


Safe Work Instruction	Issue date: 24/11/09
<b>Train Communication System (14): Safe Working</b>	Review date: 01/03/11




<b>Document no.</b>	<b>Work description</b>
SMS-06-SW-1281	This SWI describes safe work practices related to the maintenance of components within the Train Communication System
	<b>Scope</b> This SWI applies to all work by RSD staff on Rollingstock train communication systems This document does not replace technical 'how to' documents such as Engineering Instructions, Manufacturers' instructions etc In addition to the inclusions of this document, all Communication System work is to be carried out in accordance with <a href="#">SMS-06-GD-0268 Working around Electrical Equipment</a> .

<b>Review date</b>	<b>References</b>
01/03/11	<ul style="list-style-type: none"> <li>• OHS Act 2000</li> <li>• OHS Regulations 2001</li> <li>• Rail Safety Act 2008</li> <li>• ARPANSA Radiation Protection Standard for Maximum Exposure levels to Radio Frequency Fields – 3kHz to 300 kHz 2002</li> <li>• AS 61010.1-2003 Safety requirements for electrical equipment for measurement, control &amp; laboratory use</li> <li>• HB 187-2006 Guide to Selecting a Safe Multimeter</li> <li>• <a href="#">SMS-06-SW-0891 Train Radio Isolation</a></li> <li>• <a href="#">SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres</a></li> <li>• <a href="#">SMS-06-GD-0268 Working Around Electrical Equipment</a></li> <li>• <a href="#">SMS-06-SW-1160 Working on High Roads</a></li> <li>• <a href="#">SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms</a></li> <li>• <a href="#">SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out</a></li> <li>• <a href="#">SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key</a></li> <li>• <a href="#">SMS-06-SW-0837 Isolating 1500v DC OH using a Supplementary Lock</a></li> <li>• <a href="#">SMS-06-SW-0838 Pantograph Raising and Lowering</a></li> <li>• <a href="#">SMS-06-SW-1133 Guard's Emergency Cock Lock-Out</a></li> <li>• <a href="#">SMS-06-SW-0538 PPE for Electrical Work</a></li> <li>• <a href="#">SMS-06-SW-0269 Electric Shock Protocol</a></li> <li>• <a href="#">SMS-06-SW-0812 Working in the Pit</a></li> <li>• <a href="#">SMS-06-SW-0487 Entering Trains from Ballast</a></li> <li>• <a href="#">SMS-06-SW-0488 Climbing out of Trains onto Ballast</a></li> </ul>







Responsible supervisor	PPE and precautions	Competencies or qualifications	Licences or permits required
Line Manager	<ul style="list-style-type: none"> <li>• High visibility vest or clothing</li> <li>• Safety Footwear</li> <li>• Gloves, as required</li> <li>• Knee pads, as required</li> <li>• Bump hats, as required</li> </ul>	<ul style="list-style-type: none"> <li>• Rail Industry Safety Induction (RISI)</li> <li>• Site specific induction</li> <li>• Electrical Safety Awareness</li> <li>• Electrical Trade Certificate, as required</li> <li>• Manual Handling Training</li> </ul>	

<b>Tools and equipment required</b>
<ul style="list-style-type: none"> <li>• Red Flag</li> <li>• Personal Locks, Multi-locks (Hasps) and/or Danger tags, as required</li> <li>• Power tools, as required</li> <li>• Hand tools</li> </ul>
IF CONTROL MEASURES ARE NOT SUITABLE AND MAJOR CHANGES ARE NEEDED, CONDUCT A RISK ASSESSMENT AND DEVELOP NEW CONTROLS ACCORDING TO <a href="#">SMS-06-PR-0104 WORKPLACE RISK MANAGEMENT</a> .

	<b>Warning</b> The following warnings apply throughout this SWI: <ul style="list-style-type: none"> <li>• Train antennas generate a radiation field that can be hazardous to your health. Always ensure antennas have been isolated, in accordance with <a href="#">SMS-06-SW-0891 Train Radio Isolation</a>, before approaching</li> <li>• The isolation provided in this SWI is an administrative (procedure) control only. Wherever possible make use of hard isolation such as described in <a href="#">SMS-06-SW-1133 Guard's Emergency Cock Lock-Out</a>, <a href="#">SMS-06-SW-0838 Pantograph: Raising and Lowering</a> and / or <a href="#">SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key</a></li> </ul>
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	<ul style="list-style-type: none"> <li>Working with power tools can be hazardous. Where possible use non-powered or battery operated tools. If power tools are required, always work in accordance with the relevant SWI or manufacturers instructions, if no SWI is available</li> <li>Ensure all pantographs are lowered and isolated on all cars in that area, by undertaking a visual inspection in accordance with <a href="#">SMS-06-SW-0838 Pantograph Raising and Lowering</a>. Failure to confirm that all pantographs are lowered correctly, by undertaking a visual inspection could lead to serious injury or death</li> </ul>	
<b>Place Red Flag</b>	To notify persons that work on Communication System systems is being carried out on the train you must place a Red Flag accordance with <a href="#">SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres</a>	
<b>Job/Site Planning</b>	<p>Once the red flag is in place, determine the work required</p> <p>Identify the relevant tools, equipment and parts that will be required</p> <p>Identify any other relevant SWIs (eg. SWIs for relevant tools) that will document hazards and their controls</p> <p>Collect identified items from the store and transport to the location using manual handling aids (eg. bags, trolleys, or electric maintenance vehicles)</p> <p>Where possible, climb in and out of the cars from platforms. If it is necessary to access from ballast always do so in accordance with <a href="#">SMS-06-SW-0487 Entering Trains from Ballast</a> and <a href="#">SMS-06-SW-0488 Climbing out of Trains onto Ballast</a></p>	
	<p><b>Warning</b></p> <p>Train antennas generate a radiation field that can be hazardous to your health. If 'determining the work required' involves approaching an antenna, first ensure it has been isolated, in accordance with <a href="#">SMS-06-SW-0891 Train Radio Isolation</a></p>	
	<p><b>Note</b></p> <p>Should testing / fault finding on live electrical equipment and / or wiring be required, this is only to be carried out by:</p> <ul style="list-style-type: none"> <li>Qualified electricians or apprentices under their direct supervision, when: <ul style="list-style-type: none"> <li>Competent in the requirements of electrical shock protocol in accordance with <a href="#">SMS-06-SW-0269 Electric Shock Protocol</a></li> <li>Wearing all the PPE for electrical work in accordance with <a href="#">SMS-06-SW-0538 PPE for Electrical Work</a></li> <li>Using approved electrical test equipment (e.g. a multimeter that complies with AS 61010.1 2003)</li> </ul> </li> </ul>	
<b>Isolation – Electrical Energy</b>	<p>Before commencing work on communication systems, isolation is required to protect you from electric shock. The isolation required may vary, depending upon the work, and should be determined in conjunction with relevant technical documents and, if in doubt, in conjunction with the Line Manager</p> <p>However, to protect from electrical energy within the communication system</p> <ul style="list-style-type: none"> <li>Access the communication system Control Panel and isolate the Train Radio Main Circuit Breakers (MCBs) and</li> <li>Access the drivers cab and isolate the wall mounted Train Radio Circuit Breaker and</li> <li>Ensure the drivers Master Controller is out of the "Isolate" position and in the "Off" position</li> <li>Apply circuit breaker locks and tags to all isolations, in accordance with <a href="#">SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out</a>. Refer to <a href="#">SMS-06-SW-0891 Train Radio Isolation</a> for more information</li> </ul>	
	<p><b>Note</b></p> <p>If due to its design, it is currently not possible to apply a lock or tag to a switch or circuit breaker:</p> <ul style="list-style-type: none"> <li>Isolate the circuit</li> <li>Lock or seal (using tape) the Control Panel</li> <li>Attach a Danger Tag to the Control Panel door</li> </ul>	
<b>Isolation – Train Movement</b>	<p>To protect from the movement of Electric Trains when ever possible</p> <ul style="list-style-type: none"> <li>Lower the pantograph(s), in accordance with <a href="#">SMS-06-SW-0838 Pantograph Raising and Lowering</a>, <a href="#">SMS-06-SW-0837 Isolating 1500v DC OH using a Supplementary Lock</a> and</li> <li>Isolate the road, in accordance with <a href="#">SMS-06-SW-0836 Isolating 1500V DC OH Using an Annett Key</a> and</li> <li>Isolate the guard's emergency cock, in accordance with <a href="#">SMS-06-SW-1133 Guard's Emergency Cock Lock-Out</a></li> </ul>	
<b>Check</b>	Visually inspect that the pantograph(s) has been lowered from the overhead power supply	

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	<p><b>Warning</b></p> <p>Ensure all pantographs are lowered in accordance with <u>SMS-06-SW-0838 Pantograph Raising and Lowering</u>. <b>Visually check</b> that the pantographs are lowered. Do not simply rely on the pantograph air pressure gauge, this will not guarantee that the pantographs are lowered. Failure to confirm that pantographs are lowered correctly may lead to serious <b>INJURY</b> or <b>DEATH</b>.</p>
	<p>To protect from the movement of Diesel Trains always</p> <ul style="list-style-type: none"> <li>Shut down the engine and apply the park brake fully</li> <li>Place Red Flag in accordance with <u>SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres</u></li> <li>Apply local road isolation (e.g. lock the boom gate, position the stop board and position chocks)</li> </ul>
<b>Carry Out Communication System Work</b>	Once isolation and other relevant controls have been put in place, carry out the Communication System work
	<p><b>Note</b></p> <p>Much of the Communication Systems work is carried out by non-RSD parties. Where this is the case, Line Management is to ensure these parties are authorised to carry out the work and that their system of work has been assessed and accepted as safe, before work commences</p>
	<p><b>Warning</b></p> <p>Communication System work has a number of general hazards. These include...</p>
	<ul style="list-style-type: none"> <li>Manual handling injury when handling large components. Where possible make use of manual handling aids such as gantry cranes, trolleys etc. Ensure any lifting / transport carried out with powered equipment (such as gantry cranes or electric powered maintenance vehicles) is carried out in accordance with relevant SWIs. Where manual handling aids are not practicable, seek assistance and use manual handling techniques consistent with your training</li> <li>Manual handling injury when accessing components mounted at height or in awkward positions. Only work with an approved, appropriate height step ladder in accordance with <u>SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms</u>. Seek assistance, as required, make use of manual handling techniques consistent with your training</li> <li>Strike injuries when accessing components located in awkward positions. Seek assistance, as required, and wear bump hats, knee pads and / or protective gloves, as required</li> </ul>
	<p><b>Warning</b></p> <p>Some Communication System work has unique hazards. These include...</p>
<i>Interrogator Antenna Removal &amp; Replacement</i>	<ul style="list-style-type: none"> <li>Various hazards associated with working in the pit. Always work in accordance with <u>SMS-06-SW-0812 Working in the Pit</u></li> </ul>
<i>Roof Mounted Antenna Removal &amp; Replacement</i>	<ul style="list-style-type: none"> <li>Various hazards associated with working from high roads. Always work in accordance with <u>SMS-06-SW-1160 Working on High Roads</u></li> </ul>
	<p><b>Note</b></p> <p>Ensure all work is carried out in accordance with relevant Engineering and Operational Instructions</p>
<b>Reinstate the electrical circuit</b>	<p>Before reinstating power always check for Red Flag(s) and that equipment is safe to reinstate</p> <p>Look for and inform other personnel that may be affected by reinstating the circuit.</p>
	<p><b>Warning</b></p> <p>Only remove your own isolation. The removal of another persons lock and / or tag may result in their injury or death. Offenders will be subject to strict disciplinary action and may be subject to prosecution by the regulator</p>
<b>Function Test</b>	Ensure correct installation of replaced components by function testing
<b>Clean and Exit</b>	<p>Remove replaced components and any rubbish from the train dispose of in a designated bin</p> <p>Remove any unused components, tools and equipment from the train</p> <p>Remove your Red Flag, in accordance with <u>SMS-12-OI-0886 Red Flagging Trains in Stabling Yards, Depots and Maintenance Centres</u></p> <p>Notify the Line Manager (supervisor or foreman) of completion, as required</p>

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<b>Additional controls</b>	
<ul style="list-style-type: none"> <li>• <i>Other controls may be necessary, depending upon the work being carried out. Refer to relevant SWIs</i></li> <li>• <i>If you identify additional hazards and / or controls relevant to this SWI, notify your Safety Facilitator or Line Manager as soon as practicable, so they can be noted and used to continuously improve this document</i></li> </ul>	