

SIGNALLING RECORD SOCIETY (VICTORIA)

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Dead line for January 1983 issue is 12 December 1982.
NEXT MEETING: 19 November 1982.
VENUE: A.R.H.S. Library Room, Windsor Railway Station.

MINUTES OF SEPTEMBER 1982 MEETING

HELD AT: A.R.H.S. Library Room, Windsor Railway Station. Meeting commenced at 2016 hours.

PRESENT: J. McLean (Leader), G. Inglis (Minutes Secretary), W. Bates, W. Brook, A. Cohn, C. Guy, R. Jeffries, A. Jungwirth, J. McCallum, B. McCurry, S. McLean, I. Michaelson, T. Penn, G. Price, J. Sinnatt, R. Weiss.

Mr Fry and J. (Churchie) Churchward were welcomed to the meeting.

APOLOGIES: D. Langley (work).

MINUTES OF PREVIOUS MEETING: adopted as read. (Weiss/Jungwirth)

BUSINESS ARISING: Show Day Tour - \$75 paid and verbal permission granted for tour to proceed. Booking arrangements and the reasons for the cost being raised from \$3 to \$4 were outlined.

CORRESPONDENCE: Outwards - to V.R. payment for tour.

Inwards - from A.R.H.S. re arrangements concerning telephone at Library Room, also receipt for \$20 donation.

from SRSNSW 'Blocking Back' Nos 15 & 16.

from Stewart Sharp who is organising a tour of India. Any takers?

from Jeff Asay - U.S. Timetable collector & correspondent of J. McLean who writes "I have been enjoying the magazines you sent. Thanks very much. I find the S.R.S. quite interesting. I don't believe there is anything like it in the U.S. From time to time a rail-road article will discuss signal towers or the intricacies of interlocking but it will be pretty basic and have little history. Obviously S.R.S. members are dedicated to their hobby. One thing which strikes me is that Australia and England have many more signal towers than the U.S. I remember my trip from London to Manchester and thinking how many interlockings there were. I suppose we had more interlockings in the past but the total number could not even have approached what you still have today..."

GENERAL BUSINESS: 1. Bayswater - new interlocking now in use.

2. Metrol - "ill". Scheduled introduction of Metrol is now put back to Cup weekend.

3. Pimpinio Loop - staff & ticket operation between Horsham, Pimpinio Loop and Dimboola has been closely studied by some S.R.S. members recently. Jungi was even around at the right time to see a newly worded (i.e. pre-printed form with fill the gaps for locations) Line Clear Report issued - a rather momentous occasion.

4. BR Safeworking - According to recent information, printed relief forms were no longer to be used. Instead everything will be done verbally by electric telephone. (P.S. British Post Office has also closed down the internal system of telegrams too.)

5. Yarrawonga - The railway bus may yet be obliged to carry the staff for the section to avoid bus/train meets on local level crossings.

6. Line Upgrading - single line working between Seymour and Mangalore will take place soon to allow track rehabilitation work to proceed.

7. Macedon - a new home-grown electro-hydraulic machine has been installed on the up distant signal. According to Jungi (him again) the new machines bolt holes match those on the existing mounting plates and thus couldn't have been designed that way.

8. Puzzle - The first railway in Australia began in September 1854 and the first recorded use of telegraph was 1855. Therefore what kind of safeworking existed?

SYLLABUS ITEM: Rob Weiss then showed a very interesting series of slides of Western Australian boxes and safeworking installations. Different but quite recognisable and thoroughly enjoyed by all.

MEETING CLOSED: at ? hours.

--oOo--

SIGNALLING ALTERATIONS

- 28/7/1982 TOTTENHAM. Up Independent home signal Post No 1G and the two lever ground frame between the up goods line and No 2 classification siding were removed.
- 1/8/1982 FLINDERS STREET "E" BOX. Illuminated letter "A" lights were added to signals Nos 352, 353, 354, 362, 363, 364, 365, 395, 772, 774, 775, 776, 782, 785, 786, 796, 798, 982, 983, 986 and 992.
- 1/8/1982 BURNLEY-CAMBERWELL-KOOYONG. Train Number Transmitters were brought into use between Burnley and Camberwell, and between Burnley and Kooyong. These transmitters are to be used in lieu of the Electric Train Description bells from 2000 hours until the last train on Monday-Thursday and from 2000 hours Friday until the last train on Saturdays.
- 3/8/1982 NEWPORT WORKSHOPS No 2 BOX. The interlocking frame and signals were taken out of use and abolished.
- 5/8/1982 WANGARATTA. Flashing lights have been brought into operation at Taminick Road and Gravel Pits Road. Both locations work automatically for up and down, broad or standard movements.
- 5/8/1982 LALBERT. Closed as an electric staff station, the new section is Quambatook-Ultima. The plunger locks and signals have been retained for the time being, the signals being secured reverse.
- 6/8/1982 GEELONG-MAITLAND STREET SIGNAL BOX. This signal box has been abolished following the closure of the adjacent level crossing. Signal Post No 5 was abolished and the signals on Post 92 are worked by Geelong "A" Box.
- 10/8/1982 DIAPUR. The down home signal Post No 3 was relocated 37 metres in the up direction and the down end points relocated 3 metres in the down direction. The down end of No 12 points was abolished and the up end spiked normal.
- 12/8/1982 SPRINGHURST. Flashing lights were brought into operation at Cannings Crossing level crossing. A new down starting light signal Post 10 was also provided.
- 16/8/1982 DINGEE. The up home signal was relocated 107 metres in the down direction.
- WN34/1982 RINGWOOD EAST-LILYDALE. New diagram No 14/82 issued cancelling diagram No 14/79.
- WN34/1982 CRAIGIEBURN, DONNYBROOK & WALLAN. New diagram No 18/82 issued cancelling diagrams Nos 13/61 Craigieburn, 19/62 Donnybrook and 3/61 Wallan.
- WN34/1982 SPRINGHURST. New diagram No 2/82 issued cancelling diagram No 6/80.
- 18/8/1982 REDCLIFFS-MILDURA. New diagram No 16/82 issued cancelling diagram No 25/77. Flashing lights brought into operation at Irymple Avenue level crossing on the upside of Irymple station. Push button controls for the flashing lights are located at the up end points and on the platform. These push buttons operate the new up two position home (light) signal located on the down side of the crossing. Stop/Start push buttons are provided at the crossing for manual operation of the flashing lights.
- 18/8/1982 CHELTENHAM. Pedestrian boom barriers were installed at Charman Road.
- 18/8/1982 SPRINGHURST. The down home signal Post 4 was moved 60 metres in

- 30/8/1982 DINGEE. The down end plunger locked points were relocated 206 metres in the down direction.
- 2/9/1982 ORMOND. A 5P key operated switch was provided to enable the up and down automatic signals (F448 and F441 respectively) to be put back to stop. The switch is operated when O.D. Loads are passing over the crossing. The boom barrier operation is not suppressed by this switch.
- 3/9/1982 NUNAWADING. A similar 5P key operated switch was provided to put automatics L640 and L637 back to stop.
- 8/9/1982 WINCHELSEA. The down end extension of No 3 road was abolished and a scotch block was provided on the down end of No 3 road.
- 11/9/1982 BAYSWATER. New diagram No 27/82 (Heathmont-Belgrave) was issued cancelling diagram No 16/77. A new island platform was brought into service. The existing signals and control panel were abolished, and a new unit lever control panel was brought into service to operate the new signals provided. Signals Nos 306, 307 and 309, dwarfs 303, 305, 312, 313, 314 and 315, and automatic signal No 206 were provided. Post No 4 was renumbered No 304 and up home signal No 22 was converted to automatic signal L922. L929 was renumbered 302. The flashing lights at Scorsby Road were converted to boom barriers. Pedestrian boom barriers were provided at both Scorsby Road and Mountain Highway level crossings.
- 12/9/1982 WERRIBEE. No 5 points were relocated 13 metres in an up direction and down home signals Nos 6 and 18 were placed on a gantry.
- 16/9/1982 ELMORE. Flashing lights were installed at Raywood Road level crossing. Two down home (light) signals were provided on a bracket post on the upside of the crossing. The signal for the Echuca line is worked from the platform or the down end points, and the signal for the Diggora West line is worked from the down end points.
- 16/9/1982 TYNONG. The goods siding together with associated switch locks was abolished. Up home signal No D2282 was converted to an automatic signal.
- 19/9/1982 WYCHEPROOF. The annett locked points leading to the dock were abolished and the two annett locks were removed from the platform signal quadrants.
- 21/9/1982 DIGGERS REST. New signalling diagram No 32/82 issued cancelling diagram No 41/81. The interlocked gates were abolished and boom barriers provided in lieu. The boom barriers work automatically for all movements subsequent to the necessary fixed signal being at proceed. Two dwarf signals Nos 5 & 6 were provided for set back movements across the crossing and levers 3 & 11 working the down and up home signals respectively were provided with lever locks. Posts Nos 3B, 4, 5 & 6 were renumbered 4, 7, 8 & 9 respectively. A "Limit of Shunt" board was provided on the down line.
- 22/9/1982 BUCKRABANYULB. The plunger locking on the main line points was replaced by staff locking. The home signals were abolished.
- 24/9/1982 MARONG. The down end plunger locked points leading to No 2 road were abolished.
- 26/9/1982 CAULFIELD. Automatic signals Nos F364 and D362 were converted to light signals.
- 26/9/1982 WERRIBEE. Up home signal No 4 was relocated to a signal bridge at the up end of the platform.
- 29/9/1982 OUYEN. Flashing lights were provided at William Street level crossing on the down side of Ouyen. A new down two position light home signal was provided and the up semaphore signal (lever 2) was replaced by a light up home signal, Post No 6, electrically repeated to the signal box.
- 30/9/1982 BOINKA. Flashing lights were provided at Ouyen Highway level crossing and the operation of the lights is automatic for all trains.
- WN41/1982 CITY CIRCLE & CLIFTON HILL LOOP. New signalling diagram No 32/81 was issued. The City Circle & Clifton Hill Loop Line will open for passenger traffic with the introduction of the new Metropolitan Working Timetable on Sunday, 31 October 1982.

SINGLE LINE AUTOMATIC SIGNALLING
(THE ABSOLUTE PERMISSIVE BLOCK SYSTEM)

by John F. Sinnatt.

(continued)

INTERMEDIATE SIDINGS

1. Points secured by Padlocked Switch Stands

Points leading to intermediate sidings in APB sections are detected normal by the signals on each side. Where the points were not electrically released and secured only by padlocked switchstands, a train which had been side tracked and was ready to depart had to wait a specified period - three minutes on at least one road - after the points were set before it was permitted to occupy the main line again.

In Figure 18, when the points are reversed for a train to come out of the siding signals 3 and 6 will go back to Stop, but if the section between them is unoccupied, neither's stick relay will be operated, so that signals 1 and 8 will go back to Stop also. The specified delay of x minutes would be to allow time for any train which might be approaching to react to the changed signal indications.

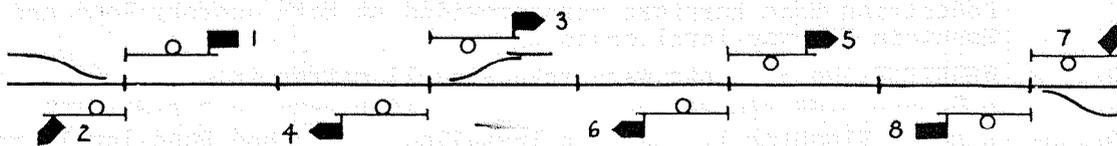


Figure 18.

If the train from the siding travelled to the right, then when the van passed signal 5, as 5SR would have operated, signal 3 would go to Warning and signal 1 would go straight from Stop to Proceed. Similarly, if the train travelled to the left, signals 6 and 8 would both clear when the van passed 4.

If the train merely shunted the siding in passing and portion was left on the main line, the signals would work as for a through train.

2. Points secured by Electric Switch Locks

Siding points in APB sections may be secured by devices known as Electric Switch Locks and this is the general practice in Australia and New Zealand, at least. Typical arrangements for a siding on the Geelong line will be described here.

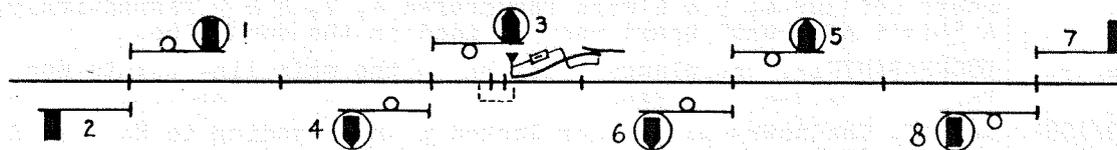


Figure 19.

In Figure 19, for the points to be released for a train to come out of the siding, the track circuits between signals 3 and 6 must be unoccupied and these signals must be at Stop. This implies that there must be no Down train approaching signal 3 or no Up train approaching signal 6, and that signals 1 and 8 must also both be at Stop. This is so because otherwise, as explained in section 5.1, either signal 3 or 6 would be off. There may, however, be a train travelling away from the siding, i.e. a Down train ahead of signal 5 or an Up ahead of 4.

If the correct conditions exist and permission has been received from the Train Controller to occupy the main line, then the making of a contact as the door of the switch-box is opened causes the lock to lift as shown by a mechanically-connected semaphore indicator. The releasing handle can then be turned to free the points. Signals 3 and 6 are also held at Stop when the lock lifts, and so therefore are signals 1 and 8, the block lights at the stations on either side being extinguished also. If the door is opened while a train is approaching, nothing whatever happens and any signals already off remain off.

An important consequence of signals 3 and 6 being held at Stop when the lock lifts is that signals 4 and 5 both clear, allowing the train to travel in either direction on the main line. If it proceeds to the right, then when the van passes signal 5, signal 3 is no longer held at Stop (although it still shows Stop) so that signal 4 goes back to Stop. The block light at the station on the left now comes on again and signal 1 can be cleared if required for another train. Similarly, if the train from the siding proceeds to the left, signal 5 goes back to Stop when the van passes signal 4, and 8 is free to be cleared.

For a train to enter the siding, the releasing arrangements described will not be effective and instead, a short track circuit specially provided on the facing side of the points must be occupied. This alternative releasing circuit is selected by pulling a finger trigger mounted with the semaphore indicator and releasing handle. On the Victorian Railways, but not necessarily on other railway systems, pulling the trigger also alters the connections to the short releasing track such that the circuit of the lock is completed through the wheels and axles of the train. This arrangement ensures that the lock is not released if the track relay fails - a train must be physically present, or at least some metallic connection between the rails.

Technically, the arrangements for releasing the points for a train to come out of the siding are remarkably simple as all the information required is contained in the circuits of 3GR and 6GR, which pass the siding location. Little more is necessary than to branch a relay across each circuit to prove that the two signals are at Stop and the track circuits between them clear, and to insert various detection contacts in the signal circuits. No additional line wires have to be run.

In Figure 20, the points have been numbered 10 for reference purposes. The controls for 3GR in (b) are basically the same as those in Fig. 8(f) except that contacts have been added at the siding location to detect the points normal, the lock in, the releasing handle normal, and the short track section clear. Controls for 6GR in (c) are similar, except that it is apparently not considered necessary to detect the points in the trailing direction. Relays 10DWLR (Down Switch Lock Relay) and 10UWLR are branched across the 3GR and 6GR circuits, and the two together prove that signals 3 and 6 are at Stop, that there is no Down train approaching signal 3 or Up train approaching signal 6, and that track circuits 3T, 10T and 6T are all unoccupied.

The circuits to the DWLR and UWLR are completed when a contact 'DO' makes as the door of the switch-box is opened. (Actually on the Geelong line

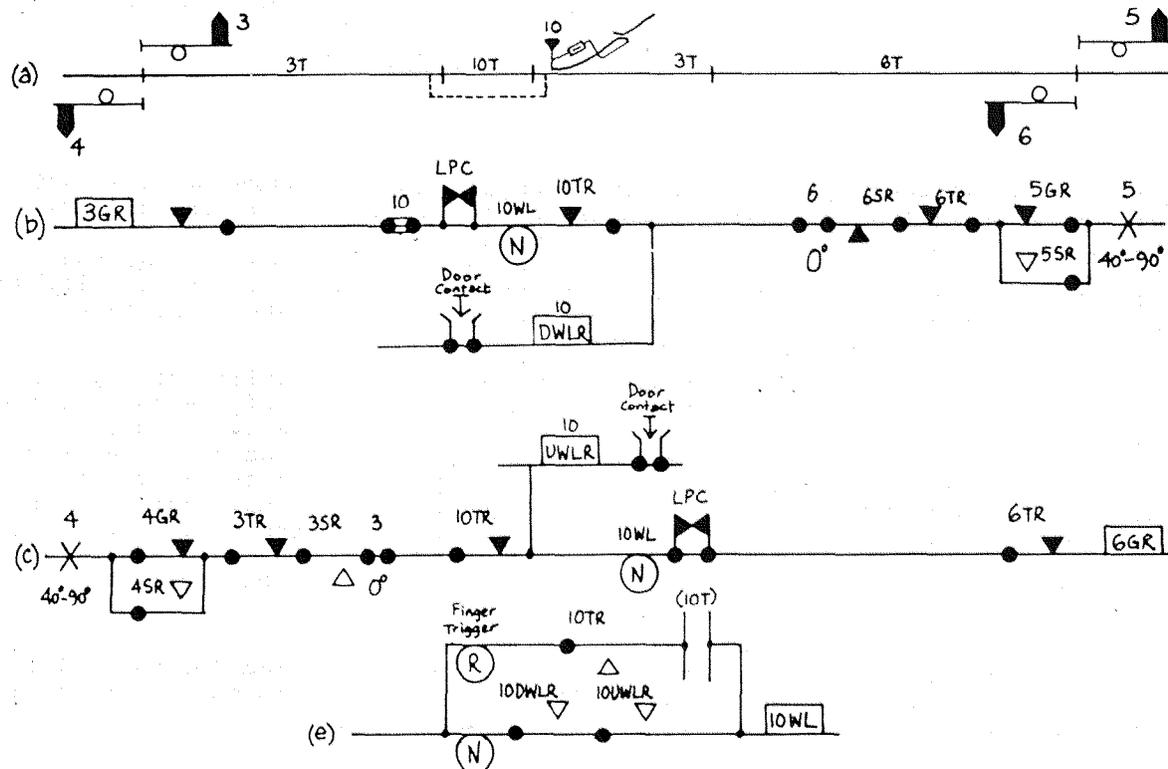


Figure 20.

The circuits to the DWLR and UWLR are completed when a contact 'DO' makes as the door of the switch-box is opened. (Actually on the Geelong line where a.c. apparatus is used, the door open contacts are included in the local

coils of the relay.) Thus if conditions are correct for a release, as the door is opened the DWLR and UWLR both pick up and the lock 'WL' in (e) is energised allowing the releasing handle to be operated. Lifting of the lock also opens the lock proving contacts LPC in (b) and (c) thus dropping 3GR and 6GR, and clearing signals 4 and 5 in accordance with Geelong line practice as explained in section 5.1. Relays 3GR and 6GR remain down when the train enters the main line and the points are restored, and the door closed and padlocked, so that signals 4 and 5 remain off. If the train travels to the right then when the van passes signal 5, relay 5SR having operated, 3GR picks up again and signal 4 goes back to Stop. Similar action occurs if the train goes to the left.

The upper branch in (e) is intended to indicate in a purely stylised way - the actual connections are necessarily more complex - that when the finger trigger is operated, the lock WL will be energised only if a vehicle is present in 10T to complete the circuit.

A correction is needed in "Clear Normal Speed", page 24, line 6, where "Unlocking the points clears the intermediate Automatics looking away from the siding" should read "Opening the door of the switch-box". It is doubtful, too, if the term "switch locked points" should be used as "switch" in this context is evidently the American word for points, i.e. a track switch rather than an electric switch, so that "switch locked points" is really meaningless and should be replaced by "electrically-locked points".

The writer has no information on how a siding secured by an Electric Switch Lock is released where it is situated on a line where reversible circuits as described in section 6.1 are used. Nobel's Siding, between Sunshine and Deer Park, is an example. It seems unlikely that the arrangements would be as elegant as those described for the Geelong line where separate circuits are used for the signals in each direction. Perhaps some reader can help?

Information is, however, available on the releasing arrangements for the points at the goods sidings between Taillem Bend and Wolseley in South Australia referred to in section 6.2. The IRSE paper cited shows that these are quite simple, although rather restrictive. The layout at Kumorna, between Tintinara and Coombe, is illustrated in Figure 21, the numbers here being "real" ones. The five local track circuits are fed by steady d.c. while 136T and 139T are reversible coded circuits corresponding to 4T and 3T in Figure 15.

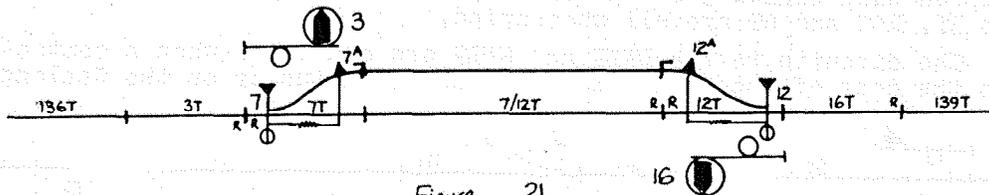


Figure 21.

Points 12 are released by 12T clear, 16T occupied and 3SR operated; the latter provision means that only a Down train can shunt at that end of the siding. Moreover the releasing handle here is locked in both the normal and reverse positions; this means that if the whole train is placed in the siding, the points cannot be restored for the main line as 16T has to be occupied. Similar arrangements apply for points 7. Thus the siding can be shunted only by a through train and crosses are not possible.

Electric Switch Locks are also provided at some trailing sidings on the one-way lines of the duplicated Gippsland line. Opening of the door of the switch box for a train to enter the main line, puts back the two signals in the rear to Stop provided that the line is free back to the approach to the third signal in the rear. Wires have to be run specially to detect the approach of a train, and further wires to prove that the signals have actually returned to Stop before the points can be released, thus the arrangements are, unusually, more complex for double-lines than for single-lines.

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(to be continued)

NEXT MEETING

The speaker at our next meeting is Mr. W. Graham from British Rail. The subject has yet to be announced but I'm sure that members who attend will be well entertained on the subject of safeworking. (Ed).

NORTH COAST LINE OF THE NEW SOUTH WALES RAILWAYS

Bob Taaffe

INTRODUCTION

The North Coast Line comprises the major portion of the Interstate Route between Sydney and Brisbane, and part of the National Standard Gauge Network. Except for the first 2.223 km, the line is single track for its entire length of 793 km. The North Coast Line diverges from the Main Northern Line at Maitland which is located 30.4 km north of Newcastle and 192.5 km north of Sydney. It is at Maitland that the Main Line reduces from four to two tracks and the privately owned South Maitland Railways junctions with the Government System.

It is an interesting route safeworking-wise, in that all the loops were constructed in a number of different forms and evolved essentially into one standard style. Often, the only discernible difference lies in the architecture of the SB.

Little local traffic is catered for today, with the emphasis being on through interstate and wagon load freight to and from major centres, viz. Dungog, Wingham, Taree, Kempsey, Macksville, Coffs Harbour, Grafton, Casino, and the Brisbane Area. Outward traffic is mainly bananas, milk and timber.

The route is very windy, traversing heavily timbered plains and hills, rain forest, and river flats as it journeys northwards, parallel with the Pacific shore. The large number of curves presents operational difficulties by keeping speeds below the permissible maximum of 115km/h for much of its length. Also, the short length of most of the loops means that train lengths are usually restricted to a full load for one main line unit.

REGIONAL HISTORY

Prior to the coming of the railway, the North Coast region was served primarily by coastal vessels which were capable of navigating the tidal portions of the numerous rivers. From these river ports, goods were normally moved to the many small towns by horse or bullock teams in favourable weather.

The line was constructed from a number of locations (normally river ports) and extended until the final connection took place at Grafton in 1932.

A section of the Murwillumbah Branch was the original portion of railway opened on the North Coast and this event took place in 1894. This section was extended to Casino (now Old Casino) and onto Grafton on 6 November, 1905. The line from Casino to Murwillumbah is now known as the Murwillumbah Branch and carries some local and considerable through freight traffic. The only passenger service is the Gold Coast Motorail Express which operates daily from Sydney to Murwillumbah. From Casino, another branch was constructed northwards to Kyogle in 1910 (via the present North Fork of the triangle).

The next section to be opened was from (then West) Maitland to Dungog in August, 1911. It was extended to Taree on 4 January, 1913, onto Kempsey in December 1917, and finally to Macksville in July, 1919. The other origin of construction was the southern bank of the broad Clarence River at Grafton, the station being known as South Grafton to distinguish it from the other station isolated on the northern bank of the river. The first section opened in this region was to Glenreagh on 12 October, 1915. This was extended to Urunga in July, 1922 and linked up with the southern section at Macksville in December, 1923.

The next stage was the extension northwards from Kyogle to Brisbane in September, 1930, and was the first step in the creation of a national one gauge network. A week before, a triangle connection was laid between the two lines out of Casino to Kyogle and Grafton. A new station was opened at the

southern junction of the triangle and was named Casino. The station, formerly named Casino, was renamed Old Casino because of its now reduced importance as a result of being on the branch line instead of the new main line. North of Border Loop, the State border is crossed in the tunnel just north of the crossing loop with the Up Home signals in N.S.W. and the Up Distant in Queensland. The line north of the border is owned by the Queensland Railways and operated for them by N.S.W. The final link-up in the North Coast Line came in May, 1932 when a double deck, road/rail bascule bridge was opened over the Clarence River, between South Grafton and Grafton. The bridge replaced two train ferries which had provided a temporary service for some years.

SPECIAL SIGNALLING FEATURES

Before going into detail regarding loop development, a unique feature of N.S.W. practice should be explained. To aid traffic movements when crossing loops are unattended, a special indicator is mounted on the posts of the Main Line Starting signals and is operated from a Guard's Lever in the SB. When a train is working itself through an unattended loop, the guard will insert the MES for the section they have just left into the instrument and speak to Control. The Train Controller (the Man on the Wall) will advise the train's future movements and how the loop is to be left set. After the new staff is extracted, the point levers are placed in the normal position, the F.P.L. levers reversed and, if the next train has no crossing, the appropriate Home signal is pulled off and the Guard's Lever reversed. If the next train is to participate in a crossing, then both Main Line Home signals will be left at stop, although the Guard's Lever is still reversed. The reversing of the Guard's Lever uncovers the 'U' indicator on the Main Line Starting signal posts. When the 'U' is exhibited, the train may pass the Starting signal at stop, provided the driver has the staff for the section in advance and the guard gives right of way - just another way of overcoming the Rules to save money during quiet periods. It also indicates to the driver that the Main Line points are locked. 'U' indicators were installed on the North Coast from 1934.

LAYOUT OF LOOPS

After the opening of the extensions, a number of new loops were opened in existing sections, one in 1911, one in 1913, two in 1914, five during the 1920s, and one in 1930. Then, from 1933 to 1936 and from 1942 to 1945, quite a few new loops were opened or converted from various forms to the standard, centrally operated, fully interlocked type. These two latter periods roughly conform to: 1) an increase in traffic following final linking up of the North Coast line, easing of the Depression, and introduction of 'U' indicators allowing faster working through; 2) increased traffic movements due to escalation of the War in the Pacific - it requires something like forty trains to move a Division of troops.

Since WW2, the only alterations of consequence have been the introduction of automatic staff exchangers between Telerah and Border Loop in 1946 and 1948, allowing MES to be exchanged at speeds up to 115km/h, and the replacement of FPL train and clearance bars at a number of locations by track circuit control of facing points.

Average traffic density today is of the order of 30 to 35 trains per day.

Architecture of SBs can be associated with approximate prescribed time periods:

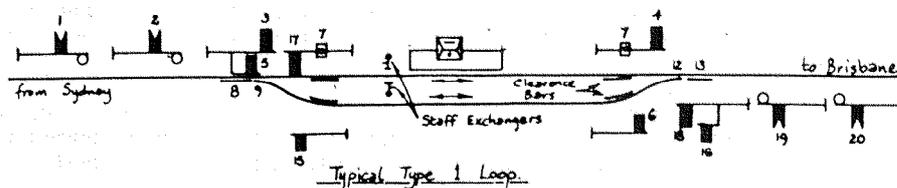
- timber, skillion roofed - 1911 - 1922
- concrete unit slabs, gable roof 1922 - 1936
- fibro-asbestos with hip or gable roof 1936 - 1945

Most of these SBs are at platform level (not necessarily on a passenger platform) or elevated as at Taree South, Grafton and Casino. Glenapp and Kagaru conform to Queensland architectural styles and Tamrookum and Greenbank do not have SBs but rather fibro-asbestos, hip roof, ground level staff huts.

OPERATION OF LOOPS

Type 1 Centrally Operated, Fully Interlocked

This type is fully signalled for through running moves on the Main Line and movements to and from the Main Line to the Loop. All points and signals are operated from a centrally placed SB. A typical frame and pulling list is shown on the diagram. The main variations lie in the number of distant signals (Inner and Outer in lieu of one), occasionally an Outer Home and/or Second Home is provided, and the position of levers for controlling Points, FPLs, Guard's Lever and Annett Key Release in the frame. Frames are normally 16 or 20 lever standard Type A, cam and tappet machines made in the Workshops. Gloucester, Wingham and Mount George have standard frames manufactured by Contractors before the Workshops were geared up for large scale production. South Grafton possesses a McK&H 6A pattern rocker shaft frame converted to Type B cam and tappet locking in the Workshops. The other frame of significance is the 84-lever standard cam and tappet machine at Casino. This is the largest remaining full-size mechanical frame in N.S.W.



In virtually all cases, except some major yards, the only points worked directly from the frame are the Loop points. Siding points, even in front of the SB, are operated from ground frames via annett keys from the main frames or by the staff for the section (if outside the Home signal).

Loops which have been opened as centrally operated, fully interlocked and the year of that event are as follows:

Lower Coast

- Mindaribba (1933), Wallarobba (1914), Dungog (1911), Monkeral (1930), Noroo (1944, see special note), Weismantels (1934), Berrico (1934), Yumbunga (1945), Mt. George (1913), Kimbriki (1934), Killawarra (1944), and Wingham (1913).

Central Coast

- John's River (1933), Wauchope (1915), Kempsey (1917), Tamban (1934), Nambucca Heads (1934), Dalhousie Creek (1943 and closed 1963), Bonville (1943), Landrigans (1943), Nana Glen (1943), Glenreagh (1915), Kungala (1943), and South Grafton (1915).

NOTE: All loops opened with the line between Mount George and Macksville were opened as centrally operated, fully interlocked.

No loops north of South Grafton were opened in the form of centrally operated, fully interlocked.

All trains normally proceed via the main line unless a crossing is to be made, in which case the first train to arrive will take the loop. The second train goes through at speed on the automatic staff exchanger.

Type 2 Opened as Key Locked Type Crossing Loop and Later Converted to Central Operation, Fully Interlocked

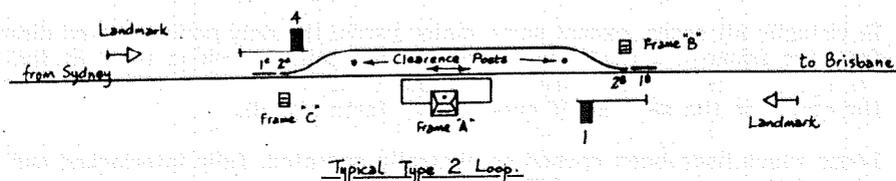
These can be divided into two categories:

1. Those opened with the line or soon after, and were often unattended. This type of arrangement simplified working by train crews and was relatively cheap.
2. A wartime, temporary phase to enable crossings to take place without waiting for full interlocking to be installed, which would probably have delayed opening by many months. Full interlocking by central operation generally followed within about twelve months.

Another feature was the provision for closing and introducing long section staff working when the traffic density did not warrant short staff sections. This short/long system was probably unique to N.S.W. in that no switching instruments were provided for the MES, but, rather, the District S&T Engineer kept all staffs when they were not in use and when an opening or closing took place, he arranged the changing over of the staffs. When the staff station was opened, a special lever ensured that the two Home signals could not be pulled off at the same time. When closed, both Home signals were permanently left off and the Closing Lever reversed.

The Normal arrangement for a key locked loop was to have a Distant or Landmark as well as a single Home signal for each direction. Moves into and out of the Loop were by hand signals and, as no Starting signals were provided, the Guard gave the right-of-way when the driver was in possession of the staff for the section in advance. The loop points were controlled by ground frames released by Annett Keys normally secured in an Annett Lock on a lever in Frame A.

Frame A was normally an open air affair of six or eight levers, probably using direct action tappet locking. Staff instruments were generally housed in a nearby staff hut, usually of concrete unit construction or fibro-asbestos.



The Loops opened in the full form without opening/closing facilities are given below. The first date refers to when the Loop was opened and the second to when the Loop was converted to fully interlocked central operation.

- Paterson (1911, starting signals 1936), Raleigh (1922, 1935), Coffs Harbour (1922, 1944), Kilbride (1942, 1942), Macksville (1919, 1934), Coramba (1922, 1935), Braunstone (1942, 1943), Grafton (1905, 1930), Kyarran (1926, 1935), Gurrang (1911, 1935), Banyabba (1926, 1935), Camira Creek (1905 - ball levers, 1925, 1936), Rappville (1925, 1935), Leeville (1925, 1925), Fairy Hill (1927, 1936), Kyogle (1910, 1944), The Risk (1930, 1944), Border Loop (1930, 1944).

It should be noted that Camira Creek was originally opened with the line in 1905 as a Loop and the Loop points were operated by means of clipped ball levers.

Those loops which were opened as Open/Closed Loops were as follows:

- Gauld's (1943, -), Loadstone (1943, 1944), Bundook (1943, 1943), Kerewong (1943, 1943), Mount Neville (1943, 1945). Except for Bundook and Kerewong, these Loops have been closed. Gauld's was closed in 1946, Mount Neville in 1953, and Loadstone in 1962.

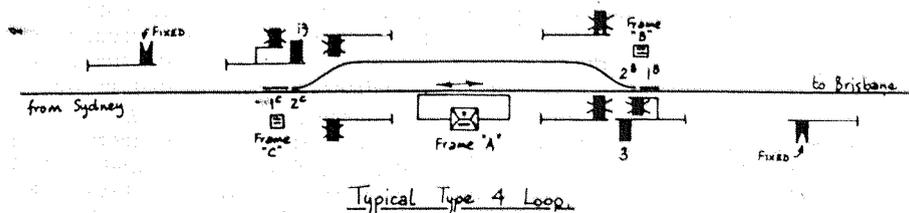
Type 3 Follow-On Staff Stations

These were generally opened for special purposes and were not a trend. Locations involved were: •Telerah (1914) - although provided with a yard from the start, a crossing loop was not provided until 1945; •Martins Creek (1914) - this was the junction for the short branch to the ballast quarry and was closed as an MES station in 1942. Since that time, an intermediate staff instrument has been provided to enable ballast trains to proceed to the quarry loading bins. •Bartletts (1943) - only open a matter of months with Opening and Closing Levers and was located within 1.5km of Gauld's. The probable reason for its existence was to break the section until some kind of crossing facility could be provided at Gauld's. •Gurrang (1911) - stop and warning boards in lieu of normal signals. •Leeville (1925) - prior to provision of crossing loop. •Fairy Hill (1926) - until crossing loop provided.

Type 4 Fully Interlocked, Centrally Operated Loops with a Number of Functions Disconnected

These were all opened before the through line was brought into use, provision being made for later operation as a full loop. Soon after opening the loop, points were disconnected from the frame and operated by ground frames released by Annett Keys. The Loop Home signals and the Starting signals from both the Main Line and Loop were fitted with crossboards. In all cases, the full frame was provided to operate as a fully interlocked loop. One reason which may have contributed to the crossboarding of the signals was that 'U' indicators for Starting signals were at that time unknown. These were not introduced until 1934. If normal Starting signals were provided, then working through by train crews whilst unattended would have become a time-consuming ordeal.

Removal of crossboards from signal arms and conversion of loop points to control direct from the SB generally took place soon after the final link in the North Coast Line was completed.

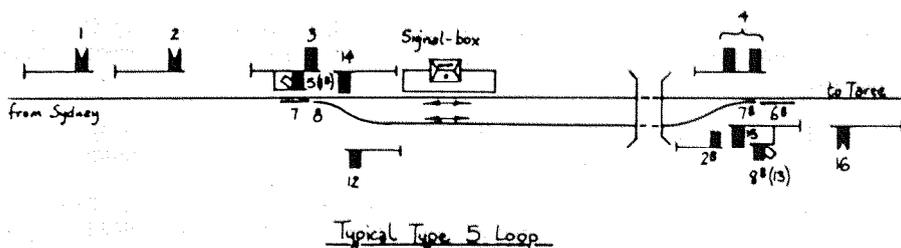


The loops in question are as follows: •Craven (1922, converted 1934); •Melinga (1915, converted 1935); •Kendall (1922, converted 1934); •Cooperook (1915, converted 1926); •Telegraph Point (1917, converted 1927); •Kundabung (1924, converted 1934); •Lanitza (1922, converted 1935); •Bulliac (1924, converted 1934). Melinga and Cooperook were closed soon after opening and, when reopened, the signals were crossed. Craven still had its points rodded. Lanitza was closed in 1962.

Type 5 Board of Trade

Thankfully, N.S.W. was spared from the adoption of most of the Board of Trade's unnecessary requirements, although just enough were introduced to make life difficult.

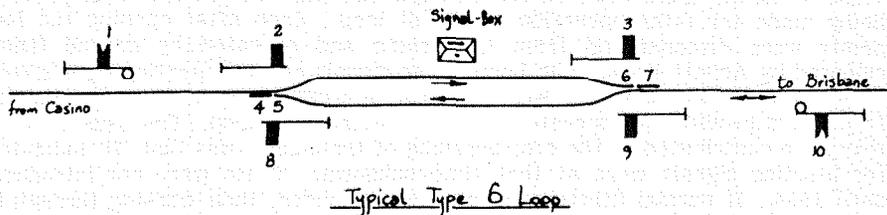
These loops have one end out of sight of a centrally located SB, so the Board of Trade regulations required the obscured end to be operated from a separate frame. Signals at both ends of the loops were interlocked by means of a slotting. However, much mucking around was necessary when trains were worked through. A solution to this supposed problem already existed in the form of track circuits which were in use on other parts of the System. Eventually, the second frame was replaced by either motor points for that end of the loop or track circuit protection.



The loops involved are: •Stroud Road (1913, converted 1941); •Gloucester (1913, converted 1945); •Taree (1913); and •Casino (1930). The two latter are special cases where the smaller frame operated the points to Loco. The smaller frame at Taree became a 68-lever SB, whilst the other became a 32-lever SB. At Casino, both frames were amalgamated to form a single SB.

Type 6 Up and Down Main

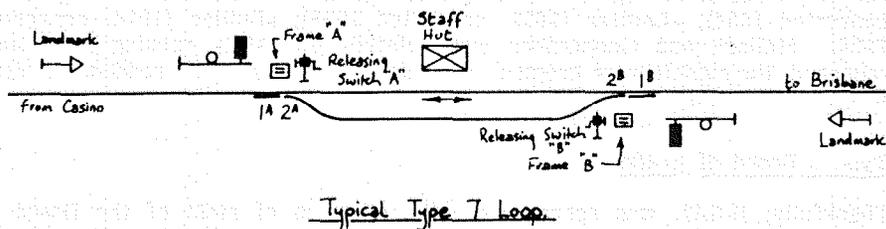
There are only two loops in this category, both being in Queensland. The loops were originally laid out for trains travelling in different directions to pass through on separate roads. All Queensland type equipment was provided plus a SB of Queensland architecture. In later years, the layout was changed to conform to centrally operated, fully interlocked style. The same SB was retained, but larger N.S.W. machines were provided. N.S.W. MES instruments are also used right through to Brisbane and all S&T maintenance is carried out by N.S.W. personnel. SB manning is by N.S.W. personnel as far north as Greenbank.



The two loops in question are: •Glenapp (1930, converted 1945); •Kagaru (1930, converted 1945).

Type 7 Regulation 68 Crossing Loop

Three of these were opened during the war and are automatic crossing loops designed for full, unattended operation. The loops are fully track circuited and the Home signals for both directions are approach cleared. No Starting signals or Loop Home signals are provided and Landmarks are provided in lieu of Distant signals. Loop points are operated by the staff releasing an Annett Key in an electric releasing switch, which, in turn, unlocks the ground frame. No main interlocking frame or SB is required, and the MES instruments and Control phones are housed in a fibro-asbestos staff hut at the centre of the loop. Also housed in this staff hut is a master releasing switch which can over-ride those at the Loop points. Clearing of the upper quadrant Home signals (to the Caution position only), and the release of the loop points is dependent on certain track occupancy conditions being fulfilled.



The Loops of this type are: •Tamrookum, 1941; •Bromelton, 1942 (closed 1946); and •Greenbank (Road), 1942. These Loops have not been converted to the standard style.

Because of the present heavy traffic densities, these Loops are normally fully attended to speed up working through, except for Saturday afternoon and Sunday.

Queensland Railways SB

North of Greenbank Road, a number of existing Queensland Railway SBs exert some control over the Uniform Gauge Line as well as the narrow gauge (standard in Queensland). These SBs are:

- Beaudesert Road: follow-on MES post for the U.G. line as well as a Block telegraph station for the narrow gauge.
- Clapham: MES and crossing station for U.G. trains. Site of a major transshipment yard. SB houses a McK&H double wire frame for control of various narrow and uniform gauge functions.
- Yerrongpilly: as for Beaudesert Road, plus it protects a narrow gauge crossing of the U.G. line and controls movements to and from the nearby N.S.W. Loco. Depot.

- South Brisbane Interstate: controls the interstate freight terminal and passenger station. U.G. only.

MES FEATURES

Many sections have or did have provision for divisible MES operation to reduce train headways. Trains followed each other by time interval or telephone block using intermediate block posts. N.S.W. staffs are divisible into two portions only. The main area this seems to be still in use is the region generally bounded by Macksville and Coffs Harbour.

NOOROO - SWITCHING OUT OF ETS STATIONS

N.S.W. practice does not provide for regular switching in and out of staff stations to meet traffic demands. Where short and long section working was adopted on single lines, it was the practice to withdraw all short section tokens from the instruments and place into District Management custody, and, in turn, insert the long section token into the appropriate instrument. Instruments were always left in situ. This arrangement was used to cover seasonal traffic movements, such as the wheat harvest, and these stations were usually left open or closed for considerable periods.

There were several special exceptions to this rule, two being tablet stations - Exeter and Corrimal in 1893, and staff stations on the Belmont Line and Nooroo. In these latter cases, all tokens remained in the appropriate instruments or associated switching apparatus, whether switched in or out, switching being mechanical for electric staff and electrical for tablet.

As we are only concerned here with the North Coast Line, only Nooroo will be considered further.

Nooroo was opened with the line as a loop goods siding, controlled by ground frames, plus an 8-lever frame in a SB to release the ground frame keys and controls home and distant signals in both directions. It was not a staff station but in the Dungog-Stroud Road OTS section.

On 28 June, 1944, the Monkerai-Stroud Road MES section was divided when Nooroo was opened as a Type 1 Loop. Two months later, Nooroo was temporarily closed, the signal arms were crossed, points spiked and the MES section once more became Monkerai-Stroud Road. It was reopened on 11 July, 1945, only to close again on 10 January, 1949.

Nooroo appears to have reopened on 15 December, 1949, this time equipped with facilities for switching out as a staff station.

The equipment provided now consisted of the usual frame in the SB, three MES instruments ('B' type to Monkerai, 'C' type to Stroud Road, and an intermediate instrument for the long section). Opening and closing levers are found in the frame and a quadruplex lock mounted somewhere in the SB.

Before explaining how switching was accomplished, it should be mentioned that although the long section was an 'A' type MES, the intermediate instrument had a 'D' gauge block and a single 'D' pattern MES with key attached. Both short section MES instruments had a single key staff, neither of which was to leave Nooroo.

To switch in Nooroo, the following ceremony had to be performed:

1. Withdraw the key staff from the special 'D' instrument and insert into Lock 'D' of the quadruplex lock.
2. Insert the Closing Key (kept by the signalman) into the Closing Lever and place the lever in the normal position.
3. Return Main Line signals to stop.

To close Nooroo, the reverse procedure was adopted. Opening and closing times were nominated in the timetable.

On 27 May, 1952, the switching quadruplex lock was replaced by separate duplex and triplex locks (image a quintuplex lock).

The new switching-in procedure was as follows:

1. Obtain the staff from the long section intermediate MES instrument and insert in the top lock 'D' of the duplex lock.
2. Remove Closing Key from the bottom lock 'E' of the duplex lock, insert in Closing Lever and normalise this lever as well as Main Line signal levers.
3. Pull over Opening Lever, remove key and insert into top lock 'A' of triplex lock.
4. Remove short section staffs from centre 'B' and bottom 'C' locks of the triplex lock and insert in respective MES instruments.

To close, the reverse procedure was adopted. This change simply moved the custody of the Closing Key from the signalman to the switch lock - just improved security somewhat.

On 16 June, 1962, Nooroo was switched out until further notice and, probably, never again saw service when abolished on 10 April, 1963.

Today, no trace remains of Nooroo Crossing Loop.

THE FUTURE

A contract has been let to DML-Ericson for the installation of C.T.C. between Telerah and Casino. The whole area will be controlled from a major control centre to be located at Broadmeadow, just outside Newcastle. The only existing SBs to remain will be Telerah and Casino, and these will be fringe SBs for safeworking purposes and train describer input. It is strange that the C.T.C. should end at Casino, but, rather, it should have gone right through to achieve maximum benefit. If the project goes ahead as planned, 1983 should see virtually all of this working obliterated, the end of a very fascinating length of safeworking and the loss of the longest section of automatic staff exchanging in Australia, if not the world.

LAST WORD

All of this material was obtained from PTC Circular-diagrams, S&C records and field notes.

S.R.S.V. CROSSWORD No 1

compiled by S. McLean

Across

1. Block man after fall (6)
6. Initially blue Spirit carriage (2)
8. Indefinite system (2)
9. Such tidiness renders staff unnecessary (5)
11. Imperial sidings (4)
13. Sounds like moisture is expected (3)
14. Chopped ling is not near the bank - but it was! (9)
17. Almost a superlative carriage (3)
18. Hinge graph awkwardly at an awkward station (10)
20. Initially hard understanding this loop routing code (2)
21. What one sometimes does in Avoca (5)
24. Last signal then commencement of Eastern Region (7)
26. Signal box has number 6 reversed.
28. Alternative eastern mineral traffic (3)
30. What the barber did at some point during single line working (7)
31. Could be a catch in this clue! (4)

1	2		3		4		5		6	7
8					9				10	
		11								
					12				13	
14		15		16						
									17	
18								19		
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21			22	23						
			24		25					
26	27			28					29	
30								31		

- Down
- | | |
|---|--|
| <ol style="list-style-type: none"> 1. Comes before a caution, or before a stop (7) 2. Dooen couldn't be unless Jung was (2) 3. Hang back, like some louvres do (5) 4. He usually works the points (3) 5. Strange numbers of down trains (3) 7. Terrible rot Samuel's printed for SRS members (10) 10. Common colour of the home (3) 12. Astounded at seeing the platforms at St. Albans (9) | <ol style="list-style-type: none"> 15. Clear colour (5) 16. Here in France is a 2-6-2 (3) 17. Old louvre which supplies oil (2) 19. Key man in safeworking development (6) 21. 500 is 100? The last thing I'd expect! (4) 22. Single line system with two points (2) 23. What you do if there's no asterick (4) 25. Group of enthusiasts exist (3) 27. Pound up these tracks to Burnley (2) 29. Half of old Warburton loco (2) |
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WODONGA TOUR

Members enjoyed an interesting tour of Wodonga and Albury on Show Day, 22 September 1982. Forward travel was on the morning down Albury pass. to Wodonga where inspection of Wodonga box was undertaken. Y137 & 4CA then provided the transport to Albury via Bandiana and Coal Sidings box. At Albury both South and Station boxes were inspected prior to travelling home on the Intercapital Daylight. Our thanks go to Jack McLean for organising the day and to Tony Palermo, the Seymour Safeworking Inspector, for explaining the various features of the Victorian installations and answering the many questions from members.

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