



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Discipline
Engineering Standard – NSW

Category
Signalling

Title
**Maintenance Responsibilities, Frequencies,
Recording**

Reference Number
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Document Control

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About This Standard

This Standard defines the signalling procedures that describe the maintenance responsibilities, frequencies and recording of signalling maintenance tasks.

Superseded

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
	13/08/2010		Superseded by ESM-26-01

Superseded

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Superseded

1 GENERAL RESPONSIBILITIES

Signalling maintainers are responsible for efficiently maintaining the equipment on their sections to ensure the availability of the equipment and its reliable operation to safely and efficiently regulate train movements.

Signalling maintainers are responsible for the maintenance of the whole of the electrical safeworking instruments and electrical signalling equipment and circuits, including level crossing warning systems, on their assigned sections in accordance with the Network rules and procedures, maintenance instructions, maintenance rosters, technical maintenance plans & service schedules, standard practices and procedures and equipment manuals. If due to unavoidable circumstances the required maintenance frequency is missed, records shall be suitably endorsed with reasons.

Where maintenance of an item of equipment or circuit is carried out by separate working groups then the person in charge nominally responsible for the item of equipment or circuit is not responsible for the work of the group who do not report to him/her but is responsible to be vigilant for and to report for correction any equipment or circuit defect or maintenance attention required by the other group.

For example, where signalling circuits extend over cables and/or linewires which are maintained by staff who do not report to the signal electrician then the signal electrician is not responsible for the maintenance performance of those staff but he/she is required to assure himself/herself, as far as reasonably practical, that the integrity and reliability of those circuits is not at risk. Any work involving disconnection or re-connection of signalling circuit wires and cables requires the attendance of the signal electrician.

Signalling maintainers in charge of persons carrying out work for which the signalling maintainer in charge does not normally hold accreditation, are to ensure that those persons hold current accreditation and are suitably experienced for the work to be carried out and are to reasonably assure themselves to the best of their ability that the work is carried out correctly and is satisfactorily completed.

The balancing of electric train staffs on single lines, where balancing magazines are not provided, shall be carried out by a signal electrician.

Where signal electricians are in charge of mechanical maintenance employees they are also responsible for ensuring that the maintenance of the mechanical equipment on their sections is properly carried out.

Signalling maintenance employees in charge of a section are also responsible for the maintenance of all communication equipment on their sections excepting where provision is made for specified communications equipment to be maintained by communications technicians.

Signalling maintenance employees in charge of others are also responsible for the direction and supervision of persons placed under their control and in their care, and are to ensure the equipment on the section is effectively and efficiently maintained. They shall ensure that their signalling staff are knowledgeable and competent to perform their duties and they shall develop the skills and proficiency of their signalling staff. They shall train inexperienced and junior signalling employees as required. They are to ensure that their staff are aware of safety hazards, that they know the safety precautions and that they practice safe work methods.

Upon being assigned maintenance responsibilities for a particular section, accredited signalling employees shall as soon as practical become fully conversant with the equipment and circuits etc. on their section, including the particular condition and maintenance requirements of each item of equipment, and the applicable specifications, equipment manuals, technical maintenance plans & service schedules, instructions, procedures and Network rules and procedures. They shall familiarise themselves with relevant emergency arrangements.

As far as practicable, they are also to become fully conversant with the equipment on adjacent sections, and thus be capable of performing effective service also on adjacent sections when required to do so in an emergency.

Signalling maintenance employees shall be required, from time to time, to attend failures or carry out maintenance on other sections when the staff for that section are unavailable or require assistance. When tracing equipment failures on their own sections staff shall if required work on adjacent sections to find and/or rectify the cause. In such cases the local signal electrician shall be notified as soon as practical.

Signalling maintainers, when attending equipment fitted with doors, covers, lids etc. are responsible for ensuring that they are left properly secured in position, closed and where applicable, locked.

Signalling maintenance employees shall check items of signalling equipment during regular maintenance visits, and whenever there is reasonable cause to suspect that reliable operation of equipment may have been jeopardised, e.g.; by construction activities, mechanised track maintenance activities, etc and also at other times when the opportunity arises and it is practical and advantageous to do so.

To ensure the reliable operation of equipment, it is the responsibility of signalling maintenance employees to keep a look out for potential failures and potential failure situations so that preventative maintenance can be achieved.

The signalling employee in charge of maintaining the section shall report to the Signal Maintenance Engineer any matter which appears to require attention which is beyond his/her own means.

2 MAINTENANCE - FREQUENCIES, REPORTS AND RECORDS

In order that maintenance of systems and equipment be carried out in a controlled, programmed manner it is necessary to keep accurate, updated records. Signalling maintainers are required to produce returns, reports and test records in accordance with these procedures.

In the event of a train accident in which the integrity of the signalling system may be questioned or thrown under suspicion, the maintenance reports and records form an important documented account, duly attested to the maintainer, of the maintenance of the system concerned.

Records of actual maintenance carried out are also required to assist in determining the optimum level of maintenance for each type of equipment.

The actual maintenance actions carried out are to be on the basis that it should ensure that the signalling equipment will operate safely and reliably until the next maintenance visit.

2.1 Maintenance Frequencies

Maintenance Signal Engineer's are responsible to ensure the performance of maintenance necessary to meet safety standards and reliability requirements.

Maintenance frequencies are set out in technical maintenance plans and service schedules or in maintenance rosters. Some regions/areas have Tailored Technical Maintenance Plans and service schedules to take account of the particular conditions relevant to that region/area.

Scheduled maintenance frequencies require the approval of the Principal Engineer Signals Assurance, wherever the signalling equipment affects safety or its failure significantly impacts on the availability of the signalling system for safe train operations (such that inherently less safe, regulatory means to advance trains could be required on a number of occasions).

Maintenance frequencies and maintenance actions are to be in accordance with the Technical Maintenance Plan (TMP) and the associated Service Schedules or an approved Tailored Technical Maintenance Plan and service schedules where applicable.

Maintenance frequencies and actions are subject to continuous review and Signal Maintenance Engineers should take the opportunity to advise the Principal Engineer Signals Assurance, the results of their experience to allow for improvements to be made.

The TMP maintenance periods are specified intervals for specified maintenance actions included in the Service Schedules and are based on signalling equipment in fair and reasonable condition in an operating environment of a reasonable standard with a high level of main line passenger and/or freight rail traffic.

The Signal Engineer is to direct that additional or more frequent maintenance be carried out where site specific conditions, (such as road movement, or equipment approaching its life expectancy, etc.) would otherwise cause a reduction in safety integrity or in reliability below requirements.

For non-vital equipment, or on non-passenger lines with low to medium levels of traffic, or on terminating branch passenger lines with a low level of traffic, then, provided the equipment and its operating environment are in reasonable order, the responsible Signal Engineer after due deliberation, may extend the TMP maintenance periods by up to 1 month and advise the Principal Engineer Signals Assurance, accordingly prior to implementation. This does not apply to the frequencies of some critical inspections and tests which are listed in the following paragraphs under 'Returns'.

In other situations where there are conditions which are conducive to extending the maintenance periods while meeting the safety integrity and reliability requirements, then the responsible Signal Engineer is to submit recommendations with justifying reasons to the ARTC General Manager ISP or nominated Signalling representative for action. Once approved, the Signal Engineer will be responsible for regularly reviewing the conditions to ensure that there are no changes that would affect the maintenance requirements.

Notwithstanding the scheduled maintenance actions, signalling maintenance employees should be particularly vigilant when attending locations to detect any deficiency in items other than that which they are specifically maintaining during that visit. This includes bonding, notice board lighting, and any changes to track circuit ballast conditions that may have recently occurred. Any

defects are to be attended to and not left for the next scheduled visit. Maintenance on such items is to be recorded and the records submitted to the Signal Engineer.

Proposed changes to approved maintenance actions and frequencies (e.g. tailored Technical Maintenance Plans) requires approval of the relevant group within engineering and authorisation by the ARTC GM ISP or nominated Signalling representative. All proposals for changes are to be forwarded to the ARTC GM ISP or nominated Signalling representative for action.

2.2 Reports, Records and Returns

Details of the planned maintenance schedules and frequencies and the actual preventative and corrective maintenance performed, including regular safety critical tests, shall be documented using a reliable reporting and recording system.

Signalling Form SFJ121 or equivalent means should be used for monthly return of critical inspections for facing point lock and detector adjustment, 50hz AC double rail track circuit tests, electric lock tests and trainstop gauging tests.

Returns are required certifying the inspections and tests that have been carried out and bringing to attention those that have not been carried out.

The following regular inspections and tests are also required with returns also to be provided to verify and record compliance.

Test Description	Test Frequency
Checking of 50Hz AC DR track circuits. Passenger Lines	Monthly
Checking of 50Hz AC DR track circuits. Freight Only Lines	2 Monthly
Testing of Electric Locks (Non-Proved)	Monthly
Testing of Electric Locks (Proved)	3 Monthly
Testing of Electric Locks (Power Frame)	Monthly
Testing of Facing Point Locks	1-2 Monthly
Testing of Facing Point Locks (XL Locked Crossovers)	3 Monthly
Testing of Electrical Detectors (XL Locked Crossovers)	3 Monthly
Testing of Electrical Detectors	1-2 Monthly
Testing of Mechanical Detectors (XL Locked Crossovers)	3 Monthly
Testing of Mechanical Detectors	Monthly
Testing of Selectors and Bolts	Monthly
Gauging of Trainstops	6 Monthly
Testing of Circuit Insulation (PVC)	4 Yearly
Testing of Circuit Insulation (Non-PVC)	2 Yearly
Testing of Slip/Rainfall/etc. Detectors	Monthly
Inspection of Level Crossing Warning Systems – Road	Monthly

Inspection of Level Crossing Warning Systems – Pedestrian	Monthly
Examination of Signal Posts, Cantilevers, Gantries etc.	2-3 Yearly
Inspection of Running Signal Lights (Main Passenger Lines)	Half Yearly
Inspection of Running Signal Lights (Other Lines)	Yearly
Examination of Collars of Large Electric Train Staff Instruments	Half Yearly
Checking of Staff Transfer Magazines	Yearly
Testing of Time Limit Shelf and Large Plug-In Relays	2 Yearly
Testing of Mechanical Locking	2 Yearly
Testing of Staff Instruments	2 Yearly
Overhaul of Non-Proved Shelf Relays	15 Yearly

NOTE: The above frequencies apply to the base Technical Maintenance Plan (TMP) and may vary where Tailored Technical maintenance Plans are in use or a specific waiver has been issued.

Maintenance records arranged such that each critical item is individually signed for and submitted regularly as required, or alternatively a separate return listing all related items and signed for collectively, would fulfil the requirements for these returns.

The Signal Maintenance Engineer is to analyse maintenance records monthly and arrange corrective action if required.

The Signal Maintenance Engineer's recommendation is required for any extended interval for facing point lock and detection testing proposed to be submitted to the ARTC GM ISP or nominated Signalling representative for authorisation.

Such submissions should take into account, among other things the points configuration, condition, operating environment and maintenance history and these details should be recorded. A points turnout checklist is attached for this purpose.

The Signal Maintenance Engineer shall review extended intervals approved and authorised for facing point lock and detection testing at least every 12 months and whenever conditions change significantly.

Refer to details of tests in the relevant sections of these maintenance procedures:

Relay records

Relay records shall be prepared and submitted in accordance with the procedure on relays herein.

Battery records

Battery record cards shall be kept with the battery/cell in accordance with the procedure laid down herein.

Track circuit records

Track circuit test record cards (history cards) shall be kept near the track relay and track feed as specified in the track circuit procedure herein.

Insulation Test Records

Insulation test records shall be kept in the District Office and monitored against the programme.

Signal Engineer Inspection/Test Reports and Certificates

Reports and certificates shall be completed and kept by the Signal Maintenance Engineer for the specific inspections or tests required to be carried out by them or their suitably accredited delegate. These shall include locking test certificates, protected level crossing inspection reports, staff instrument test reports, and signal sighting inspection reports.

2.3 Lines on Which Traffic is Suspended

Should traffic on the line be suspended, maintenance may also be suspended with the approval of the Principal Engineer Signals Assurance. Network Control must be notified in writing that no maintenance is being carried out and that no trains must run until arrangements have been made to carry out the maintenance prior to any train running. Written acknowledgement is required from Network Control and a notation is to be made in the Train Register Book of the station at the beginning of the section. All signalling equipment on the line is to be collectively booked out of order. A GENL telegram is to be sent.

POINTS TURNOUT CHECKLIST

For proposals to change Facing Point Lock and Detection Testing frequency

Date:

LOCATION:

POINTS No.:

Turnout Type: Conventional

1. General turnout condition including timbers or beams and ballast – do not include signalling equipment in this part of the assessment.					
	Condition Rating				
	V Poor	Poor	Fair	Good	V Good
60 kg 1 in 8¼ or 1 in 10½ on concrete beam	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>or</i>					
60 kg 1 in 15 on concrete beams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60 kg 1 in 8¼ or 1 in 10½ on timber sleepers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>or</i>					
60 kg 1 in 15 on timber sleepers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53 kg 1 in 15 housed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53 kg 1 in 8¼ or 1 in 10½ std switch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53 kg 1 in 8¼ or 1 in 10½ thick switch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47 kg or lighter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ballast Condition (Fouled → Clean)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ballast Height (Low/Excessive → Correct)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the turnout pumping (High → Negligible)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the ballast through the turnout been glued (bonded)?	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Super-elevation through the turnout	<input type="checkbox"/> None		<input type="checkbox"/> < 35mm	<input type="checkbox"/> > 35mm	
Switch tip condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type of Chair	<input type="checkbox"/> Rail Brace		<input type="checkbox"/> Pressed Steel		
Switch fit up to stockrail:					
Normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reverse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flangeway Clearance (Behind Open Switch)	<input type="checkbox"/> < 50mm			<input type="checkbox"/> > 50mm	
General Level and Alignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

POINTS TURNOUT CHECKLIST

Date:

LOCATION:

POINTS No.:



Turnout Geometry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drainage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gauge	<input type="checkbox"/> <1432	<input type="checkbox"/> 1432-1440	<input type="checkbox"/> >1440	
Turnout Switch Alignment	<input type="checkbox"/> within 25mm of square			
	<input type="checkbox"/> more than 25mm out of square			
Evidence of stockrail longitudinal movement	<input type="checkbox"/> >20mm	<input type="checkbox"/> 10-20mm	<input type="checkbox"/> <10mm	
Evidence of stockrail lateral movement	<input type="checkbox"/> <3mm	<input type="checkbox"/> >4mm		
Drainage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Superseded

POINTS TURNOUT CHECKLIST

Date:

LOCATION:

POINTS No.:

Turnout Type: Conventional

2. Traffic: Density, Type and Speed.					
Density: Trains per day	<input type="checkbox"/> <5	<input type="checkbox"/> 5-20	<input type="checkbox"/> 20-50		
	<input type="checkbox"/> 50-100	<input type="checkbox"/> 100-200	<input type="checkbox"/> >200		
Type	<input type="checkbox"/> EMU	<input type="checkbox"/> XPT	<input type="checkbox"/> Mixed		
	<input type="checkbox"/> Freight	<input type="checkbox"/> Heavy Haul			
Speed:					
Straight Route	<input type="checkbox"/> <60kph	<input type="checkbox"/> 60-90	<input type="checkbox"/> 90-120		
	<input type="checkbox"/> >120kph				
Turnout Route	<input type="checkbox"/> <20kph	<input type="checkbox"/> 20-40	<input type="checkbox"/> >40kph		
Percentage of trains through turnout route	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> %				
Line Class	<input type="checkbox"/> <input type="checkbox"/>				
3. Environment					
Approach Conditions	<input type="checkbox"/> Continuously welded				
	<input type="checkbox"/> Other turnouts				
	<input type="checkbox"/> Rail joint within 3m of tip				
Straight Route	<input type="checkbox"/> none	<input type="checkbox"/> >400m	<input type="checkbox"/> <400m		
Rising grade approaching turnout	<input type="checkbox"/> <1 in 60		<input type="checkbox"/> > 1 in 60		
Level approaching turnout	<input type="checkbox"/>				
Falling grade approaching turnout	<input type="checkbox"/> <1 in 60		<input type="checkbox"/> > 1 in 60		
Locality: Subject to flooding	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Corrosive (coal & mineral traffic)	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Seaboard	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Derailed Severity ##	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
<p>## Derailed severity is defined by the location of the turnout relative to bridges over rivers or roads, embankments, other running lines, building or overbridge supports, frequented public areas.</p> <p>Example: A turnout immediately ahead of a bridge could rate "5" (very high) whereas a turnout on a single line in open flat country could rate "1" (very low).</p>					

POINTS TURNOUT CHECKLIST

Date:

LOCATION:

POINTS No.:

Turnout Type: Conventional

4. Signalling Equipment: Type and Condition				
Type	<input type="checkbox"/> Electric		<input type="checkbox"/> EP	
	<input type="checkbox"/> Mech			
	<input type="checkbox"/> Hydraulic			
	<input type="checkbox"/> Clamp lock		<input type="checkbox"/> Claw Lock	
Back drive(s)	<input type="checkbox"/> None		<input type="checkbox"/> One	
	<input type="checkbox"/> Two			
	V Poor	Poor	Fair	Good
	V Good			
Condition of external equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Condition of mechanism(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Installation Standard				
Alignment of Rodding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electric Switch Machine	Type:.....			
Mechanical Drive	<input type="checkbox"/> Interlock Machine		<input type="checkbox"/> Ground Frame	
60kg 1 in 8¼ or 1 in 10½ additional gauge rod fitted		<input type="checkbox"/> Yes		<input type="checkbox"/> No
Type of extension piece	<input type="checkbox"/> ball joint		<input type="checkbox"/> rubber bush	
Turnout Route	<input type="checkbox"/> <20kph		<input type="checkbox"/> 20-40	
	<input type="checkbox"/> >40kph			
For Mechanical operation only,				
Adjustment remaining on 10 x 18 crank	<input type="checkbox"/> <65mm		<input type="checkbox"/> >65mm	
Escapement between bobbin and cradle	<input type="checkbox"/> <10mm		<input type="checkbox"/> >10mm	
Lock and/or Detection Adjustment History				
Lock and/or Detector required adjusted during testing or periodic maintenance at intervals of	<input type="checkbox"/> <2 months		<input type="checkbox"/> 2-4 months	
	<input type="checkbox"/> <4-6 months		<input type="checkbox"/> >6 months	
Lock and/or Detection Failure History (Include only "adjustment" failures)				
No. of failures past 3 months	<input type="checkbox"/>			
No. of failures past 12 months	<input type="checkbox"/>			

Signed:

POINTS TURNOUT CHECKLIST

For proposals to change Facing Point Lock and Detection Testing frequency

Date:

LOCATION:

POINTS No.:



Turnout Type: Tangential

1. <u>General turnout condition</u> including timbers or beams and ballast – do not include signalling equipment in this part of the assessment.					
	Condition Rating				
	V Poor	Poor	Fair	Good	V Good
190-250m radius on concrete beams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>or</i>					
300-800m radius on concrete beams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>or</i>					
1200m radius on concrete beams	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
190-250m radius on timber sleepers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>or</i>					
300-800m radius on timber sleepers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>or</i>					
1200m radius on timber sleepers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ballast Condition (Fouled → Clean)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ballast Height (Low/Excessive → Correct)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the turnout pumping (High → Negligible)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the ballast through the turnout been glued (bonded)?	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Super-elevation through the turnout	<input type="checkbox"/> None		<input type="checkbox"/> < 35mm	<input type="checkbox"/> > 35mm	
Switch tip condition	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Type of Chair	<input type="checkbox"/> Rail Brace		<input type="checkbox"/> Pressed Steel		
Switch fit up to stockrail:					

Normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reverse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flangeway Clearance (Behind Open Switch)	<input type="checkbox"/> < 50mm		<input type="checkbox"/> > 50mm		
General Level and Alignment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turnout Geometry	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
Drainage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gauge	<input type="checkbox"/> <1432		<input type="checkbox"/> 1432-1440	<input type="checkbox"/> >1440	
Turnout Switch Alignment	<input type="checkbox"/> within 25mm of square				
	<input type="checkbox"/> more than 25mm out of square				
Evidence of stockrail longitudinal movement	<input type="checkbox"/> >20mm		<input type="checkbox"/> 10-20mm	<input type="checkbox"/> <10mm	
Evidence of stockrail lateral movement	<input type="checkbox"/> ≥4mm				

Superseded

POINTS TURNOUT CHECKLIST

Date:

LOCATION:

POINTS No.:

Turnout Type: Tangential

2. <u>Traffic:</u> Density, Type and Speed.					
Density: Trains per day	<input type="checkbox"/> <5	<input type="checkbox"/> 5-20	<input type="checkbox"/> 20-50		
	<input type="checkbox"/> 50-100	<input type="checkbox"/> 100-200	<input type="checkbox"/> >200		
Type	<input type="checkbox"/> EMU	<input type="checkbox"/> XPT	<input type="checkbox"/> Mixed		
	<input type="checkbox"/> Freight	<input type="checkbox"/> Heavy Haul			
Speed:					
Straight Route	<input type="checkbox"/> <60kph	<input type="checkbox"/> 60-90	<input type="checkbox"/> 90-120		
	<input type="checkbox"/> >120kph				
Turnout Route	<input type="checkbox"/> <25kph	<input type="checkbox"/> 25-50	<input type="checkbox"/> 60-80		
	<input type="checkbox"/> >80kph				
Percentage of trains through turnout route	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> %				
Line Class	<input type="checkbox"/> <input type="checkbox"/>				
3. <u>Environment</u>					
Approach Conditions	<input type="checkbox"/> Continuously welded				
	<input type="checkbox"/> Other turnouts				
	<input type="checkbox"/> Rail joint within 3m of tip				
Curvature approaching turnout	<input type="checkbox"/> none	<input type="checkbox"/> >400m	<input type="checkbox"/> <400m		
Rising grade approaching turnout	<input type="checkbox"/> <1 in 60		<input type="checkbox"/> > 1 in 60		
Level approaching turnout	<input type="checkbox"/>				
Falling grade approaching turnout	<input type="checkbox"/> <1 in 60		<input type="checkbox"/> > 1 in 60		
Locality: Subject to flooding	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Corrosive (coal & mineral traffic)	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Seaboard	<input type="checkbox"/> Yes		<input type="checkbox"/> No		
Derailment Severity ##	<input type="checkbox"/> 5	<input type="checkbox"/> 4	<input type="checkbox"/> 3	<input type="checkbox"/> 2	<input type="checkbox"/> 1
<p>## Derailment severity is defined by the location of the turnout relative to bridges over rivers or roads, embankments, other running lines, building or overbridge supports, frequented public areas.</p> <p>Example: A turnout immediately ahead of a bridge could rate “5” (very high) whereas a turnout on a single line in open flat country could rate “1” (very low).</p>					

POINTS TURNOUT CHECKLIST

Date:

LOCATION:

POINTS No.:

Turnout Type: Conventional

4. Signalling Equipment: Type and Condition					
Claw Lock	<input type="checkbox"/> Electric		<input type="checkbox"/> EP		
Back drive(s)	<input type="checkbox"/> None		<input type="checkbox"/> One	<input type="checkbox"/> Two	
	<input type="checkbox"/> One plus spring assist				
	V Poor	Poor	Fair	Good	V Good
Condition of external equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Condition of mechanism(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Installation Standard					
Alignment of Rodding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>or</i>					
Electric Switch Machine	Type:.....				
Back drive(s)	<input type="checkbox"/> None		<input type="checkbox"/> One	<input type="checkbox"/> Two	
	<input type="checkbox"/> One plus spring assist				
	V Poor	Poor	Fair	Good	V Good
Condition of external equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Condition of mechanism(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Installation Standard					
Alignment of Rodding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lock and/or Detection Adjustment History					
Lock and/or Detector required adjusted during testing or periodic maintenance at intervals of	<input type="checkbox"/> <2 months		<input type="checkbox"/> 2-4 months		
	<input type="checkbox"/> <4-6 months		<input type="checkbox"/> >6 months		
Lock and/or Detection Failure History (Include only "adjustment" failures)					
No. of failures past 3 months	<input type="checkbox"/>				
No. of failures past 12 months	<input type="checkbox"/>				

Signed: