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Engineering Standard – NSW

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Signalling

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Approach Locking

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		Refer to Reference Number	H Olsen	M Owens	Refer to minutes of meeting 12/08/04

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About This Standard

This Principle addresses the requirements for the provision of approach locking on signals and the methods and conditions under which it is applied and released.

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Document History

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List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		<ul style="list-style-type: none">Reformatting to ARTC Standard
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11 Approach Locking

11.1 Principle No.11.1 - Approach Locking

11.1.1 Introduction

This Principle addresses the requirements for the provision of approach locking on signals and the methods and conditions under which it is applied and released.

11.1.2 Purpose

Approach locking is provided to prevent an operator or an auto-normalisation call from normalising a route ahead of an approaching train which could allow a change of route that might endanger the passage of the train.

Approach locking is normally applied to any signal routes which are interlocked.

The approach locking becomes effective when the signal has been called to clear and all conditions for clearance are proved available.

11.1.3 Requirements - Provision and Application of Approach Locking

If a controlled signal has one or more routes which directly or indirectly interlock with other routes on the same or on other signals or with points or ground frames or level crossings then it shall be provided with approach locking.

11.1.3.1 Running Signals

The approach locking shall become effective if a proceed aspect has been displayed in the approached locked signal and the driver of an approaching train has sighted any signal showing a proceed aspect which would be altered by replacement of the approach locked signal to stop.

The approach locking once initiated shall be maintained by the occupation of the track circuits over the appropriate approach locking distance in rear of the signal which is approach locked. If the first signal to be sighted can be seen for a reasonably long distance then the approach locking point shall commence a minimum of 600m in rear of that first signal. Refer to figures 1A and 1B.

If a running signal is situated such that the number of aspects which can be displayed in rear are restricted due to physical or operational constraints of the system then the extent of the approach locking may be reduced accordingly. Refer to figure 2.

If a running signal is situated such that no track circuit is provided in rear then it shall be approach locked immediately it displays a proceed aspect. Refer to figure 3.

11.1.3.2 Subsidiary Shunt Aspects

The approach locking shall become effective if a proceed aspect has been displayed in the subsidiary shunt signal to be approached locked and an approaching train has

passed the

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running signal immediately in rear and is within sighting distance of the subsidiary shunt signal and is within 600 metres of the signal. Refer to figure 4A.

The approach locking once initiated shall be maintained by the occupation of the track circuits over the appropriate approach locking distance in rear of the signal which is approach locked. The approach locking point may commence 600m or sighting distance in rear of the approach locked signal or from the first signal in rear as the case may be. Refer to figures 4A and 4B.

11.1.3.3 Ground Shunting Signals

The approach locking shall become effective if a proceed aspect has been displayed in the signal to be approach locked and an approaching train has passed the signal in rear and is within sighting distance of the signal and is within a distance of 300m of the signal to be approach locked. Refer to figure 5.

11.1.4 Requirements - Release of Approach Locking

Approach locking shall be released by the signal at stop and the passage of the train past the signal which is approach locked or after the expiry of a time period to allow for the train to be nearly at or have come to a stand at the approach locked signal, or the train being otherwise proved to have come to a stand.

11.1.4.1 Running Signal

The approach locking shall be released by the normal passage of the train over the first and second track circuits immediately past the approach locked signal and in the direction for which the route is set or following a time release which shall commence timing immediately the approach locked signal has been replaced to stop.

If a full approach locking distance is provided in rear of the running signal then the time release period shall be a minimum of 120 seconds

Additional time may be required if the signals are widely spaced.

11.1.4.2 Subsidiary Shunt Aspects

The approach locking shall be released by the normal passage of the train over the first track circuit immediately past the approach locked signal or following the expiry of a time release which shall commence timing immediately the approach locked signal has been replaced to stop.

The subsidiary shunt aspect time release period shall generally be equal to that of the main aspect unless particular operating conditions require the provision of a reduced time release period for the subsidiary shunt aspect.

11.1.4.3 Ground Shunting Signals

The approach locking shall be released by the normal passage of the train over the first track circuit immediately in advance of the approach locked signal or following the expiry of a time release which shall commence timing immediately the approach locked signal has been replaced to stop.

The time release expiry period shall be 60 seconds except for nominated shunting yards where the period may be 30 seconds.

11.1.5 Prevention of Pre Release of Approach Locking

To prevent the possibility of approach locking being pre-released by the releasing track circuits effectively becoming occupied due to a loss of power a power-off time expiry feature shall be provided in each track circuit release path.

This shall cause a period of 120 seconds to elapse following the loss and subsequent restoration of power after which the approach locking track release shall again become effective.

11.1.6 Release of Approach Locking with Simplified Autonormalisation

Where automatic normalising is provided by occupancy of the A track circuit alone (eg OCS type systems) the track occupied release of approach locking is not to be provided for main running aspects.

Where there is a need for a track occupied release (eg on certain subsidiary signals) selection shall be incorporated to ensure that the track occupied release is not effective for main running aspects.

11.1.7 Signals Stepping from Shunt to Main Aspect

It is permissible for signals to step up directly from a shunt aspect to a main aspect without first releasing approach locking.

However, it is not permissible for a signal to step down from a main to a shunt aspect where less restrictive locking is applied without release of the approach locking.

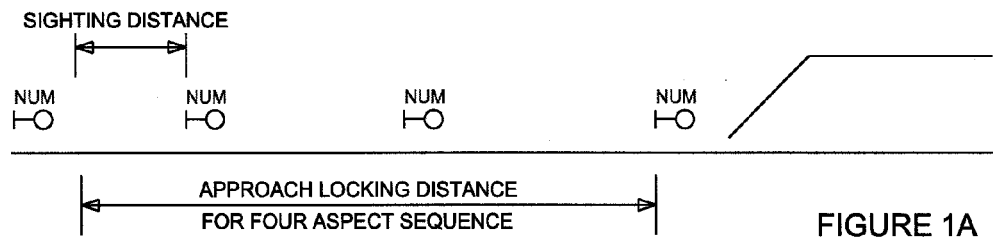


FIGURE 1A

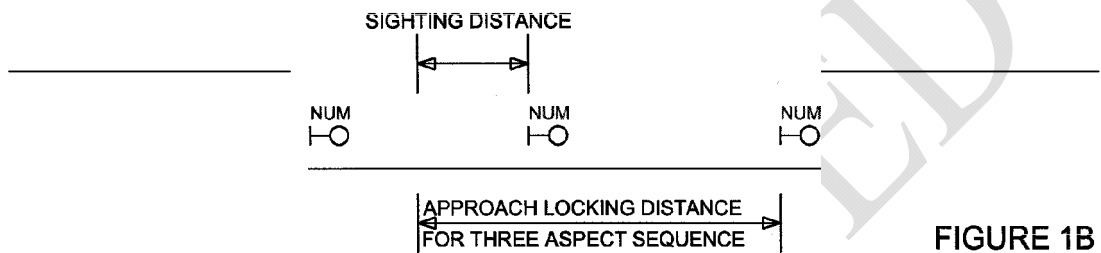


FIGURE 1B

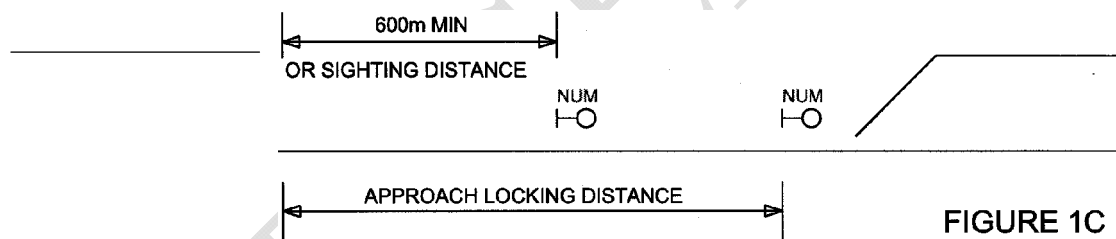


FIGURE 1C



FIGURE 2

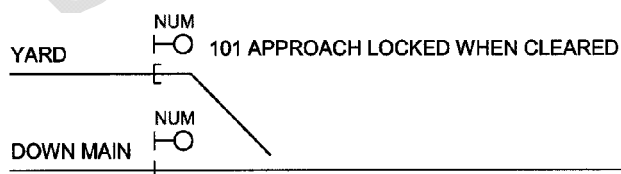


FIGURE 3

APPROACH LOCKING

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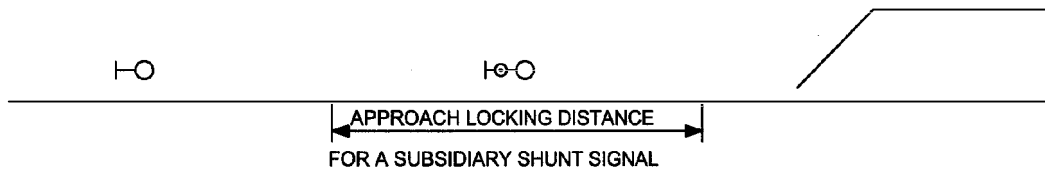


FIGURE 4A

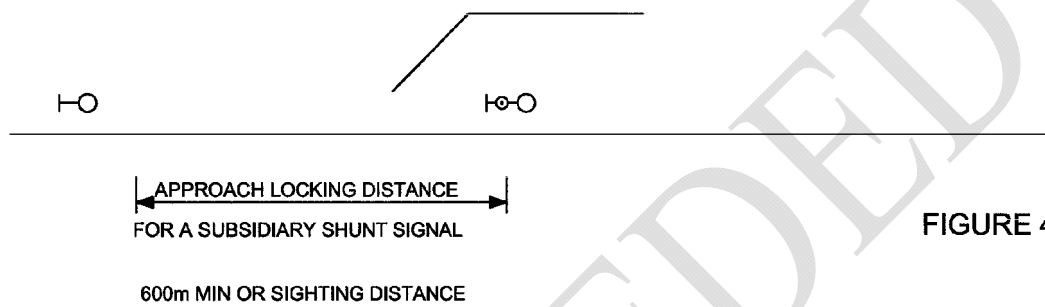


FIGURE 4B

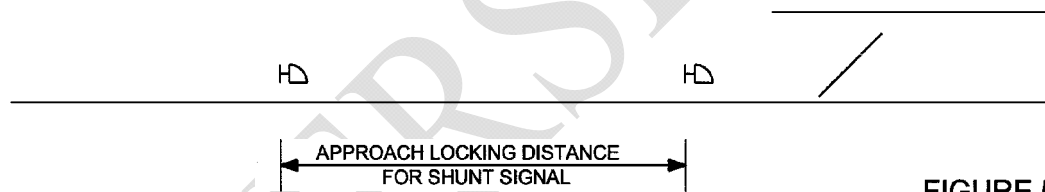


FIGURE 5A

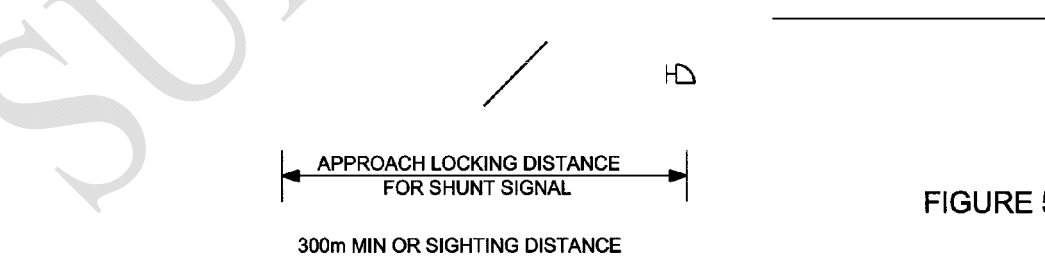


FIGURE 5B

APPROACH LOCKING
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