic 724 was converted to an uncontrolled automatic signal
- † Train stops were provided at Posts 721, 724, 726, and 822.

Amend Diagram 11/94 (SW 45/95, WN 6/95)

05.02.1995 **Donnybrook, Wallan, Kilmore East, Broadford**

From Monday 5.2.95 the block hours for these stations will be:

<b>Donnybrook</b>	
Monday to Friday.....	1600 hours to 2400 hours (or clearance of No 9319)
Saturday, Sunday.....	Switched Out
<b>Wallan</b>	
Monday to Friday.....	0640 hours to 1045 hours (or clearance of No 8314) and 1200 hours until 1500 hours (or clearance of No 9352)
Saturday .....	1615 hours to 1945 hours (or clearance of No 8337)
Sunday.....	Switched Out
<b>Kilmore East</b>	
Monday.....	0520 hours to 2400 hours
Tuesday to Friday.....	Continuously
Saturday.....	2400 hours to 0100 hours (or clearance of No 9250) and 0645 hours to 1150 (or clearance of No 8314) and 1800 hours to 2010 hours (or clearance of No 8337)
Sunday.....	1650 hours to 2020 hours (or clearance of No 8336)
<b>Broadford</b>	
Monday to Thursdays.....	0520 hours to 2015 hours (or clearance of No 8329)
Friday .....	0520 hours to 2235 hours (or clearance of 8333)
Saturday, Sunday.....	Switched Out

(SW 36/95, WN 6/95)

06.02.1995 **Dandenong**

At 0400 hours Monday, 6.2.95, the following track and signal alterations took place:

- † The new Signal Control Panel came into operation. The panel is of the unit lever type.
- † New Express/Stopping push buttons were provided for the level crossing protection at Webster Street for the Cranbourne line as well as Express/Stopping push buttons for the Gippsland line.

- † Post telephones will not be provided. All communication to the Signalbox will be by radio. A dedicated safeworking telephone will be provided in the Signalbox where Drivers of trains will have ready access. Drivers of Electric Trains are to use the Met Trains Radio, whilst Drivers of V/line trains may use the local radio for general information, but for Safeworking purposes they must use the Train to Base Radio to Central who will patch the call through to the Signalbox.
- † Track alterations at the Down end of the yard will connect No 3 Track and the Goods Yard to the new Main Line to Cranbourne (previously Siding P). Down Home DNG 728 was provided to apply from the new lead (old Siding P) to Cranbourne. A new set of points with derail and wheel crowder (Points 656) were provided to lead into 6, 7, 8, and 9 tracks from the main lines at the Down end of the yard. A Notice Board lettered "Trains must not pass this point unless Dwarf Signal No 756 is at proceed" has been provided at the exit of Nos 6, 7, 8, and 9 tracks. Competent employees must ensure that all derails are removed before a train or locomotive is permitted to proceed towards Dwarf 756.
- † New Stabling Sidings Nos 3 and 4 were provided at the Up end of the yard. The remotely controlled security gates are worked by lever 699 and are repeated open or closed on the diagram in the Signalbox. Down Dwarfs DNG 732 and DNG 742 applying from Stabling Sidings 3 and 4 were provided.
- † Dwarf 71 was converted to a Home signal.
- † Dwarf 70 and Up Repeating Post X1044 was abolished.
- † Points 629 were converted from a turnout into a crossover.
- † All signals have been renumbered:

Old Number	New Number						
1 (D 937)	DNG 700	33	DNG 734	41U	DNG 745	57	DNG 756
2	DNG 702	36	DNG 711	42	DNG 725	71	DNG 727
3	DNG 704	36U	DNG 721	44	DNG 706	75	DNG 717
4	DNG 724	37	DNG 713	45	DNG 716	76	DNG 719
11	DNG 712	38	DNG 705	45U	DNG 726	76U	DNG 729
12	DNG 722	39	DNG 715	47 (D991)	DNG 708	79 (X1022)	DNG 759
13	DNG 752	40	DNG 723	48	DNG 718	80 (D1022)	DNG 749
22	DNG 733	40U	DNG 743	53	DNG 736		
26	DNG 714	41	DNG 735	54	DNG 746		

- † Points, Catches, and Derails were renumbered:

Old Number	New Number						
5	602	19	652	32	605	65	607
6	633	20	653	34	634	69	617
9	643	27	624	35	621	72	629
16	622	28	604	50	606		
17	612	29	614	61	646		
18	642	30	625	63	626		

(SW 35/95, WN 5/95)

06.02.1995 **Strathmerton - Tocumwal**

This line will reopen on Monday 6.2.95. The Tocumwal line will be the Primary Corridor.

(SW 22/95, WN 5/95)

(07.02.1995) **Train Order System**

Replace the contents of Rule 9, Section 18, Book of Rules under the heading "Working of Fixed Signals when Trains are to Cross" with:

- (9) When trains are to cross, the Train Controller must ensure that the location is attended prior to the issue of a Train Order to the second train which is to approach the crossing station. Prior to the issue of the second Train Order, the Train Controller must confer with the Signaller and ensure that the fixed signals have been restored to the Stop position.

Replace the contents of Rule 11, Section 18, Book of Rules under the heading "Working of Fixed Signals at Certain Locations" with:

- (11) Where fixed signals are provided within Train Order Territory, and it is not possible to place these signals to proceed in both directions simultaneously, the following instructions must be observed. The Train Controller must jointly arrange with the Manager Operations for a competent employee to place the fixed signals to proceed for the passage of the train. The Train Controller must ensure

**(07.02.1995) Meredith**

Commencing forthwith the following switching instructions apply at Meredith

**To Switch In**

The Signaller, Meredith, must contact the Train Controller and request permission to switch the Signalbox in. The Train Controller may grant permission provided there are no Authorities applying to the Lal Lal Block Point - Lethbridge Block Point section.

The Signaller must then place the fixed signals to stop, test the fixed signals, and advise the Train Controller that the Signalbox is "switched in".

Upon being advised that the Signalbox is switched in, the Train Controller must alter the status of Meredith to "switched in" in the Workstation, and advise the Signaller the time it was switched in the workstation.

The Signaller must make an entry to that effect across the "Figures" column of the Train Register Book and the Train Controller must make a note in the Workstation.

Under no circumstances is the Train Controller to alter the status of Meredith to "Switched In" unless advised by the Signaller that Meredith Signalbox is "Switched In"

**To Switch Out**

The Signaller must obtain permission from the Train Controller to switch the Signalbox out. Providing there are no Authorities outstanding to the Lethbridge Block Point - Meredith or Meredith - Lal Lal Block Point sections, the Train Controller must alter the status of Meredith to "Switched Out" in the Workstation. The Train Controller must then advise accordingly and instruct the Signaller to place the Fixed Signals to proceed in both directions.

The Signaller must place the Switching lever to the "Switched Out" position and advise the Train Controller.

The Signaller must make an entry across the "Figures Column" of the Train Register Book as to the time permission was granted to switch the Signalbox out, and the actual time the Signalbox was switched out. The Train Controller must make a note in the Workstation to that effect.

Under no circumstances is the Signaller, Meredith, to switch the Signalbox out unless he is first advised by the Train Controller that the location is Switched Out in the Workstation, and the time that Meredith was switched out in the Workstation. (SW 28/95, WN 5/95)

**07.02.1995 Moama**

Between 0800 hours and 1600 hours on Tuesday 7.2.95, Flashing Light signals will be provided at the Moama Bowling Club access road level crossing (253.173 km). This will affect the level crossing protection at Shaw Street level crossing. (SW 48/95, WN 6/95)

**08.02.1995 Numurkah**

In conjunction with the operation of special drought relief trains (as per S.95/5044), permission is granted for vehicles to be stabled in No 2 Road at Numurkah between 8.2.95 and 15.2.95. Trains are not permitted to cross at Numurkah while vehicles are standing in No 2 Road. (SW 42/95, WN 6/95)

**14.02.1995 Mildura**

From Tuesday 14.1.95, Driver in Charge of Signalling Conditions will apply at Mildura for the arrival of train 9139, Tuesday to Saturday, and the departure of train 9142 on Sunday. The procedures in O.1117/93 must be observed. (SW 37/95, WN 5/95)

## LETTERS TO THE EDITOR

Peter Kay writes enclosing details of a reprint of 'Power Railway Signalling' by H. Rayner Wilson that he is producing:

The companion volume to the same author's Mechanical Railway Signalling reissued last year (still available). Another all-time classic, it describes in full detail all electrical and power signalling equipment then in use. It is now a very rare book fetching high prices when available on the secondhand market.

Due to the considerable size of the book, the reissue will be done in two parts. Part 2 (pp 208 onwards) will be done first and will be available shortly. This section of the book deals with Power Frames and power resignalling schemes. It covers all the then designs of Electro-Pneumatic, Low

Pressure Pneumatic, Electric, Electro-Mechanical, Hydraulic, etc., frames in great detail, and includes 240 scale drawings/photographs/plans, including many signalling layout plans of stations in the UK and USA resignalled with power frames.

The first part has 140 pages and costs £15.95. If any Australian members are interested in obtaining a copy, they can write to Andrew Waugh (address inside the front cover of this issue) by April 21st and we will arrange a bulk order to attempt to minimise the cost of postage and bank orders. Alternatively, they can contact Peter directly by writing to P.Kay, 22 Brunswick Street, Teignmouth, South Devon TQ14 8AF, though the above price won't include postage to Australia!

# BOMBO

Andrew Waugh

If sun, sand, and surf are the characteristics of Australia, then the small station at Bombo, NSW, is the quintessential Australian station. Situated immediately behind the Bombo beach on the outskirts of the NSW South Coast town of Kiama, it is difficult to imagine a station closer to the sea. But it is the land side of the line which keeps Bombo open as a safeworking location. The high quality basalt quarried at the State Quarry is used as ballast on the railways and trains of ballast regularly leave Bombo.

Bombo is a 'typical' centrally interlocked NSW single line crossing loop with bi-directional signalling provided on both the main and loop lines. A short dead end siding forms an extension of the loop line at the down end, and, although known as the 'Storage Siding', was probably mainly used to allow the crossing of longer trains than the loop itself could hold and as a cripple siding for ballast hoppers. The even shorter dead end siding at the up end of the loop had been lifted by 1988. Two other dead end sidings led from the main and the loop lines. As is common in NSW the points to these sidings are not connected to the interlocking frame in the signal box, but are worked from two small ground frames. The Quarry siding is located at the Sydney end of the yard at the foot of the 1 in 50 gradient to the top of the adjacent headland. The location causes some interesting signalling arrangements, which will be described later.

NSW has, in my view, the most complex and unusual signalling system in Australia. Although firmly based on British principles, NSW signalling practice has many unusual features.

I'd like to thank Eddie Oliver for his helpful comments on the article. Any remaining misunderstandings, of course, remain mine. The rules

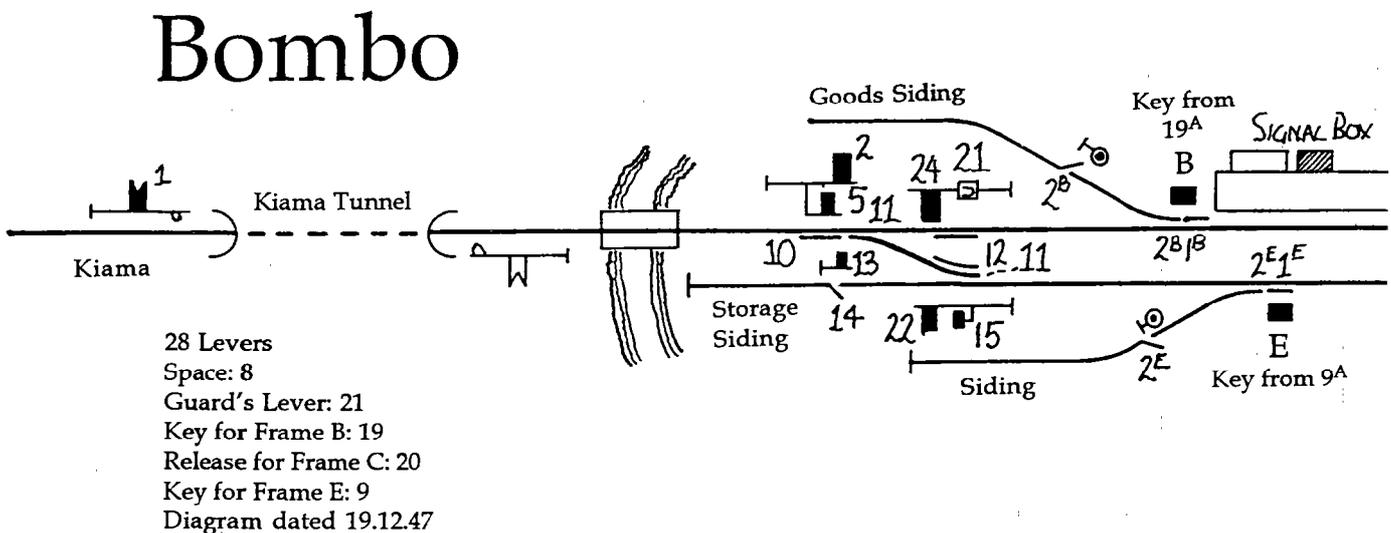
and definitions quoted come from the 1967 Part II General Appendix. This has recently been superseded, but I have not got a copy of the replacement. Donations will be gratefully accepted!

## History

Bombo was the original station for Kiama and was the southern terminus of the then isolated line from Clifton (north of Wollongong), through Wollongong, to North Kiama (Bombo) [1]. This line was opened on 9 November 1887 and was worked by Ordinary Train Staff and Ticket. It was renamed Kiama on 1 May 1889. Train Staff and Ticket working between Albion Park and Kiama (Bombo) was replaced by Tablet working on 28 November 1892.

The extension into Kiama itself was not opened until 2 June 1893 when the line was extended southwards to Bomaderry, on the north bank of the Shoalhaven River opposite Nowra. The delay was due to the heavy expenditure involved in cutting through the basalt ridges which run from the Illawarra Range to the sea. Such a ridge is immediately south of Bombo and required the construction of the 1546 foot Kiama tunnel between Bombo and Kiama. With the opening southwards, the station reverted to its original name of North Kiama and it was closed as a Tablet Post. The turntable was removed to Kiama on 12 April 1897. The station was renamed Bombo in June 1907.

The first rail connected quarry in the Bombo area was opened on 28 July 1889. The Bombo Quarry Siding was situated on the Down side of line near the present site of the Down Outer Home signal. A more elaborate set of sidings serving the same quarry were provided on 14 September 1890. The new points were further out, near the



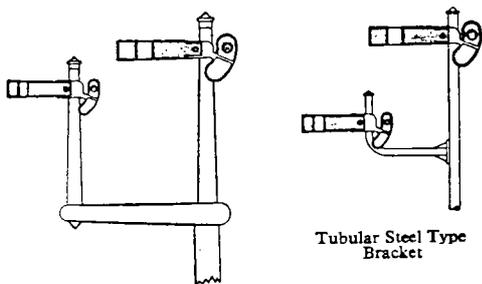
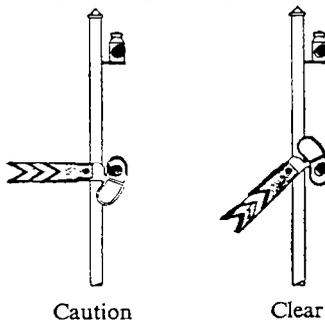


Figure 2: Crossing and refuge loop signals.



The fixed green upper light is provided to avoid the red distant light being mistaken for a stop signal.

Figure 3. The standard NSW distant signal. Note that the night indications are the same as if a home signal, fixed at clear, was mounted above the arm.

present site of the Distant signal. The original siding was renamed the South Siding and was retained as a safety siding to prevent runaways while trains were shunting the newer siding as the short section of track between the siding and North Kiama (Bombo) fell steeply down to the station at 1 in 50.

Cameron's Siding, serving a second quarry, was opened on 28 July 1890. This siding was situated just to the north of North Kiama at the foot of the grade.

The 1890 Bombo Quarry Siding was replaced by the

Bombo Railway Quarry Siding, situated opposite Cameron's Siding and opened on 11 October 1904. The old Bombo Quarry siding was converted into the Bombo Staging Siding to allow the ballast trains to be staged up the grade from the new quarry siding. The South Siding was presumably removed at the same time.

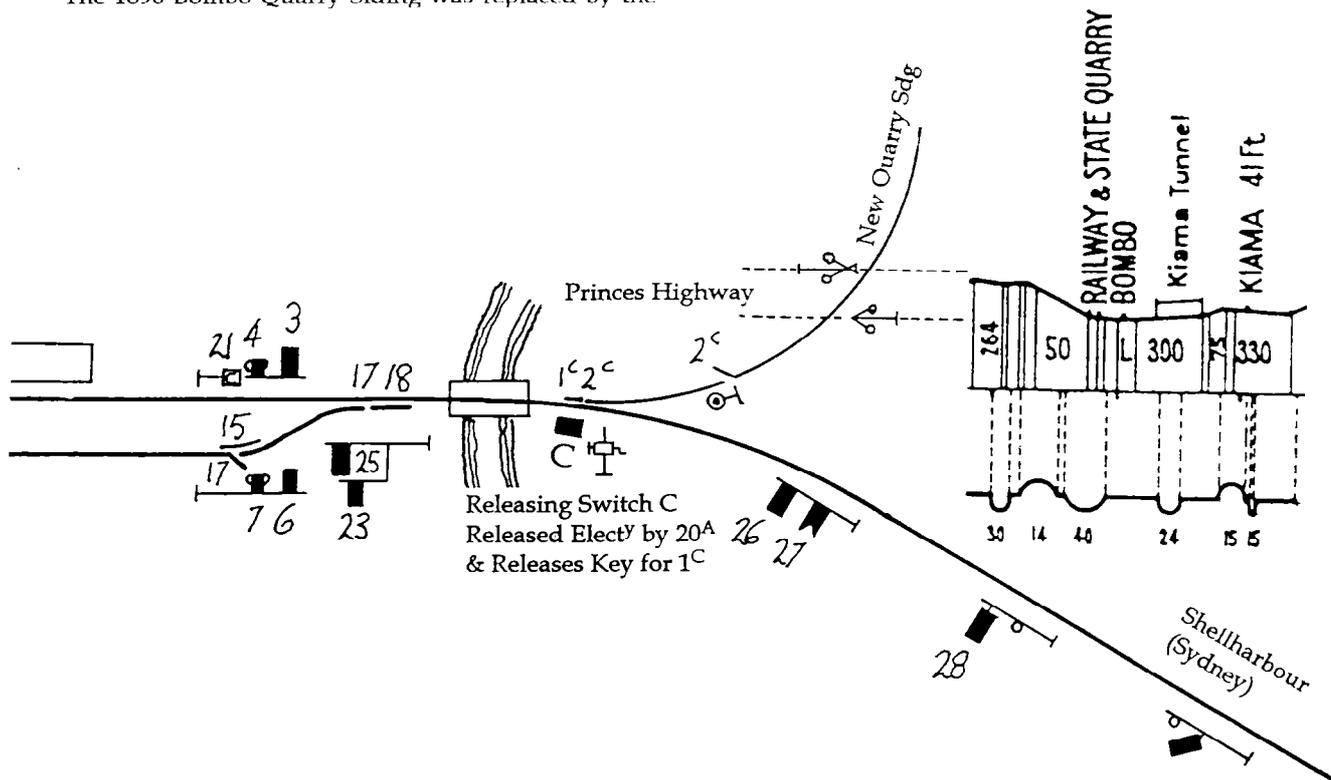
The Bombo State Quarry Siding was opened in 1921. Situated on the Up side of the line and closer to Bombo than Cameron's Siding or the Bombo Railway Quarry Siding, this is the only siding in use today. Cameron's Siding was closed on 8 January 1930 and the Bombo Railway Quarry Siding and the Bombo Staging Siding were abolished some time between 1946 and 1961.

Bombo was reopened as a staff station around 1923, this time as with Miniature Electric Staff instruments working to Shellharbour and Kiama. By 1931 it had been interlocked, and the layout has remained essentially the same since then.

**The Crossing Loop**

Mechanical signals in NSW are lower quadrant arms signals pivoted at the post. The arms generally taper gently from the pivot, so that the outer ends of the arms are wider than the inner ends and consequently look faintly odd to Victorian eyes. Home signals are conventionally coloured: red with a vertical white stripe on the front and white with a black stripe on the back.

The arms reading into and out of crossing or refuge loops (signals 5, 6, 22 and 23 at Bombo) are distinguished from the main line arms by the provision of a smaller ('medium sized') arm and lights, as shown in figure 2. The Up Home post (2/5) is currently of the 'tubular steel type bracket' variety. In this type the 'bracket' is formed from a simple steel pipe which is bent 90 degrees at the end to form a short doll - just long enough to bolt the arm pivot and lamp. The balance weight for the loop signal is located on the main post at the level of the arm and a light push rod operates the signal.



The two Up Starting signals (3 and 6) are 'track controlled', that is, they are fitted with signal reversers which automatically restore the arm to danger as the train passes the signal. NSW uses Reid's patent reversers; one of the very few pieces of Victorian signalling equipment to be adopted by the NSW railways.

To maximise the standing room in the loop, the lockbar on Points 11 is placed on the curved point blade, and the lockbar on Catch 16 is placed opposite the catch

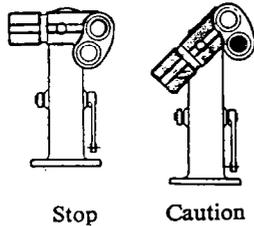


Figure 4. This arm is used for general shunting movements 'between running lines and sidings and within sidings'. This particular form is the mechanical dwarf signal, similar to signal 13.

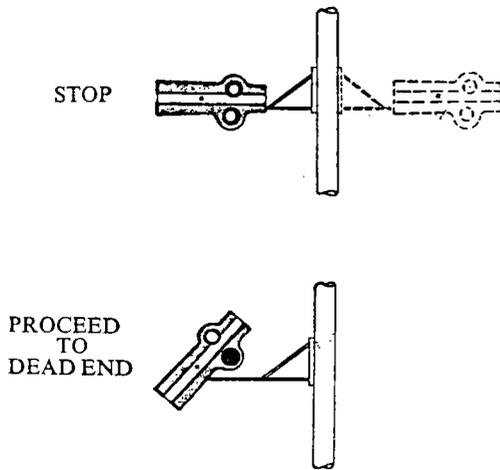


Figure 5. The 'Dead-end' signal which applies from a running line into a dead end. This shows a small green light when at clear.

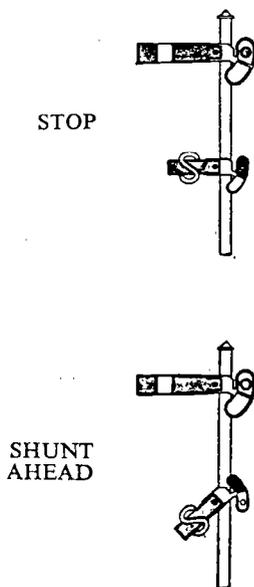


Figure 6. The 'Shunt-ahead' signal which 'authorises the passing of a starting signal at stop for shunting purposes'

blade. This allows the loop starting signals to be placed immediately in the rear of the points, instead of being some 40 feet from the points if the lockbars were placed in the usual position. As mentioned in the introduction, the short dead end siding at the up end had been removed by 1988 and a catch point provided. The provision of facing catch points in running lines used by passenger trains is a peculiarity of NSW layout practice, and is certainly not copied from Britain or any of the other Australian states. The catch point was, of course, fitted with a FPL, although I am not sure if the lockbar was retained or whether it had been replaced by a lever lock as the track in advance of signal 6 was track circuited. An electric clearance bar was situated in the main line in advance of signal 24.

**The Up Distant Signal**

Before becoming Signal Engineer of the NSW railways, C.B. Byles wrote a book on the principles of British signalling. In it he devoted an entire chapter to 'The Problem of the Distant Signal'. One aspect of this problem was the difficulty of distinguishing between home and distant signals at night, as the lights shown (red and green) were common to both. In the book, Byles commented favourably on the Indian practice of providing an upper green light on distant signals. The night aspects then became: green over red, caution; and green over green, clear. Shortly after becoming Signal Engineer in NSW, the NSW railways adopted this practice as their new standard (see figure 3) and it is likely that all remaining self contained distant signals in NSW are of this pattern, including the Up distant at Bombo (signal 1). The same principle was adopted for three position power signals, as will be describe in a later section. Bob Taaffe has described the development of the NSW distant signal in [2].

The front of a distant arm is red with a white chevron, and the back white with a black chevron.

The major disadvantages of this practice are a more expensive post (taller and requiring a second lamp platform) and the expense of maintaining the second lamp.

**Shunting Signals**

There were five different types of mechanical shunting signal used in NSW:

- † Shunting signals, for general shunting movements;
- † Wrong road signals, for movements in the wrong direction on a running line;
- † Dead end signals, for movements from a running line into a dead end siding;
- † Calling on signals, for authorising movements on a running line past a home signal at stop; and
- † Shunt ahead signals, for movements past a starting signal at stop for shunting purposes.

Generally, mechanical shunting signals were provided with a small arm coloured red with a horizontal white stripe (white with a black horizontal stripe on the back). The night indication was usually a small red light when the arm was on, and a small green light when the signal was off. Wrong-road, Calling-on, and Shunt-ahead arms differed from this standard in various ways and will be discussed below.

The only simple 'shunting signal' at Bombo was signal 15 which applied from the Storage Siding (13) to the Loop line. The 1967 GA (Part II) listed eight varieties of shunting signal (including power and light varieties),

but signal 15 is a mechanical dwarf shunting signal (figure 4). As the name implies, this was a low signal designed for use in restricted clearances such as between tracks. A dwarf signal consists of a cast iron body with a very small cast iron arm. The arm is split into two pieces by a vertical hinge in line with the body (which can be seen in figure 4). This allows the projecting end of the arm to fold back out of the way if it is hit by an object (such as a shunter!) projecting from a train.

Signal 15, governing entry into the Storage Siding, is an example of a 'dead end' signal (figure 5). This type of signal is provided where movements are to be made from a running line into a short dead-end siding (as at Bombo) or for restricted movements from a running line into a yard or loop. A 'dead end' signal consists of a short centre balanced ('tumbler') arm fitted to a bracket projecting to the left or right of the post carrying the arm for the main route. The spectacles are fitted into the arm itself, just to the right of the pivot.

The points to the Quarry Siding are in advance of the Starting signals (3 and 6) for the staff section Bombo - Shellharbour. Shunt-ahead signals (figure 6) are provided beneath both these Starting signals to allow shunting movements to pass the Starting signals at stop and enter the Quarry Siding. Shunt-ahead and Calling-on signals both authorise shunting movements past a home signal at danger, but Shunt-ahead arms differ from Calling-on arms in that they authorise a movement past the starting signal and into the section. Shunt-ahead arms are coloured solid red and are fitted with a large white letter 'S'. The back of the arm is coloured white with a black stripe, and the back of the letter 'S' is also white. The arm shows a small green light when at clear, but no light when at stop as Shunt-ahead arms are always placed beneath Home signals. The interlocking at Bombo is arranged so that lever 20 (the releasing lever for the switch at the Quarry Siding points) must be reversed before the Shunt-ahead signals can be cleared.

Bombo does not have examples of Wrong-road or Calling-on arms, so these will be left for another article.

### Non Signalled Sidings

All of the remaining sidings at Bombo are worked from small two lever ground frames ('C', 'B' and 'E'). (Frame 'A' is, by convention, the main interlocking frame, Frame 'D' worked the points to the removed Bombo Railway Quarry Siding, and Lever 'F' works a set of catch points in the Quarry Siding.) The working of Frame C will be described in the next section. Frames B and E are interlocked with the main frame in the signal box by means of Annett Keys.

The use of ground frames to work siding points is very common in NSW. The advantage is a significant reduction in the cost of the signalling installation as no shunting signals need be provided and the main interlocking frame (and hence signal box) can be shorter and cheaper. A member of staff must work with the shunting movement to couple and uncouple anyway, and they can easily operate the ground frames as required. The major disadvantage is the time consumed in physically transferring the Annett key from the signal box

At many country stations, Frame 'A' (the main frame

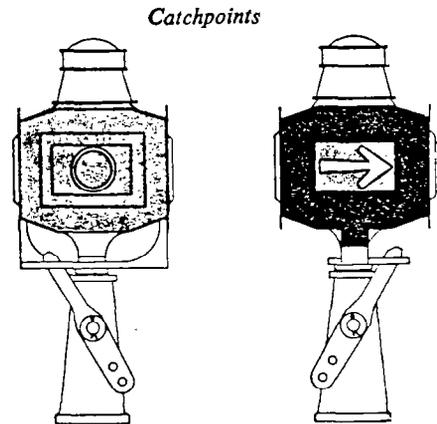


Figure 7. Arrow type point indicator for catch points. The diagram on the left is when the catch is open and shows a red target. The diagram on the right is for the catch closed and shows a white arrow in a red ground.

ground frames. Some locations had ground frames with more levers than the frame in the signal box.

The ground frames are fitted with direct action tappet interlocking and range up to about six levers in size (a slightly different pattern frame is used for larger ground frames). Two lever ground frames were probably the most common, however, and were used almost everywhere a simple non-interlocked main line turnout was required. At smaller staff stations, they would be used to work the loop points. At non-staff stations they would operate the staff locked points; the Annett key in this case being formed on the staff, or kept in a drawer lock release or releasing switch.

The arrangement of equipment at a turnout worked from a two lever ground frame was equally standard. The main line points were rodded to the catch or safety points in the siding and worked by Lever 2. A point indicator was often provided adjacent to the catch or safety points and worked in conjunction with the points. A FPL, but not a lockbar, was provided on the main line points. This was worked by Lever 1 and secured the points for the main line (only) when the lever was normal. The Annett lock was also fitted to Lever 1 and secured the lever normal (i.e. main line points locked normal).

The type of point indicator provided at Bombo is shown in figure 7. The design of this point indicator is very similar to the Victorian point indicators. When the catch is open, a red target is shown (red light at night, with a white back light in the trailing direction). A white arrow (illuminated at night) is shown in both directions when the catch points are closed.

### The Quarry Siding

The Quarry Siding is also worked from a two lever ground frame. However, the distance from the signal box is too great for the manual transference of an Annett key to be convenient. Instead, a 'releasing switch' is provided near Frame C. The complete 'releasing switch' is a post in the ground. On one side of the post is mounted a telephone. On the other side is the releasing switch itself, with an Annett lock mounted immediately below it. The lock and the standard instructions for operation are:

- (i) When it is required to work the points, the guard

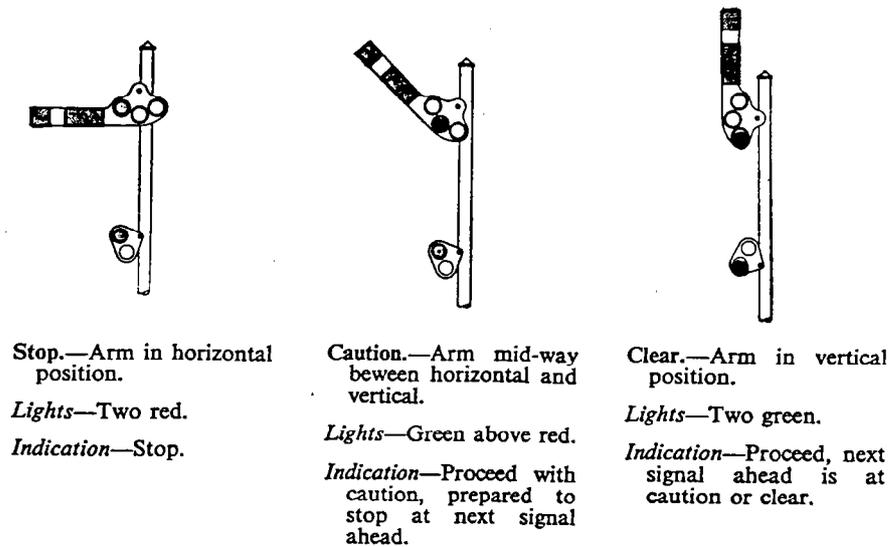


Figure 8. An upper quadrant home signal, similar to signal 28. The day indications are given by the semaphore arm in the usual manner. The night indications are given by the two spectacle plates acting in conjunction and are identical to the indications which would be given by a home signal mounted above a distant signal.

reverse the releasing lever [...]. The guard or shunter will then proceed as follows:-

- 1) Unlock the door of the releasing switch; and, provided the indicator shows "Free", press the button, also, at the same time, turn the handle from "N" to "R", thereby releasing the key below [...]
- 2) Turn and remove the key, and with it unlock the releasing lever in the ground frame. [...]

In addition to the Annett lock on Lever 1 of Frame C, Lever 2 also has an Annett lock fitted to it. The key in this second lock is released when the lever is reversed (i.e. points set for a movement to or from the Quarry Siding) and is used to unlock 'Lever F' which works a second catch point in the Quarry Siding beyond the Princes Highway (not shown on the diagram). This 'sequential' Annett locking ensures that the route has been set up from the Siding onto the main line before the second catch point is closed.

### Signalling at the Up end of the yard

The signalling at the up end of Bombo is complicated by the Quarry Siding and the steep descending grade as the line leaves the headland and descends to beach level.

The first signal past the Quarry Siding is the Down Home<sup>1</sup> signal (signal 26). This has a distant arm (signal 27) underneath it known as the 'Inner Distant'. This could be cleared when all the main line home signals in advance of it (homes 24, 25, and 26) were clear. No slot was provided on the post to control the distant signal as the levers 26 and 27 were interlocked together. Inner Distant was probably covered to exempt home 26 from Rule 60(a): 'The provisions of Rule 60(a) which states that, when the starting signal is at "stop", a home signal must not be cleared until the train has been brought quite or nearly to a stand, will not apply to an outer home signal [when a] distant signal arm is provided below the outer home signal', despite signal 26 being the Home signal and not the Outer Home. This post was, effectively, a three position signal.

The next post, the Down Outer Home (signal 28), is a true three position signal. It is located at the top of the 1 in 50 grade, undoubtedly to allow trains to be accepted

from Shellharbour while the Quarry Siding was being shunted. Signal 28 is an upper quadrant semaphore (see figure 8). The day aspects are what you would expect: stop, arm horizontal; caution, arm at 45 degrees; and clear, arm vertical. The night aspects, however, mimic a two position signal with home signal over distant (like 26/27): stop, red over red; caution, green over red; and clear, green over green. This is achieved by providing two separate spectacle plates<sup>2</sup>. The upper one is a normal three position upper quadrant spectacle plate, however both the caution and clear positions are fitted with green spectacles. The lower spectacle plate has two positions and is driven by a rod connection to the upper plate. The two colours are red (upper) and green (lower). The drive is arranged so that the lower spectacle plate does not move while the arm drives from stop to caution, but is lifted to show green when the arm drives from caution to clear.

The arm is red with a white stripe on the front, and white with a black stripe on the back. Signal 28 was fitted with a plate bearing its 'Mileage designation number' Signal 28's number was '72.9' indicating that it was a Down signal roughly 72.9 miles from Sydney (an Up signal would have an odd fraction).

The distant signal for signal 28 also acts as the Down distant for Bombo. The distant signal is also an upper quadrant semaphore and has the same aspects as signal 28 except that it cannot display 'stop' (see figure 9). The upper quadrant distant signal is distinguished from an upper quadrant home by the arm being beneath the second light. The lower spectacle plate has a green lens in the clear position, a red lens in the caution position, and the stop position is blanked out. As for a mechanical distant signal, the upper light is a simple fixed green light. Unlike a mechanical distant, however, the arm is square ended with a white vertical strip.

### The signal box

The signal box at Bombo is a standard platform level box constructed out of pre-cast concrete components with a corrugated iron roof. Windows were provided in the front wall, facing the track, and in the north wall. The door was in the front wall and opened onto the platform.

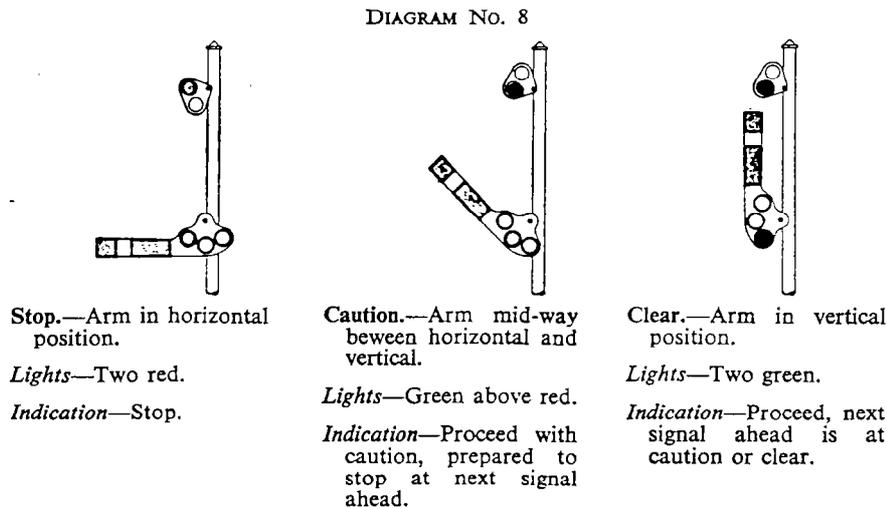


Figure 9. An upper quadrant distant signal. This one is shown working in three positions with an upper spectacle plate. The down distant at Bombo only worked in two positions, caution and clear, and so the upper spectacle plate was replaced by a fixed green light.

Since the door also faced straight onto the ocean, a small porch was provided to give a little shelter. Bombo was also provided with a small wooden station building containing the usual booking office, store, and waiting room, but the staff worked in the signal box and the booking office was generally locked up. I suspect that few tickets are sold at Bombo.

The box contains a 28 lever frame which appeared to be of the standard NSW cam & tappet type. Platform level boxes in NSW are usually arranged with the frame at the back of the signal box, and Bombo is no exception. Lever plates are fitted to the levers, and those for Bombo are reproduced in table 1. Lever 28 works the Down Outer Home signal and the lever worked in three positions. When reversed to the centre notch, signal 28 would clear to caution. The lever lead indicates that this can be done if the line was clear between the Home (26) and the Outer Home. When fully reversed, the signal would go to clear, but this requires either the route into the platform road or the loop to be set up. The Annett locks for Ground Frames B and E are fixed on levers 9 and 19, and the keys can be removed when the lever was reversed. Lever 20 is the releasing lever for the Quarry Siding Releasing Switch. Lever 21 is the Guard's lever, and its use will be described in the next section.

The signal box diagram and a small illuminated diagram are mounted above the lever frame. The illuminated diagram is of the 'ball' type, where a white 'ball' changes to red when a train occupies the track. This mechanism was popular in NSW and is also used in indicators. Only three sections of track are indicated on the diagram. The first from the Down distant to signal 28; the second from signal 28 to signals 23/25; and the third to signals 3 and 6.

The two miniature electric staff instruments are positioned against the south wall of the box, mounted on the attractive cast iron bases used in NSW. Both instruments are battery instruments; an A pattern instrument works to Shellharbour, and a B pattern instrument to Kiama. Mounted on the wall above the two instruments are the automatic operators, the use of which will be described in the next section.

### Unattended Working

Most railway systems with extensive sections of single track provide switching out equipment at staff stations to lengthen sections during periods of light traffic. Although NSW had a few examples of switching apparatus, it was more common to provide equipment to work trains though staff stations while they are unattended.

An automatic operator is provided for the staff instrument. This effectively replaces the signalman at a remote staff station, and allows a staff to be withdrawn from an staff instrument, even though the signalman is not present at the station at the other end of the section. Automatic operators could be switched in or out as required and special bell signals were provided: 3-4-3 ("Switching staff instrument from ordinary to automatic working") and 3-3-3 ("Switching staff instrument from automatic to ordinary working").

Automatic operators were very common at staff stations, even where a signalman normally attends for all trains. This allows a staff to be extracted for the first train of the day, or if the signalman at the other end of the section is busy with other duties. However, it was also quite common for Guards to work some trains through unattended staff stations. The Guard would open up the signal box and operate the frame and staff instruments as required. Before leaving, the signals would be cleared to allow the next train to arrive into the platform. This caused a problem at fully interlocked crossing loops (such as Bombo) as the starting signal could not be cleared for the train to depart.

The solution to this problem adopted in NSW was to provide special indicators on the main line starting signals. These took the form of a large, illuminated, letter 'U'. Normally the indicators are obscured by a weighted flap worked by a special lever in the frame; the 'Guard's Lever'. The display of the 'U' authorises the driver to pass the starting signal at danger:

- vi) When the station is unattended, the driver of a train, after ascertaining that the indicator is displaying the letter "U", and provided he is in possession of the electric staff for the forward section, may pass the main line starting signal at

1 UP DISTANT 10.3 2	2 UP MAIN HOME 10	3 UP STARTING MAIN	4 UP SHUNT AHEAD MAIN	5 UP HOME MAIN TO LOOP 11.12.10	6 UP STARTING LOOP 17.16	7 UP SHUNT AHEAD TO MAIN 20.17.16
	9 KEY FOR E	10 FPL 11 POINTS	11 UP MAIN	12 FPL 11 POINTS	13 STORAGE SIDING TO LOOP 14	14 CATCH POINTS IN STORAGE SIDING
15 LOOP TO STORAGE SIDING 12.14	16 FPL 17 POINTS	17 DOWN MAIN LOOP	18 FPL 17 POINTS	19 KEY FOR B	20 RELEASE FOR RELSW. C	21 GUARDS LEVER 10.18 OR 10.18.2 OR 10.18.25 26.28
22 DOWN STARTING LOOP TO MAIN 11.12	23 DOWN SECOND HOME MAIN TO LOOP 17.16.18	24 DOWN STARTING MAIN	25 DOWN SECOND HOME MAIN 18	26 DOWN HOME MAIN	27 DOWN INNER DISTANT 18.24 25.26	28 DOWN OUTER HOME  CAUTION NIL CLEAR 18.25.26 OR 17.16 18.23.26

The lever leads for Bombo. The text and arrangement of the leads follows the actual leads. Except for lever 21, the leads are cast brass with raised letters. The background is painted black. Lever 21 (formerly a spare lever before being brought into use as the Guard's lever) is brass (or similar coloured alloyed) with engraved lettering. The engraving is painted black. Lever 8 is not present in the machine.

"stop", on being instructed to do so by the guard  
[...]

At Bombo, lever 21 is the Guard's lever and it works 'U' indicators under signals 3 and 24. From the lever plates, it can be seen that reversing lever 21 not only displays the letter 'U', but it also ensures that the main line points are locked and that the Guard has set up one of the three scenarios for the next arriving train. These are described on the plate attached to the wall of Bombo signal box, shown at the foot of the page. If the next train will not cross an opposing train at Bombo, the Guard will clear the signals so that the next train can arrive into

the platform. If a cross is to be performed, however, the signals controlling entrance to the platform are left at danger and the Guard of the first train to arrival will take charge of the signalling. The Guard's lever and 'U' indicators are relatively recent provisions at Bombo, being installed between 1988 and 1993.

#### The future

When I last visited Bombo a little over two years ago, preparations were well advanced for relaying points 11 at the down end of the station. I am not sure of the full extent of this work, but the mechanical locking bars were to be replaced by track circuits. The box diagram and the illuminated diagram was to be replaced with a new illuminated diagram with, I am sure, not half the charm of the old diagrams.

In the longer term, it is likely that CTC will be extended south of Dapto to at least Kiama. The plan was for the box and mechanical signals to be abolished, but Bombo would remain as a safeworking location to allow ballast trains to shunt while working the Quarry Siding.

#### References

[1] *The Illawarra Line, Part 5, Wollongong - Bombo and Part 6 Bombo - Nowra*, C.C. Singleton, ARHS Bulletin, No 106 (Aug 46), 107 (Sept 46), 108 (Oct 46)

[2] *The Development of the Distant Signal Indication in New South Wales*, R.T. Taaffe, ARHS Bulletin, No 474 (Apr 77), 475 (May 77), 476 (Jun 77)

1 A note on mechanical signal nomenclature in NSW. The first home signal protecting points is the 'Home' signal. Succeeding homes are known as the 'Second Home', 'Third Home' and so on up to the 'Starting' signal, which authorises entry into the next section. An 'Outer' home is in the rear of the Home signal and does not protect any points. At Bombo, signal 28 is an Outer Home, signal 26 the Home, signals 23 and 25 Second Homes, and signals 22 and 24 Starting signals.

2 Later upper quadrant signals in NSW use a small two aspect colour light signal instead of the lower spectacle plate.

BOMBO INSTRUCTIONS TO GUARDS	
When the Signal Box is unattended, Guards or Second Persons will be held responsible for leaving the signals in position for the next train to arrive as follows:	
For next arriving	
DOWN TRAIN: See that levers 10, 18, 25, 26, 28, 21 are pulled over	
OR	
UP TRAIN: See that levers 10, 18, 2, 21 are pulled over	