

Engineering Procedure

Signalling

CRN SP 008

BOOKING OUT AND DISCONNECTION OF SIGNALLING EQUIPMENT

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Contents

1	Booking out of Signalling Equipment	4
2	Disconnection of Signalling Equipment	5
2.1	Disconnection of Signals and MLIs	6
2.2	Disconnection of Points - Mechanical	6
2.3	Disconnection of Points for Work on the Points: Points Detection in Working Order	7
2.4	Disconnection of Points for Work on the Points: Points Detection Not in Working Order	8
2.5	Unplanned Work During a Planned Possession	10
2.6	Disconnection of Points for Indefinite Period	10
2.7	Removal of Sidings	10
2.8	Disconnection of Level Crossing Protection	10
2.9	Disconnection of Electric Locks and Releasing Switches	11
2.10	Disconnection of Track Circuits	11
2.11	Routine Maintenance	12
3	Other Scenarios	12
3.1	Protection of Derailment Sites	12
3.2	Failure Investigation (in cases where investigation and rectification would not affect safety integrity)	13
3.3	Work which could affect safety integrity	13

1 Booking out of Signalling Equipment

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

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.

Alternatively, when the equipment is manually disconnected from the interlocking and this intervention formally documented and signed accordingly on Infrastructure Booking Authority form CNRF 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 CRN SP 009 “Disconnection of Signalling Apparatus”.

Signalling Maintainers are to use Infrastructure Booking Authority form CNRF 003 to book signalling equipment out of use and back into use in accordance with Network rules & Procedures CNWT 312 and CNPR 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 CNRF 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)

OR

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 CNRF 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 CNRF 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 CNRF 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 CNRF 003 form and include this equipment as booked out of use.

In all cases, completing and signing the CNRF 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.

2 Disconnection of Signalling Equipment

Whenever it is necessary to disconnect signalling apparatus (mechanical or electrical) the provisions of Network Rule and Procedure CNWT 312 and CNPR 704 shall be strictly observed.

The Signalling Maintainer in charge of the work shall confirm that a suitable entry has been made in the NCOs log.

All involved in the work shall ensure there is a common understanding of who is in charge and responsible for these safeworking arrangements.

When it is necessary under the provisions of Network Rule and Procedure CNWT 312 and CNPR 704 for a 'Hand Signaller' to be provided in connection with the disarrangement of interlocking apparatus, or disconnection of points, signals, MLIs or level crossing warning systems from the interlocking, such 'Hand Signaller' shall be provided and work under the directions of the Signaller.

Signalling Maintainers shall not interfere with the connections until they have assured themselves that the required 'Hand Signaller' is in position.

Safe working form CNRF 003 shall be filled in and countersigned by the NCO, in accordance with Network Rule and Procedure CNWT 312 and CNPR 704.

When the work involves the disarrangement of permanent way equipment (e.g. where rails, points or crossings are re-laid, removed or repaired) safeworking form CCNRF 003 shall also be used, and signed jointly by the Signalling, NCO and Civil personnel.

When it is necessary for a lever, route push button or panel key to be moved during the execution of the work, the NCO shall be requested to move it.

Signalling Maintainers may move levers etc, for the purpose of testing only with the permission of the NCO.

Under no circumstances shall a Signalling Maintainer operate any signalling control device as part of a safeworking operation.

When the apparatus which has been disconnected is again in working order, the Signalling Maintainer shall cause the NCO to make an entry in the Control Centre log, and fill in particulars on form CNRF 003 and sign in conjunction with the NCO, and Civil representative where applicable.

Whenever any signalling apparatus is electrically disconnected by the removal of fuses, pins or links and the Signalling Maintainer cannot remain in attendance, then the points of disconnection shall be securely and clearly labelled to prevent the possibility of someone inadvertently replacing the fuse or pin or closing the link.

2.1 Disconnection of Signals and MLIs

When it is necessary to disconnect an electrically controlled signal or MLI to prevent the operation of the signal or MLI and maintain it at stop, the control circuit fuse shall be removed.

On installations where route termination links are provided this facility is used to disconnect the route(s) of the signal concerned instead of removing the common signal control circuit fuse.

On colour light signals and MLIs, securely disconnect both the active (positive) leg and the common (negative) leg of the signal control relay circuit for the lowest proceed indication in the sequence, typically the caution (HR) relay circuit but in some cases the low speed (LSpR) relay circuit. Also disconnect the active (positive) or common (negative) legs of the signal control relay circuits for the higher indications in the signal.

Advise the NCO of the circumstances and request blocking facilities be applied to the signal as applicable.

In conjunction with any main line signal or MLI being disconnected and maintained at stop, the distant signals or equivalent shall also be arranged to be securely maintained at their correct restrictive indications i.e., the distant signal shall be disconnected and maintained at caution and, in the case of power worked signals, the signal immediately in rear shall be maintained at caution, or low speed, as applicable controlled by the main signal prevented from operating.

The respective control relay circuits for the higher indications of the signal in rear shall be disconnected by manually opening either the active (positive) or common (negative) legs of the circuits.

(Where the respective higher signal indications of the signal in the rear are double switched by the disconnected control relays for the main line signal and where the integrity of these circuits is not in doubt, then the manual disconnection is unnecessary.)

2.2 Disconnection of Points - Mechanical

When it is necessary to disconnect mechanical points to prevent their operation the catch rod handles for the FPL lever and the point lever concerned shall be disconnected. Lever sleeves shall be fitted to the FPL lever and the points lever.

The procedures described above render the points inoperative but still safely connected to the interlocking with the points locked in position and the signals detecting and interlocked with the points. In such circumstances, provided the facing points are clipped and SL locked, the signals or MLIs leading over the points may be left in order.

When it is intended that the points are to be further interfered with, worked on, manually operated or disconnected from the interlocking, then, in addition to the above, the signals or MLIs protecting the points shall also be disconnected and maintained at stop and the associated distant signals or equivalent (ie., higher indications of the signals immediately in the rear) are to be disconnected so that these signals are restricted to a caution indication, or low speed, as applicable. Traffic moves shall be conducted with the points clipped and SL locked, and with the disconnected signals handsignalled.

2.2.1 Exception

If it is intended to work on the channel iron lead to the points or facing point lock and the points will not be moved during the course of this work it will be permissible to leave the protecting signals in working order provided the following precautions are observed.

- Book the points and facing point lock out of order on form CNRF 003.
- Disconnect the catchrod of both the points lever and the facing point lock lever so that the levers and the interlocking cannot be moved out of correspondence with the points.
- Disconnect the plunger of the facing point lock and securely wire the plunger into the plunger casting to securely lock the points.
- Secure the points with clip and SL lock.
- Provided the detection is in order and no attempt will be made to move the points, the signals leading through the points may be left working.

This procedure can only be adopted while the site is permanently attended by Signalling Maintainers; if it is required that the protecting signals remain operating while the Signalling Maintainers are not in attendance the points must also be spiked and XL locked in accordance with the procedures for 'Crossovers Seldom Used'. Disconnection of Points - Power Operated.

2.2.2 Electric – All Types

When it is necessary to electrically disconnect power worked points to prevent their operation, the following arrangements shall apply; where the points are electrically operated the local power shall be disconnected from the motor by the removal of the motor control fuse. The isolating switch shall also be switched to the off position. This shall be carried out for each point end worked from the points lever.

The electrically disconnected points shall be securely and clearly labelled to prevent the possibility of someone inadvertently replacing the fuses, closing links, switching on the power

The NCO is to be advised of the circumstances and request blocking facilities be applied to the points lever for the position the points are in.

The method of disconnection of points in computer based interlocking (CBI) areas is described in the respective sections in this manual dealing with the particular type of computer based interlocking.

2.3 Disconnection of Points for Work on the Points: Points Detection in Working Order

Where work is to be carried out on power worked points fitted with electrical detection, then, in some cases, the signals leading over one or more of the ends of such points, and over the diamond crossings may be left working if it is safe to do so provided the following precautions are observed.

- Advise the NCO of the work to be done and request blocking facilities be applied to the points lever.
- Fill in form CNRF 003. Observe CNWT 312 and CNPR 704.
- Electrically disconnect the points and turn the power off (electric or electro-pneumatic) to prevent their operation.
- Clip and SL lock the points facing ends which are being worked on or are liable to be affected by the work.
- If the points detection is in working order and will remain so, and if all ends that are or could be affected by the work are clipped and locked, the signals over the points may be left working while the Signalling Maintainer is in attendance to ensure the clips and SL locks are not removed. If the Signalling Maintainer cannot remain in attendance and if the integrity of the facing point lock cannot be relied upon, then the SL lock is to be changed to an XL lock and the points are also to be spiked, or otherwise the signals leading over the points ends

and the diamond crossings are to be disconnected and maintained at stop, until the points are restored to use.

2.4 Disconnection of Points for Work on the Points: Points Detection Not in Working Order

Normal Case

- Advise the NCO of the work to be done and request blocking facilities be applied to the points lever.
- Fill in form CNRF 003. Observe CNWT 312 and CNPR 704.
- Electrically disconnect the points and turn the power off (electric) to prevent their operation.
- Clip and SL lock the facing ends of the points.
- Clip and SL lock the trailing ends of the points.
- Disconnect and maintain at stop the signals leading over the points ends and the diamond crossings and disconnect the mechanical distant signal or restrict the power worked signal in rear to a caution indication (or low speed where applicable).

Exceptional Case

NOTE:

- The following procedure may also be applied when the points detection equipment has failed and the time to repair and the traffic delays will be extensive (refer to CRN SP 006).
- (Where points are booked out of use and are clipped, XL locked and spiked pending removal, the detection, if in order, should be left in circuit and not bridged.)

With the points lying normal the signals leading over the trailing end, and over the diamond crossings on a middle road, may be allowed to work if it is safe to do so, by remaining connected and by bridging detection, provided the following precautions are strictly observed.

- Explain the work to and obtain authorisation on Form 'Authority for Temporary Bridging of Contacts' from the appropriate Authorising Officer (see procedure TMG J002). Observe the requirements of TMG J002 'Bridging or False Feeding of Signalling Circuits'.
- Advise the NCO and request blocking facilities to be applied to the points lever.
- Compile Form CNRF 003 booking the points out of use, include the notation 'BRIDGED' against the entry of the points booked out of use and sign the form. Observe the requirements of CNWT 312 and/or CNPR 704, as applicable.
- Electrically disconnect the points and turn the power off to prevent their operation. (Mechanical points shall have the catch handle rod of the point lever and the FPL lever disconnected to prevent their movement.)
- In all cases, clip and SL lock the facing ends of the points.
- Also clip and SL lock the trailing end points for traffic movements (in addition to the facing end points) if the work is being carried out on the trailing end points, or if the detection is out of order on the trailing end.
- Disconnect and maintain at 'Stop' the signals leading over the facing ends of the points and disconnect the mechanical distant signal or restrict the power worked signal in rear to a caution indication (or low speed where applicable).
- Disconnect the reverse detector circuit at the same location where the normal contacts are being bridged.
- Bridge the detection contacts for the position the points are lying using regulation jumper wires (see procedure TMG J002), as follows:-

- Using the regulation jumper wires, strap and function test the contacts to be bridged to prove they are the correct contacts, then leave the bridging connected.
 - Bridge only the detection contacts that are affected (eg. detector normal contacts or indication box normal contacts or plunger lock normal contacts, as applicable).
 - Do not bridge out the contacts on points ends that are not affected.
 - Do not bridge out the ESML contact (see Note 2 for exception).
 - Apply the bridging at the actual detection contacts where the detection is out of order, if practical. If this is not practical apply the bridging at the nearest respective cable terminals to the contacts themselves and open the cable links leading back to the contacts; correspondence must firstly be proved between the cable terminals and the respective detection contacts.
- Once the bridging is applied, function test the point detection contacts at the end that is not affected to verify they are still effectively in the detection circuit.
 - Remain in attendance at the points while the bridge is on to ensure the points are not unclipped or unlocked, unless this can be otherwise guaranteed.
 - REMOVE the bridging BEFORE the point clips and locks are removed. REMOVE the bridging BEFORE the points are electrically reconnected. REMOVE the bridging BEFORE the signals leading over the facing ends are reconnected. REMOVE the bridging BEFORE reconnecting the reverse detector circuit.
 - Operate the points and function test the detection contacts through to the signallers panel BEFORE the points are booked back into use.
 - Complete the CNRF 003 form and sign into use.
 - Advise the Authorising Officer that the bridging has been removed.
 - Authorising Officer completes the 'Authority for Temporary Bridging of Contacts'

Note 1: Facing end detection in order and facing end not affected by the work.

If the work does not involve the facing end of points, and the detection is not bridged out on the facing end, and if (after the bridging is applied on the point ends affected by the work) the points normal detection on the facing end is tested and proved to be in working order, then, provided the facing end is clipped and SL locked normal and provided all other aspects of the above procedure are observed, the signals leading over the unaffected facing end of the points in the normal direction may be restored to use, if specifically authorised by the Authorising Officer for the temporary bridging.

Note 2: Bridged points detection not permanently attended.

If it is not practical for Signalling Maintainers to remain in attendance all the time that the bridging is on then other precautions must be taken to ensure that the bridging will not be interfered with and points will not be unlocked or moved or restored to use before the bridging is removed and the detection tested. These precautions need to be authorised and documented. For example, if it cannot be otherwise guaranteed that the points would not be unlocked and if there could be any train movements (including work trains) over ends of the points in a facing direction, then have those points ends XL locked and spiked; if the bridging is to remain on for an extended period, then also obtain authorisation on Form 'Authority for Temporary Bridging of Contacts' and bridge the ESML detection contact using regulation jumper wires and remove the ESML crank and key and keep it secure in your custody. Make a notation on the CNRF 003 form that the ESML is bridged. Remove the ESML bridging when returning the crank and key

If unable to remain in attendance while the detection is bridged out, then it will be necessary to close and lock signalling apparatus, disconnection boxes and

equipment locations in which case the jumper wires may not remain obvious to any uninformed person becoming involved. Where practical leave the jumper wires protruding, or further disconnect the points near the terminals where the bridging is applied so that to reconnect the points the jumper wires will be noticeable.

Note 3: Work requiring clipped and locked points to be unclipped.

Where one end of a crossover set of points is being worked on and the nature of the work necessitates that the points be unclipped at some stage, then such work is to be carried out with the signals on that line (leading up to and over that end of the points) disconnected and booked out of use with handsignallers provided at the signal(s) for any train movements. The bridging of the points detection on that line must not be applied unless the Signalling Maintainer can ensure that the points will be kept clipped and locked in the non-conflicting (normal) position except for periods when there is no possibility of any train movement (including work trains) up to the points on that line: the Signalling Maintainer is to be in attendance when the points are unlocked or unclipped.

Note 4: Testing when points equipment disconnected.

If the planned work involves the renewal of the points wiring or the disconnection and removal of more than one wire from its terminal at the one time, then the procedures for renewal or repair of signalling cables and wires are to be observed with testing of the wiring and points correspondence testing to ensure correct reconnection. If there are mechanical disconnections or track or permanent way adjustments then it will be necessary to perform facing point lock and detection tests.

2.5 Unplanned Work During a Planned Possession

If during the course of a planned possession it becomes obvious that the points equipment is at risk of damage and requires to be disconnected to protect the equipment or, if otherwise it becomes necessary to be disconnected, then bridging of the detection to maintain signalling on adjacent roads which are not affected by the possession, is only permitted if authorised and carried out in accordance with the requirements of paragraph 2.4 above.

2.6 Disconnection of Points for Indefinite Period

If it is necessary to disconnect either mechanically or power operated points for an indefinite period, the points must be spiked, clipped and XL locked in accordance with Network Rule and Procedure CNWT 312 and CNPR 704.

2.7 Removal of Sidings

When sidings operated by interlocked points are removed the procedures outlined in Network Rule and Procedure CNWT 312 and CNPR 704 must be observed.

If the siding is not straight railed on the advertised date the points must be spiked, clipped and XL locked and the interlocking equipment disconnected.

CNRF 003 forms must be signed by representatives of each discipline.

Subsequently when the siding is straight railed fresh CNRF 003 forms will be signed and the siding will be deleted from publications.

2.8 Disconnection of Level Crossing Protection

Where it is necessary to electrically disconnect level crossing protection (i.e. type 'F' warnings lights, bells, 1/2 arm booms and/or pedestrian warning lights, audible alarms, booms) to prevent operation of the level crossing protection, the crossing control (XR) fuse is to be removed and, in addition,

where up road and down road control relays are provided the circuit fuse for either relay is also to be removed if that circuit is directly affected i.e. when one or all of the approach track circuits have been disconnected. Where 1/2 arm booms are provided the motor control fuses for the up and down booms are to be removed and the booms arranged to be tied up clear of the road. Pedestrian crossing booms are not to be tied up. If the level crossing is situated on a single line then the up and down direction stick relays circuit fuse is also to be removed.

Where the level crossing is situated in an interlocking and protected by home signals the fixed signals protecting the interlocked level crossing are to be disconnected and maintained at stop and the associated distant signals or equivalent (i.e. higher indications of signals immediately in the rear) are to be disconnected so that these signals are restricted to a caution indication or low speed, as applicable.

In addition, hand signallers must be provided at the level crossing and affected signals, if applicable, in accordance with Network Rules and Procedures CNWT 312, CNPR 704, CNGE 218 and CNPR 715.

2.9 Disconnection of Electric Locks and Releasing Switches

When disconnecting a Releasing Switch or Electric lever lock to prevent its operation, the operating circuit fuse is to be removed and the common/negative side is also to be manually open circuited.

A test is then to be made to ensure that the device is inoperative.

2.10 Disconnection of Track Circuits

When disconnecting track circuits the circuit fuses controlling the FEED and RELAY are to be removed.

The disconnections of FEED arrangements are as follows:

- For transformer fed track circuits both AC & DC, the transformer primary fuse (typical 120v) and the links on the secondary side of the feed transformer are to be removed.
- For battery fed track circuits where no fuse is provided an internal feed cable link on either the positive or negative side of the battery is to be open circuited. Alternatively the feed cable connected to the positive terminal (wing-nut) of the battery may be disconnected.
- For Jeumont track circuits the 120v fuse to the transmitter is to be removed.
- For Audio Frequency tracks, where a separate power supply is provided the 120v fuse feeding the P/S unit is to be removed. Where the track circuit is fed from a bus bar the fuse (typical 24v) feeding the transmitter is to be removed. Always pull the negative pin or links first before removing the fuse.

The disconnection of RELAY arrangements are as follows:

- For both conventional AC and DC track circuits the track side fuse controlling the relay is to be removed, the local fuse for an AC vane track relay need not be removed. Where no fuse is provided i.e. "some battery fed DC track circuits", one of the internal links on the incoming track cable to the relay is to be open circuited
- For Jeumont track circuits at least one of the internal links on the incoming cables from the track is to be open circuited.
- For Audio frequency track circuits the supply fuse to the receiver is to be removed (typical 24V fuse) or, alternatively, if the unit has its own separate power supply, the 120v+ fuse to the P/S may be removed. Always pull the negative pin or links first before removing the fuse.

In electrified areas, when traction return rails are to be broken (e.g. rerailing of a traction return rail) or traction bonding is to be disturbed, the track circuit equipment in the location is to be isolated by open circuiting the cable leads to the track in both the feed and relay end locations to prevent the potential of any traction return current or other extraneous voltages entering the track circuit equipment. This is not required in the case of jointless track circuits without insulated joints.

2.11 Routine Maintenance

The safeworking procedures set out in the Network rules and Procedures will need to be applied when working on signalling equipment except during routine maintenance where:

- a) there is no interference with the working or interlocking of points, signals or level crossing protection, or where
- b) the work will not disarrange the interlocking or disconnect the signalling equipment from the interlocking but will make points or signals inoperative (or will cause level crossing warning equipment to operate) for a short period of time, provided that an understanding is reached with the signaller and a suitable opportunity between trains exists to enable the work to be completed without detriment either to safety or train working.
- c) If the work cannot be completed within this short time between trains the apparatus concerned must be treated as being defective and the Network rules and Procedures must be applied.
- d) The period of time for this working shall be shorter than the time between trains and less than thirty minutes.

Before undertaking any day to day maintenance authorised by (b) above, the Signalling Maintainer must advise the signaller what work requires to be done and come to an agreement as to when the work shall be carried out. Both persons must co-operate throughout, as necessary. Clause b) above may also be applied to work that will make inoperative, for a very short period, the lowering of only one half boom barrier, or the illumination of only one set of lights, of a Type F protected level crossing.

Note: Terms above have the following meanings;

“will make points or signals inoperative”

means that points are unable to be moved and that signals are unable to be cleared from the stop position.

“will cause level crossing warning equipment to operate”

means that the lights and audible alarms operate and the boom barriers, where applicable, lower to the horizontal position.

“the work will not disarrange the interlocking or disconnect signalling equipment from the interlocking”

means that the vital signalling controls and indications (that prevent signals being wrongly cleared, or prevent points being wrongly moved or released, or that operate level crossing warning equipment) will not be interfered with and will remain effective and the work will not defeat any of the protection provided by the signalling system

3 Other Scenarios

3.1 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.

3.2 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.

3.3 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'.