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Engineering Standard – NSW

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Signalling

Title
Booking Signalling Equipment Out of Use

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Document Control

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The technical content of this document has been approved by the relevant ARTC engineering authority and has also been endorsed by the ARTC Safety Committee.

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About This Standard

This Standard defines the signalling procedures to be implemented when it is necessary to book signalling equipment out of use.

Document History

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List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		▪ Reformatting to ARTC Standard
1.2	14/03/2005	Disclaimer	Minor editorial change

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1 General (Refer Also To Procedure SMP 09)

Signalling equipment is referred to as “booked out of use”:-

- a) When there is manual intervention to secure signalling equipment in a safe, de-energised or locked position so that it will not be operated as part of the safeworking system for the signalled movement of trains.
- b) Alternatively, when the equipment is manually disconnected from the interlocking and this intervention formally documented and signed accordingly on Infrastructure Booking Authority form NRF 003 and in a Train Register Book or in other documents provided for the purpose.

Signallers may temporarily book controlled signalling equipment out of use by utilising lever sleeves or equivalent to secure signal levers in the normal position, or points levers in the normal or reverse position, or facing point lock levers in the points locking position, or by appropriately applying blocks to the signalling equipment concerned. Generally in these cases the signaller makes an entry in the Train Register Book or other book provided for the purpose. (However, by itself, this is not an acceptable level of protection if signalling equipment is to be disconnected from the interlocking or if the interlocking apparatus is to be disarranged).

When signalling employees are required to book signalling equipment out of use, they shall disconnect the equipment as a matter of course, (except in particular signalling irregularity investigations where it may be necessary to not disturb equipment which has failed wrong-side). They should also request the signaller to place a lever sleeve or block on the respective controlling levers, keys or pushbuttons. Disconnection should be carried out as described in procedure SMP 09 “Disconnection of Signalling Equipment”.

Signalling maintainers are to use Infrastructure Booking Authority form NRF 003 to book signalling equipment out of use and back into use in accordance with Network rules & Procedures NWT 312 and NPR 704 in order to ensure that there is an understanding reached with the Signaller of the work and the safeworking precautions to be taken, and to ensure that the affected signalling equipment is properly certified fit for use before being booked back into use.

In many cases testing to certify the equipment will involve operating the “booked-out” equipment from the signaller’s control panel and this must be done with the signaller’s agreement under strict controls directed by the signalling maintainer in charge, in circumstances where it is safe to do so and where there is no possibility of endangering train movements or of drivers or operators acting on the operation of the equipment while it is being tested but still booked out of use.

Generally the NRF 003 form is to be used whenever signalling equipment is disconnected and out of use for traffic operations or when it is restored to use for traffic operations, that is:-

- when signalling interlocking apparatus is disarranged.

OR

- when signalling equipment is disconnected from the interlocking, (includes temporary bridging of contacts of circuit control devices)

- when signalling equipment that has been disconnected from the interlocking is restored to use

OR

- when signalling trackside equipment is rendered inoperative by disconnection of the power to motors and mechanisms and/or to control devices (but the equipment remains connected to the interlocking) **and** the equipment is left unattended or requires the provision of handsignallers for traffic movements

OR

- when work is being carried out on signalling equipment or circuits and there is risk of endangering the safe operation of the signalling system, or risk of incorrect restoration which could cause a signalling irregularity, or there is otherwise a risk to the safety of the line.

Signalling maintainers are responsible for compiling NRF 003 form with the Signaller where work is to be carried out which involves disarrangement of the interlocking apparatus, or disconnection from the interlocking of signals, trainstops, points, facing point locks, locking bars, detectors, level crossing gates, boom barriers or type F flashing lights, or of track circuits affecting any of the foregoing.

It is also necessary to disconnect, and maintain in a safe state, other signalling equipment which protects and interlocks with the signalling equipment that is disconnected from the interlocking or is affected by disarrangement of the interlocking apparatus.

These protecting signals and points, while not to be disconnected 'from the interlocking', are to be disconnected and maintained in a safe position (by removal of the power supply to the motors, mechanisms and/or control devices) and included on the NRF 003 form by the signalling maintainers involved.

Where work which affects the signalling is being carried out under total possession the signalling equipment which is to be disconnected from the interlocking and the associated protecting signals and points which would also normally be disconnected are still required to be disconnected and booked out of use on the NRF 003 form.

Where signalling apparatus is disconnected in order to render it inoperative and out of use for traffic operations, (but still safely connected to the interlocking), the suitably accredited signalling maintainer shall also compile the NRF 003 form and include this equipment as booked out of use.

In all cases, completing and signing the NRF 003 form for restoring signalling equipment to use, constitutes certification that the interlocking apparatus and signalling equipment that was disarranged or disconnected or which could have been affected, has been tested and is safe and fit to restore to normal use.

1.1 Protection of Derailment Sites

At derailment sites where the signalling employee disconnects signalling equipment to protect the site, the standard practice shall be to book out of use and disconnect all signals and points which lead into the sections of track which are obstructed by derailed vehicles. Signal routes through points which are disconnected and held in the opposite position to lead clear of the

obstruction, need not be disconnected, but signals with their overlap extending over an obstructed section of track shall be disconnected. In exceptional circumstances, disconnection may be limited to the immediate protecting signals and points provided there is no risk of collision with train over-running these protecting signals and provided the approval of controlling signal engineers is obtained.

1.2 Failure Investigation (in cases where investigation and rectification would not affect safety integrity)

When signalling equipment is failed and is being inspected and tested to find and fix the failure, or is being inspected and tested to certify its correct operation, and where such inspection, testing and rectification work will definitely not interfere with the safe operation of the signalling system, then it will not be necessary for signalling employees to book out and disconnect equipment, although signallers may be requested to keep associated signals at stop, as required, by putting lever sleeves or equivalent on the controlling levers, keys or pushbuttons.

1.3 Work which could affect safety integrity

Whenever there is a possibility of inspection or testing or any other work on signalling equipment interfering with the safe operation of the signalling system, then the signalling equipment being worked on and the affected signals and points must be booked out of use and disconnected.

This is done to prevent the normal passage of trains past any signals, or over any points or level crossings, whose safe operation may be jeopardised by the work or by the testing of the completed work before it is booked back into use.

As a simplified example, if there is rewiring work on points detector contacts in a detection circuit then, in the normal case, the signal routes (including overlaps) which detect those points would be manually disconnected and booked out of use together with the points, even if the detector relay itself is not touched and is disconnected at cable links and isolated from the work on the detector contacts. (If the signal routes requiring the detector relay circuit were not disconnected and booked out of use then, if the detector circuit were wrongly reconnected, it may be possible that signals could be unsafely cleared, perhaps inadvertently).

When the rewiring work is completed the detector relay would be reconnected and the detector circuit would be fully inspected, tested and certified to be physically and functionally correct, while the affected signals remained disconnected. In this particular example, because it could be guaranteed that the detector relay itself and its contacts were isolated from the work and not touched, no further testing of the interlocking and controls would be necessary and the disconnected signals could be reconnected and booked back into use together with the points. Notwithstanding, because the signals have been disconnected, they are to be operated to test they are in working order before being booked back into use; beforehand, the signaller is to be informed that the signals are being reconnected for test but are still out of use, and a check is to be made that any handsignallers are advised accordingly, and that there are no trains approaching that could be affected by the signal clearing during the testing.

Note : Signalling equipment is disconnected ‘from the interlocking’ when the disconnection affects the integrity of the interlocking provided for the safety of train movements.

Other than for power supplies to signal lights, level crossing warning equipment and the like, the removal of power supply fuses, and the opening of circuits at terminal captive links or link pins or at indexed plug connectors, (if this secures signalling apparatus in a de-energised, fail-safe position), would not be considered as disconnection ‘from the interlocking’.

The ‘interlocking’ is that part of the signalling system which applies the interlocking and track locking between conflicting routes, signals, trainstops, points, level crossing warning systems and which applies track circuit control to the clearance of signals and level crossing warning systems, and it includes all the vital control, indication and detection equipment and circuits that provide and prove correspondence between the respective signals, trainstops, points, track circuits and level crossing warning systems and the rest of the ‘interlocking’.