



**Australian Government**

**Department of Defence**

**Estate and Infrastructure Group**

# **RANGE LIVE FIRE TARGET EQUIPMENT MAINTENANCE REQUIREMENTS**

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**Authorised By:**

A handwritten signature in black ink, appearing to read "DW Graham".

**Colonel DW Graham**

Director of Operations and Training Area Management

## Servicing Task Terminology

The Equipment Servicing Schedules detail the materiel maintenance tasks to be conducted by the tradesperson. Each task requires the tradesperson to conduct a specific activity on a designated Configuration Item or System within the RLFTE System. The following table defines the terms used in the servicing schedule.

<b>Examine</b>	<p>Carry out a survey of the condition of an item or work area without dismantling unless directed to do so by servicing schedule instructions.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. The condition of an item can be impaired by one or more of the following general forms of damage or deterioration:             <ol style="list-style-type: none"> <li>a. Insecurity of attachment;</li> <li>b. Cracks, fractures or crazing;</li> <li>c. Distortion;</li> <li>d. Loose or missing fastening devices;</li> <li>e. Chafing, fraying, scoring or wear;</li> <li>f. Corrosion, deterioration or contamination;</li> <li>g. Faulty or broken locking devices;</li> <li>h. Loose clips or packing, obstruction of, or leaks;</li> <li>i. External damage;</li> <li>j. Overheating or leaking of fluids possibly indicated by discolouration;</li> <li>k. Delamination.</li> </ol> </li> <li>2. The terminology 'Examine as far as possible' acknowledges that thorough examination is not possible due to limited access. The term is only used in those cases where access to the item is severely limited, but adequate for the tradesperson to carry out the task to the depth of maintenance intended.</li> <li>3. The terminology 'Examine, paying particular attention to', or 'Examine particularly for ....' Is used to emphasise that in addition to carrying out a condition survey of the item or work area, the tradesperson shall pay particular attention to the nominated item for a specific condition.</li> </ol>
<b>Check</b>	<p>Make a comparison of an operating parameter (eg. measurement of time, pressure, temperature, resistance, dimension or other quantity) against the specified value for that parameter in approved technical manuals or documentation. Where operating parameters are outside of the values specified, perform the necessary activities required to restore the values to those specified. Note: all alignment/adjustments performed are to be detailed as an unserviceability in the Unserviceability Record.</p>
<b>Test</b>	<p>Ascertain by using appropriate test equipment that a component or system functions correctly.</p>
<b>Operate</b>	<p>Ensure that an item or system functions correctly as far as possible without the use of test equipment or reference to measurement.</p>
<b>Ensure</b>	<p>Make certain of.</p>
<b>Carry out</b>	<p>Bring to execution; pursue to conclusion.</p>
<b>Clean</b>	<p>Make clean by removing dirt, filth, or unwanted substances from.</p>
<b>Record</b>	<p>Make a record of; set down in permanent form.</p>
<b>Remove</b>	<p>Correctly detach one item from another.</p>
<b>Refit</b>	<p>Fit an item which has previously been removed.</p>
<b>Replenish</b>	<p>Bring back quantity of an entity to a quantified level</p>

**MPTS**

**OPERATOR LEVEL – SERVICING SCHEDULE 1**

Activity Type	Task No	Task
<p><b>CAUTION</b></p> <p><b>When Operating</b> – Keep Clear of Mechanism</p> <p><b>When Charging Mechanism</b> – Switch Off</p> <p><b>Before Transport</b> – Switch Off, Remove Target, Remove Antenna</p> <p><b>During Transportation</b> – Handle Carefully</p>		
Before Use	1-1	<p>Refit antenna, conduct a 'Default' operation to reset mechanism parameters</p> <p>Check the 'Up' and 'Down' functions</p> <p>Check the distance between the target holder arm and the fibreglass cover to ensure it is a minimum of 6mm (+1 -0).                      Note: If found outside this parameter and target availability is an issue, raise a DEMS Job; if availability is not an issue, put target aside for unserviceability rectification when opportune.</p>
After Use	1-2	Examine the mechanism for damage
Not In-Use	1-3	<p>Clean upon removal from field before storage</p> <p>Place the mechanism on charge – retain on charge until mechanism required</p>
Before Transportation	1-4	Remove the antenna.
<b>SERVICING SCHEDULE 1</b>		

**SERIES 5 TARGET MECHANISMS**  
**OPERATOR LEVEL – SERVICING SCHEDULE 2**

Activity Type	Task No	Task
<p><b>CAUTION</b></p> <p><b>When Operating</b> – Keep Clear of Mechanism</p> <p><b>When Charging Mechanism</b> – Switch Off</p> <p><b>Before Transport</b> – Switch Off, Remove Target, Remove Antenna</p> <p><b>During Transportation</b> – Handle Carefully</p>		
Before Use	2-1	Refit radio receiver and antenna. Check the 'Up' and 'Down' functions
After Use	2-2	Examine the mechanism for damage
Not In-Use	2-3	Clean upon removal from field before storage Maintain the battery in a charged state
Before Transportation	2-4	Remove radio receivers not permanently affixed to the mechanism  Remove any antennas that are likely to be damaged
<b>SERVICING SCHEDULE 2</b>		

**LDTM**

**OPERATOR LEVEL – SERVICING SCHEDULE 3**

Activity Type	Task No	Task
<p><b>CAUTION</b></p> <p><b>When Operating</b> – Keep Clear of Mechanism</p> <p><b>When Charging Mechanism</b> – Switch Off</p> <p><b>Before Transport</b> – Switch Off, Remove Target, Remove Antenna</p> <p><b>During Transportation</b> – Handle Carefully</p>		
Before Use	3-1	Refit antenna, target arms and night effect lights, if required. Conduct a 'Default' operation to reset mechanism parameters Check the 'Up' and 'Down' functions Clean solar panels (spray bottle with clean water and a clean rag)
In-Use	3-2	Clean solar panels each time the mechanism is attended (spray bottle with water and a rag)
After Use	3-3	Examine the mechanism for damage
Not In-Use	3-4	Clean upon removal from field before storage Maintain the battery in a charged state
Before Transportation	3-5	Fold antenna into down position Remove target arms and place in storage position on frame Remove (if fitted) Night Effect Lights
<b>SERVICING SCHEDULE 3</b>		

### MULTI PURPOSE TARGET SYSTEM SERVICING SCHEDULE 4

<b>RLFTE Sub-System</b>	Portable Target Systems		
<b>Equipment Type</b>	Multi Purpose Target System		
<b>Site Name</b>	Eg: Kapooka Training Area		
Equip Type	Task No	Task	Initial
<b>CAUTION</b> <i>Keep clear of the unit when in operation.</i>			
MPTS - Mechanism	4-1.	Ensure equipment cleanliness – report equipment cleanliness if equipment found to not be in a clean condition	
<b>NOTE</b> <i>Any mechanisms with projectile damage or other damage that compromises the integrity of the water sealing of the mechanism is to be returned to Australian Target Systems for repair and water pressure testing</i>			
	4-2.	Examine – in particular for: <ul style="list-style-type: none"> <li>• projectile damage</li> <li>• handling damage, and</li> <li>• water ingress</li> </ul>	
Target Controller	4-3.	Examine	
Target Controller Radio Unit	4-4.	Examine	
<b>NOTE</b> <i>For Operational Test, use all of the Controllers and Radio Units is to be spread over the equipment numbers held. Eg You might choose to use a particular Controller and Radio Unit for every fifteen (15) unit held.</i>			
MPTS - Mechanism	4-5.	Check mechanism(s) for correct operation by conducting an Operational Test and recording test results for each mechanism in the Operational Test Record. <b>NOTE:</b> During operation of the mechanisms particular notice is to be taken of abnormal noises and erratic movements	
Mechanism and Ancillary Equipment – Held Carried Forward Maintenance	4-6.	Record and repair where possible faulty equipment reported/held over by Range Staff. Eg ancillary equipment such as chargers and antennas etc.	
<b>SERVICING SCHEDULE 4</b>		<b>SERVICING CARD 4.1</b>	

**MPTS OPERATIONAL TEST RECORD**

**Note:** Pass/Fail is to be recorded as a  for pass or a  for fail.

**Controller**  
**Radio Unit**

*Cat No:*  
*Cat No:*

*Serial No(s):*  
*Serial No(s):*

Ref	Mech Serial No	Test Address	UP	DOWN	Up After Hit	Fall When Hit	Hold	Expose	Score Hit <sup>1</sup>	Sleep, Wake, Shutdown	Retaliate	Illuminate	Radio Distance 1Km <sup>2</sup>	Comments
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

<sup>1</sup> Test Address is required to ensure that each mechanism is communicating with the controller

<sup>2</sup> Use attenuator – minimum distance 5 metres

**SERIES 5 TARGET MECHANISM  
SERVICING SCHEDULE 5**

<b>RLFTE Sub-System</b>	Portable Target Systems		
<b>Equipment Type</b>	Series 5 Target Mechanism		
<b>Site Name</b>	Eg: Kapooka Training Area		
<b>Equip Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
<b>CAUTION</b> <i>Keep clear of the unit when in operation.</i>			
Mechanism	5-1.	Ensure equipment cleanliness – report equipment cleanliness if equipment found to not be in a clean condition	
<b>NOTE</b> <i>Any mechanisms with projectile damage or other damage that compromises the integrity of the water sealing of the mechanism is to be returned to Australian Target Systems for repair and water pressure testing</i>			
	5-2.	Examine – in particular for: <ul style="list-style-type: none"> <li>• projectile damage</li> <li>• handling damage, and</li> <li>• water ingress</li> </ul>	
Target Controller (FSK – Electrosoft – Polytronic)	5-3.	Examine	
Target Controller Radio Receiver Unit (FSK & Electrosoft & Polytronic Interface Unit)	5-4.	Examine	
Target Controller Radio Unit (used with Polytronic Controller only)	5-5.	Examine	
<b>NOTE</b> <i>For Operational Test, use all of the Controllers and Radio Units is to be spread over the equipment numbers held. Eg You might choose to use a particular Controller and Radio Unit for every fifteen (15) unit held.</i>			
Mechanism	5-6.	Check mechanism(s) for correct operation by conducting an Operational Test and recording test results for each mechanism in the Operational Test Record. <b>NOTE:</b> During operation of the mechanisms particular notice is to be taken of abnormal noises and erratic movements	
Mechanism and Ancillary Equipment – Held Carried Forward Maintenance	5-7.	Record and repair where possible faulty equipment reported/held over by Range Staff. Eg ancillary equipment such as chargers and antennas etc.	
<b>SERVICING SCHEDULE 5</b>		<b>SERVICING CARD 5.1</b>	



**SERIES 5 TARGET MECHANISM OPERATIONAL TEST RECORD**

**Note:** Pass/Fail is to be recorded as a  for pass or a  for fail.

**Controller**  
**Radio Unit**

*Cat No:*  
*Cat No:*

*Serial No(s):*  
*Serial No(s):*

Ref	Mech Serial No	UP	DOWN	Up After Hit	Fall When Hit	Hold	Radio Distance 1Km	Comments
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

### LIGHT DUTY TARGET SYSTEM SERVICING SCHEDULE 6

<b>RLFTE Sub-System</b>	Portable Target Systems		
<b>Equipment Type</b>	Light Duty Target Mechanism		
<b>Site Name</b>	Eg: Kapooka Training Area		
<b>Equip Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
<b>CAUTION</b> <i>Keep clear of the unit when in operation.</i>			
Mechanism	6-1.	Ensure equipment cleanliness – report equipment cleanliness if equipment found to not be in a clean condition	
<b>NOTE</b> <i>Any mechanisms with projectile damage or other damage that compromises the integrity of the water sealing of the mechanism is to be returned to Australian Target Systems for repair and water pressure testing</i>			
	6-2.	Examine – in particular for: <ul style="list-style-type: none"> <li>• projectile damage</li> <li>• handling damage</li> <li>• water ingress of the control box, and</li> <li>• solar panel damage</li> </ul> Grease the lifting shaft bearings using multi-purpose grease.	
Target Controller	6-3.	Examine	
Target Controller Radio Unit	6-4.	Examine	
<b>NOTE</b> <i>For Operational Test, use all of the Controllers and Radio Units is to be spread over the equipment numbers held. Eg You might choose to use a particular Controller and Radio Unit for every fifteen (15) unit held.</i>			
Mechanism	6-5.	Check mechanism(s) for correct operation by conducting an Operational Test and recording test results for each mechanism in the Operational Test Record. <b>NOTE:</b> During operation of the mechanisms particular notice is to be taken of abnormal noises and erratic movements	
Mechanism and Ancillary Equipment – Held Carried Forward Maintenance	6-6.	Record and repair where possible faulty equipment reported/held over by Range Staff. Eg ancillary equipment such as chargers and antennas etc.	
<b>SERVICING SCHEDULE 6</b>		<b>SERVICING CARD 6.1</b>	

**LDTM OPERATIONAL TEST RECORD**

**Note:** Pass/Fail is to be recorded as a  for pass or a  for fail.

**Controller**  
**Radio Unit**

*Cat No:*  
*Cat No:*

*Serial No(s):*  
*Serial No(s):*

Ref	Mech Serial No	Test Address	UP	DOWN	Up After Hit	Fall When Hit	Hold	Expose	Score Hit <sup>3</sup>	Sleep, Wake, Shutdown	Retaliate <sup>4</sup>	Illuminate <sup>5</sup>	Radio Distance 1Km <sup>6</sup>	Comments
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

<sup>3</sup> Test Address is required to ensure that each mechanism is communicating with the controller

<sup>4</sup> If lights fitted record results, if not fitted mark as N/A

<sup>5</sup> If lights fitted record results, if not fitted mark as N/A

<sup>6</sup> Use attenuator – minimum distance 5 metres

**MARKSMANSHIP TRAINING RANGE TYPE A MK1  
SERVICING SCHEDULE 7**

<b>RLFTE Sub-System</b>	Marksmanship Training Range – Type A Mk1		
<b>Site Name</b>	Eg: Kapooka Training Area		
<b>Equip/Activity Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
Carried Forward Maintenance	7-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.  <b>CAUTION</b> <i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i>	
Control Room	7-2.	<p>Check Control Room Lightning Protection Unit. Check Uninterruptable Power Supply start up procedure under load. Disconnect mains power and check that the Uninterruptable Power Supply has sufficient power to enable correct shutdown procedure of the Range. Reconnect mains power. Using the Range Supervising Computer in maintenance mode, carry out:</p> <ul style="list-style-type: none"> <li>• a down-range equipment device and input/output test,</li> <li>• a check to ensure that each IVDU on each firing point (including spare IVDU's) is communicating with the Range Supervising Computer,</li> <li>• a check to ensure that each IVDU has the correct Plug-In-Modules (PIM's) loaded (including spare IVDU's),</li> <li>• a check of the Weather Station parameters to ensure functions are approximating the current weather ambient conditions,</li> <li>• a check to ensure sensor response from each T-bar,</li> </ul> <p>Check the printer print quality by printing a test page. Ensure that the PC mouse is operating correctly and clean as required. Check the condition of all Remote Controller batteries and the charging operation. Examine and clean the Remote Controller. Operate the Remote Controller to ensure correct operation paying particular attention to operation and functionality of each keypad button and backlight button and contrast dial.</p>	
<b>SERVICING SCHEDULE 7</b>		<b>SERVICING CARD 7.1</b>	

Equip/Activity Type	Task No	Task	Initial
		<p>Examine and clean (if required) Remote Controller radio antenna.                      Test Remote Controller(s) radio communication at maximum distance (being the Range equipment maximum distance from the Control Room).                      Examine the Serial Data Inter face Cabinet.                      Examine Public Address equipment paying particular attention to condition of:</p> <ul style="list-style-type: none"> <li>• hand held radios,</li> <li>• battery charge equipment , and</li> <li>• hand held batteries</li> </ul> <p>Carry out an Operational Test of the Public Address system. <b>Note:</b> Leave radios turned on to ensure battery life lasts a minimum of 8 hours.                      Copy the Range Supervising Computer monitor log onto an applicable media (USB thumb, CD). <b>Note:</b> The copied monitor log is to be held by the Maintenance Contractor.</p>	
Firing Point	7-3.	<p>Examine each Lane Initiator (including Spares) for damage.                      Check the response on each IVDU from the lane initiator. <b>Note:</b> Response is initiated by tapping the Lane Initiator sensor.                      Examine each IVDU (including Spares); paying particular attention to:</p> <ul style="list-style-type: none"> <li>• re-tensioning of the strain relief screws at IVDU end of the cable,</li> <li>• shade flap open and close latches for security and correct operation,</li> <li>• feet and stand security and latching into all positions,</li> <li>• damage to the housing of the IVDU that will affect the weather seal of the case</li> </ul> <p>Clean each IVDU.                      Operate each IVDU and ensure:</p> <ul style="list-style-type: none"> <li>• each switch/button functions correctly, and</li> <li>• brightness /back light is correctly adjusted.</li> </ul> <p>Examine each Firing Point connector for damage. <b>Note:</b> Plug in and test an IVDU at each point.</p>	
<b>SERVICING SCHEDULE 7</b>		<b>SERVICING CARD 7.2</b>	

Equip/Activity Type	Task No	Task	Initial
		Examine each Firing Point Junction Box (in pits and on firing points) paying particular attention to latch damage, corrosion and excess moisture. Clean the Firing Point Junction Box door seal. Spray with CRC Silicone or similar: <ul style="list-style-type: none"> <li>• all Firing Point IVDU Base Connectors, and</li> <li>• IVDU Cable Connectors.</li> </ul> Examine Firing Point Lightning Protection Units and earth clamp.	
<p><b>CAUTION</b>  <i>Ensure power is isolated to Static Target Positions before conducting any maintenance on Target Mechanisms.</i></p>			
Static Target Positions	7-4.	Examine and clean Bank Boxes paying particular attention to: <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door seal.</li> </ul> Examine all T-Bar's. Examine cabling running to/from the T-Bars. Examine T-Bar sensors, clean sensors if required and check the T-Bar sensors are correctly positioned (using the Sensor Depth Gauge). <b>Note:</b> This task is critical to ensure system accuracy. Check each T-Bar for correct alignment to the firing point. <b>Note:</b> This task is critical to ensure system accuracy. Spray T-Bar temperature sensor with CRC Silicone or similar. Examine each Target Mechanism; paying particular attention to: <ul style="list-style-type: none"> <li>• Night Effect Simulator (NES) functions and correct adjustment,</li> <li>• Target Holders for damage,</li> <li>• Correct positioning of the Triple Target Holders ensuring correct position to each other, ensure fasteners are tight,</li> <li>• cabling running to/from the mechanisms,</li> <li>• condition and continuity of the Link Plug (if fitted),</li> <li>• Hit Switches (if fitted) for function, cleanliness and water ingress.</li> </ul>	
<b>SERVICING SCHEDULE 7</b>		<b>SERVICING CARD 7.3</b>	

Equip/Activity Type	Task No	Task	Initial
		<p>Operate the Target Mechanism and ensure:</p> <ul style="list-style-type: none"> <li>• smooth operation, and</li> <li>• the up/down movement is under one second and operates smoothly.</li> </ul> <p>Examine the general condition of all power and signal conduits and condition of Lightning Protection Units and earth clamps on the target banks.</p> <p>Ensure that the terminating connector is fitted to the last T-Bar in each lane.</p> <p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center;"><b><i>Ensure power is isolated to Mover Target Positions before conducting any maintenance on Target Mechanisms.</i></b></p>	
Mover Target Positions	7-5.	<p>Examine and clean Mover Control Boxes and Junction Boxes paying particular attention to:</p> <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door/cover seal.</li> </ul> <p>Examine all power and signal conduits between Movers, Control Boxes and Junction boxes.</p> <p>Examine Mover Assembly paying particular attention to:</p> <ul style="list-style-type: none"> <li>• exterior cleanliness,</li> <li>• condition and tension of the steel draw cables,</li> <li>• condition and cleanliness of trolley rollers and tow cable guide rollers,</li> <li>• condition and cleanliness of trailing cables. Adjust cable loops evenly if required,</li> <li>• cleanliness and adjustment of the position of the limit switches (where required),</li> <li>• alignment of Motor and Idler pulleys, and</li> <li>• buffers air pressure (200kpa) and alignment.</li> </ul> <p>Operate manually (ie push manually) the push trolleys on the track to check freedom of movement.</p> <p>Operate the Movers on Auto Traverse for a minimum of 15 minutes checking in particular:</p> <ul style="list-style-type: none"> <li>• correct operation, and</li> <li>• excessive noise from the motors.</li> </ul> <p>Examine all T-Bar's.</p> <p>Examine cabling running to/from the T-Bars.</p>	
<b>SERVICING SCHEDULE 7</b>		<b>SERVICING CARD 7.4</b>	

Equip/Activity Type	Task No	Task	Initial
		<p>Examine T-Bar sensors, clean sensors if required and check the T-Bar sensors are correctly positioned (using the Sensor Depth Gauge). <b>Note:</b> This task is critical to ensure system accuracy.</p> <p>Check each T-Bar for correct alignment to the firing point. <b>Note 1:</b> Manually move the trolley directly behind a Static Target Position before aligning to the chosen lane. <b>Note 2:</b> This task is critical to ensure system accuracy.</p> <p>Spray T-Bar temperature sensor with CRC Silicone or similar.</p> <p>Examine each Target Mechanism; paying particular attention to:</p> <ul style="list-style-type: none"> <li>• Night Effect Simulator (NES) functions and correct adjustment,</li> <li>• Target Holders for damage,</li> <li>• cabling running to/from the mechanisms,</li> </ul> <p>Operate the Target Mechanism and ensure:</p> <ul style="list-style-type: none"> <li>• smooth operation, and</li> <li>• the up/down movement is under one second and operates smoothly.</li> </ul> <p>Ensure that the terminating connector is fitted to each Mover T-Bar.</p> <p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center;"><b><i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i></b></p>	
Range Operational Test/Checks	7-6.	<p>Operate the range manually testing the operation of each Static and Moving Target. Using the Range Supervising Computer in maintenance mode, operationally test all movers acceleration, speed, deceleration and braking.</p> <p>Check Monitor Log for errors.</p> <p>Carry out extended communication error monitor tests and if necessary, adjust Wallbox Serial Data Interface Serial Link Modem threshold voltages. Note: Ensure Range Supervising Computer is in maintenance mode</p>	
<b>SERVICING SCHEDULE 7</b>		<b>SERVICING CARD 7.5</b>	



**MARKSMANSHIP TRAINING RANGE TYPE A MK2  
SERVICING SCHEDULE 8**

RLFTE Sub-System	Marksmanship Training Range – Type A Mk2		
Site Name	Eg: Kapooka Training Area		
Equip/Activity Type	Task No	Task	Initial
Carried Forward Maintenance	8-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.	
<p><b>CAUTION</b></p> <p><b><i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i></b></p>			
Control Room	8-2.	<p>Check Control Room Lightning Protection Unit. Check Uninterruptable Power Supply start up procedure under load. Disconnect mains power and check that the Uninterruptable Power Supply has sufficient power to enable correct shutdown procedure of the Range. Reconnect mains power. Using the Range Supervising Computer in maintenance mode, carry out:</p> <ul style="list-style-type: none"> <li>• a down-range equipment device and input/output test,</li> <li>• a check to ensure that each IVDU on each firing point (including spare IVDU's) is communicating with the Range Supervising Computer,</li> <li>• a check to ensure that each IVDU has the correct Plug-In-Modules (PIM's) loaded (including spare IVDU's),</li> <li>• a check of the Weather Station parameters to ensure functions are approximating the current weather ambient conditions,</li> <li>• a check to ensure sensor response from each T-bar,</li> </ul> <p>Check the printer print quality by printing a test page. Ensure that the PC mouse is operating correctly and clean as required. Check the condition of all Remote Controller batteries and the charging operation. Examine and clean the Remote Controller. Operate the Remote Controller to ensure correct operation paying particular attention to operation and functionality of each keypad button and backlight button and contrast dial. Examine and clean (if required) Remote Controller radio antenna.</p>	
<b>SERVICING SCHEDULE 8</b>		<b>SERVICING CARD 8.1</b>	

Equip/Activity Type	Task No	Task	Initial
Firing Point		<p>Test Remote Controller(s) radio communication at maximum distance (being the Range equipment maximum distance from the Control Room).</p> <p>Examine the Serial Data Interface Cabinet.</p> <p>Examine Public Address equipment paying particular attention to condition of:</p> <ul style="list-style-type: none"> <li>• hand held radios,</li> <li>• battery charge equipment , and</li> <li>• hand held batteries</li> </ul> <p>Carry out and Operational Test of the Public Address system. <b>Note:</b> Leave radios turned on to ensure battery life lasts a minimum of 8 hours.</p> <p>Copy the Range Supervising Computer monitor log onto an applicable media (USB thumb, CD). <b>Note:</b> The copied monitor log is to be held by the Maintenance Contractor.</p>	
	8-3.	<p>Examine each Lane Initiator (including Spares) for damage.</p> <p>Check the response on each IVDU from the lane initiator. <b>Note:</b> Response is initiated by tapping the Lane Initiator sensor.</p> <p>Examine each IVDU (including Spares); paying particular attention to:</p> <ul style="list-style-type: none"> <li>• re-tensioning of the strain relief screws at IVDU end of the cable,</li> <li>• shade flap open and close latches for security and correct operation,</li> <li>• feet and stand security and latching into all positions,</li> <li>• damage to the housing of the IVDU that will affect the weather seal of the case</li> </ul> <p>Clean each IVDU.</p> <p>Operate each IVDU and ensure:</p> <ul style="list-style-type: none"> <li>• each switch/button functions correctly, and</li> <li>• brightness /back light is correctly adjusted.</li> </ul> <p>Examine each Firing Point connector for damage. <b>Note:</b> Plug in and test an IVDU at each point.</p> <p>Examine each Firing Point Junction Box (in pits and on firing points) paying particular attention to latch damage, corrosion and excess moisture.</p>	
<b>SERVICING SCHEDULE 8</b>		<b>SERVICING CARD 8.2</b>	

Equip/Activity Type	Task No	Task	Initial
		Clean the Firing Point Junction Box door seal. Spray with CRC Silicone or similar: <ul style="list-style-type: none"> <li>• all Firing Point IVDU Base Connectors, and</li> <li>• IVDU Cable Connectors.</li> </ul> Examine Firing Point Lightning Protection Units and earth clamp.	
<p><b>CAUTION</b>  <i>Ensure power is isolated to Static Target Positions before conducting any maintenance on Target Mechanisms.</i></p>			
Static Target Positions	8-4.	Examine and clean Bank Boxes paying particular attention to: <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door seal.</li> </ul> Examine all T-Bar's. Examine cabling running to/from the T-Bars. Examine and clean T-Bar sensors. Check each T-Bar for correct alignment to the firing point. <b>Note:</b> This task is critical to ensure system accuracy. Examine Night Effect Simulators (NES) and check functions and correct adjustment. Examine each Target Mechanism; paying particular attention to: <ul style="list-style-type: none"> <li>• Target Holders for damage,</li> <li>• Correct positioning of the Triple Target Holders ensuring correct position to each other, ensure fasteners are tight,</li> <li>• cabling running to/from the mechanisms,</li> </ul> Operate the Target Mechanism and ensure: <ul style="list-style-type: none"> <li>• smooth operation, and</li> <li>• the up/down movement is under one second and operates smoothly.</li> </ul> Examine the general condition of all power and signal conduits and condition of Lightning Protection Units and earth clamps on the target banks.	
<p><b>CAUTION</b>  <i>Ensure power is isolated to Mover Target Positions before conducting any maintenance on Target Mechanisms.</i></p>			
Mover Target Positions	8-5.	Examine and clean Mover Control Boxes and Junction Boxes paying particular attention to: <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door/cover seal.</li> </ul>	
<b>SERVICING SCHEDULE 8</b>		<b>SERVICING CARD 8.3</b>	

Equip/Activity Type	Task No	Task	Initial
		<p>Examine all power and signal conduits between Movers, Control Boxes and Junction boxes.</p> <p>Remove Motor Controller Box filter; clean and inspect filter and refit.</p> <p>Examine each Mover assembly paying particular attention to:</p> <ul style="list-style-type: none"> <li>• adjustment of the limit switch to 6mm and cleanliness;</li> <li>• examination of the Wampfler conductor bars by use of a mirror on a pole, and</li> <li>• target holders for damage</li> </ul> <p>Carry out a 'local test' on each Mover to ensure correct target cycle and Night Effect Simulator operation. During test pay particular attention to:</p> <ul style="list-style-type: none"> <li>• excessive motor noise, and</li> <li>• smooth target movement.</li> </ul> <p>Carry out an emergency stop of the Mover using the Qty 2 Emergency Stop buttons on each Mover.</p> <p>Operate the Movers on Auto Traverse for a minimum of 15 minutes checking in particular:</p> <ul style="list-style-type: none"> <li>• correct operation, and</li> <li>• excessive noise from the motors.</li> </ul> <p>Examine all T-Bar's.</p> <p>Examine cabling running to/from the T-Bars.</p> <p>Examine and clean T-Bar sensors.</p> <p>Check each T-Bar for correct alignment to the firing point. <b>Note 1:</b> Manually move the Mover Assembly directly behind a Static Target Position before aligning to the chosen lane.</p> <p><b>Note 2:</b> This task is critical to ensure system accuracy.</p>	
		<p><b>CAUTION</b></p> <p><i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i></p>	
Range Operational Test/Checks	8-6.	<p>Operate the range manually testing the operation of each Static and Moving Target. Using the Range Supervising Computer in maintenance mode, operationally test all movers acceleration, speed, deceleration and braking.</p> <p>Check Monitor Log for errors.</p>	
<b>SERVICING SCHEDULE 8</b>		<b>SERVICING CARD 8.4</b>	

**MARKSMANSHIP TRAINING RANGE TYPE B  
SERVICING SCHEDULE 9**

<b>RLFTE Sub-System</b>	Marksmanship Training Range – Type B		
<b>Site Name</b>	Eg: Kapooka Training Area		
<b>Equip/Activity Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
Carried Forward Maintenance	9-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.  <b>CAUTION</b> <i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i>	
Control Room	9-2.	<p>Check Control Room Lightning Protection Unit. Check Uninterruptable Power Supply start up procedure under load. Disconnect mains power and check that the Uninterruptable Power Supply has sufficient power to enable correct shutdown procedure of the Range. Reconnect mains power. Using the Range Supervising Computer in maintenance mode, carry out:</p> <ul style="list-style-type: none"> <li>• a down-range equipment device and input/output test,</li> <li>• a check to ensure that each IVDU on each firing point (including spare IVDU's) is communicating with the Range Supervising Computer,</li> <li>• a check to ensure that each IVDU has the correct Plug-In-Modules (PIM's) loaded (including spare IVDU's),</li> <li>• a check of the Weather Station parameters to ensure functions are approximating the current weather ambient conditions,</li> <li>• a check to ensure sensor response from each T-bar,</li> </ul> <p>Check the printer print quality by printing a test page. Ensure that the PC mouse is operating correctly and clean as required. Check the condition of all Remote Controller batteries and the charging operation. Examine and clean the Remote Controller. Operate the Remote Controller to ensure correct operation paying particular attention to operation and functionality of each keypad button and backlight button and contrast dial. Examine and clean (if required) Remote Controller radio antenna.</p>	
<b>SERVICING SCHEDULE 9</b>		<b>SERVICING CARD 9.1</b>	

Equip/Activity Type	Task No	Task	Initial
Firing Point		<p>Test Remote Controller(s) radio communication at maximum distance (being the Range equipment maximum distance from the Control Room).</p> <p>Examine the Serial Data Inter face Cabinet.</p> <p>Examine Public Address equipment (if fitted) paying particular attention to condition of:</p> <ul style="list-style-type: none"> <li>• hand held radios,</li> <li>• battery charge equipment , and</li> <li>• hand held batteries</li> </ul> <p>Carry out and Operational Test of the Public Address system (if fitted). <b>Note:</b> Leave radios turned on to ensure battery life lasts a minimum of 8 hours.</p> <p>Copy the Range Supervising Computer monitor log onto an applicable media (USB thumb, CD). <b>Note:</b> The copied monitor log is to be held by the Maintenance Contractor.</p>	
	9-3.	<p>Examine each Lane Initiator (including Spares) for damage.</p> <p>Check the response on each IVDU from the lane initiator. <b>Note:</b> Response is initiated by tapping the Lane Initiator sensor.</p> <p>Examine each IVDU (including Spares); paying particular attention to:</p> <ul style="list-style-type: none"> <li>• re-tensioning of the strain relief screws at IVDU end of the cable,</li> <li>• shade flap open and close latches for security and correct operation,</li> <li>• feet and stand security and latching into all positions,</li> <li>• damage to the housing of the IVDU that will affect the weather seal of the case</li> </ul> <p>Clean each IVDU.</p> <p>Operate each IVDU and ensure:</p> <ul style="list-style-type: none"> <li>• each switch/button functions correctly, and</li> <li>• brightness /back light is correctly adjusted.</li> </ul> <p>Examine each Firing Point (at each firing mound forward location) connector for damage . <b>Note:</b> Plug in and test an IVDU at each plug in point.</p> <p>Examine each Firing Point Junction Box (in pits and on firing points) paying particular attention to latch damage, corrosion and excess moisture.</p>	
<b>SERVICING SCHEDULE 9</b>		<b>SERVICING CARD 9.2</b>	

Equip/Activity Type	Task No	Task	Initial
		Clean the Firing Point Junction Box door seal. Spray with CRC Silicone or similar: <ul style="list-style-type: none"> <li>• all Firing Point IVDU Base Connectors, and</li> <li>• IVDU Cable Connectors.</li> </ul> Examine Firing Point Lightning Protection Units and earth clamp.	
		<p><b>CAUTION</b></p> <p><b>Ensure power is isolated to Static Target Positions before conducting any maintenance on Target Mechanisms.</b></p>	
Static Target Position	9-4.	Examine and clean Bank Boxes paying particular attention to: <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door seal.</li> </ul> Examine all T-Bar's. Examine cabling running to/from the T-Bars. Examine T-Bar sensors, clean sensors if required and check the T-Bar sensors are correctly positioned (using the Sensor Depth Gauge). <b>Note:</b> This task is critical to ensure system accuracy. Check each T-Bar for correct alignment to the firing point. <b>Note:</b> This task is critical to ensure system accuracy. Spray T-Bar temperature sensor with CRC Silicone or similar. Examine each Target Mechanism; paying particular attention to: <ul style="list-style-type: none"> <li>• Night Effect Simulator (NES) functions and correct adjustment,</li> <li>• Target Holders for damage,</li> <li>• (FOR MPTS) Check the distance between the target holder arm and the fibreglass cover to ensure it is a minimum of 6mm (+1 -0). <b>(Buckland TA Only)</b></li> <li>• cabling running to/from the mechanisms,</li> <li>• condition and continuity of the Link Plug (if fitted),</li> </ul> Operate the Target Mechanism and ensure: <ul style="list-style-type: none"> <li>• smooth operation, and</li> <li>• the up/down movement is under one second and operates smoothly.</li> </ul>	
<b>SERVICING SCHEDULE 9</b>		<b>SERVICING CARD 9.3</b>	

Equip/Activity Type	Task No	Task	Initial
<p>Mover Target Positions (Shoalwater Bay Only)</p>	<p>9-5.</p>	<p>Examine the general condition of all power and signal conduits and condition of Lightning Protection Units and earth clamps on the target bank. Ensure that the terminating connector is fitted to the last T-Bar in each lane.</p>	
		<p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center;"><b><i>Ensure power is isolated to Mover Target Positions before conducting any maintenance on Target Mechanisms.</i></b></p> <p>9-6.</p> <p>Examine and clean Mover Control Boxes and Junction Boxes paying particular attention to:</p> <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door/cover seal.</li> </ul> <p>Examine all power and signal conduits between Movers, Control Boxes and Junction boxes.</p> <p>Examine Mover Assembly paying particular attention to:</p> <ul style="list-style-type: none"> <li>• exterior cleanliness,</li> <li>• condition and tension of the steel draw cables,</li> <li>• condition and cleanliness of trolley rollers and tow cable guide rollers,</li> <li>• condition and cleanliness of trailing cables. Adjust cable loops evenly if required,</li> <li>• cleanliness and adjustment of the position of the limit switches (where required),</li> <li>• alignment of Motor and Idler pulleys, and</li> <li>• buffers air pressure (200kpa) and alignment.</li> </ul> <p>Operate manually (ie push manually) the push trolleys on the track to check freedom of movement.</p> <p>Operate the Movers on Auto Traverse for a minimum of 15 minutes checking in particular:</p> <ul style="list-style-type: none"> <li>• correct operation, and</li> <li>• excessive noise from the motors.</li> </ul> <p>Examine all T-Bar's.</p> <p>Examine cabling running to/from the T-Bars.</p> <p>Examine T-Bar sensors, clean sensors if required and check the T-Bar sensors are correctly positioned (using the Sensor Depth Gauge). <b>Note:</b> This task is critical to ensure system accuracy.</p>	
<p><b>SERVICING SCHEDULE 9</b></p>		<p><b>SERVICING CARD 9.4</b></p>	



Equip/Activity Type	Task No	Task	Initial
		<p>Check each T-Bar for correct alignment to the firing point. <b>Note 1:</b> Manually move the trolley directly behind a Static Target Position before aligning to the chosen lane. <b>Note 2:</b> This task is critical to ensure system accuracy.</p> <p>Spray T-Bar temperature sensor with CRC Silicone or similar.</p> <p>Examine each Target Mechanism; paying particular attention to:</p> <ul style="list-style-type: none"> <li>• Night Effect Simulator (NES) functions and correct adjustment,</li> <li>• Target Holders for damage,</li> <li>• cabling running to/from the mechanisms,</li> </ul> <p>Operate the Target Mechanism and ensure:</p> <ul style="list-style-type: none"> <li>• smooth operation, and</li> <li>• the up/down movement is under one second and operates smoothly.</li> </ul> <p>Ensure that the terminating connector is fitted to each Mover T-Bar.</p> <p style="text-align: center;"><b>CAUTION</b></p> <p style="text-align: center;"><b><i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i></b></p>	
Range Operational Test/Checks	9-7.	<p>Operate the range manually testing the operation of each Static and Moving Target. <b>(Shoalwater Bay Only)</b></p> <p>Using the Range Supervising Computer in maintenance mode, operationally test all movers acceleration, speed, deceleration and braking. <b>(Shoalwater Bay Only)</b></p> <p>Check Monitor Log for errors.</p> <p>Carry out extended communication error monitor tests and if necessary, adjust Wallbox Serial Data Interface Serial Link Modem threshold voltages. <b>Note:</b> Ensure Range Supervising Computer is in maintenance mode</p>	
<b>SERVICING SCHEDULE 9</b>		<b>SERVICING CARD 9.5</b>	

**GROUPING AND ZEROING RANGE  
SERVICING SCHEDULE 10**

<b>RLFTE Sub-System</b>	Grouping and Zeroing Range		
<b>Site Name</b>	Eg: Puckapunyal Training Area		
<b>Equip/Activity Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
Carried Forward Maintenance	10-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.	
Control Room	10-2.	<p>Check Control Room Lightning Protection Unit.                      Check Uninterruptable Power Supply start up procedure under load.                      Disconnect mains power and check that the Uninterruptable Power Supply has sufficient power to enable correct shutdown procedure of the Range.                      Reconnect mains power.                      Using the Range Supervising Computer in maintenance mode, carry out:</p> <ul style="list-style-type: none"> <li>• a down-range equipment device and input/output test,</li> <li>• a check to ensure that each IVDU on each firing point (including spare IVDU's) is communicating with the Range Supervising Computer,</li> <li>• a check to ensure that each IVDU has the correct Plug-In-Modules (PIM's) loaded (including spare IVDU's),</li> <li>• a check of the Weather Station parameters to ensure functions are approximating the current weather ambient conditions,</li> <li>• a check to ensure sensor response from each T-bar,</li> </ul> <p>Check the printer print quality by printing a test page.                      Ensure that the PC mouse is operating correctly and clean as required.                      Check the condition of all Remote Controller batteries and the charging operation.                      Examine and clean the Remote Controller.                      Operate the Remote Controller to ensure correct operation paying particular attention to operation and functionality of each keypad button and backlight button and contrast dial.                      Examine and clean (if required) Remote Controller radio antenna.                      Test Remote Controller(s) radio communication at maximum distance (being the Range equipment maximum distance from the Control Room).</p>	
<b>SERVICING SCHEDULE 10</b>		<b>SERVICING CARD 10.1</b>	

Equip/Activity Type	Task No	Task	Initial
Firing Point	10-3.	<p>Examine the Serial Data Inter face Cabinet.                      Examine Public Address equipment paying particular attention to condition of:</p> <ul style="list-style-type: none"> <li>• hand held radios,</li> <li>• battery charge equipment , and</li> <li>• hand held batteries</li> </ul> <p>Carry out and Operational Test of the Public Address system. <b>Note:</b> Leave radios turned on to ensure battery life lasts a minimum of 8 hours.</p> <p>Copy the Range Supervising Computer monitor log onto an applicable media (USB thumb, CD). <b>Note:</b> The copied monitor log is to be held by the Maintenance Contractor.</p> <p>Examine each Lane Initiator (including Spares) for damage.                      Check the response on each IVDU from the lane initiator. <b>Note:</b> Response is initiated by tapping the Lane Initiator sensor.                      Examine each IVDU (including Spares); paying particular attention to:</p> <ul style="list-style-type: none"> <li>• re-tensioning of the strain relief screws at IVDU end of the cable,</li> <li>• shade flap open and close latches for security and correct operation,</li> <li>• feet and stand security and latching into all positions,</li> <li>• damage to the housing of the IVDU that will affect the weather seal of the case</li> </ul> <p>Clean each IVDU.                      Operate each IVDU and ensure:</p> <ul style="list-style-type: none"> <li>• each switch/button functions correctly, and</li> <li>• brightness /back light is correctly adjusted.</li> </ul> <p>Examine each Firing Point connector for damage. <b>Note:</b> Plug in and test an IVDU at each point.                      Examine each Firing Point Junction Box (in pits and on firing points) paying particular attention to latch damage, corrosion and excess moisture.                      Clean the Firing Point Junction Box door seal.</p>	
<b>SERVICING SCHEDULE 10</b>		<b>SERVICING CARD 10.2</b>	

Equip/Activity Type	Task No	Task	Initial
Static Target Positions	10-4.	<p>Spray with CRC Silicone or similar:</p> <ul style="list-style-type: none"> <li>• all Firing Point IVDU Base Connectors, and</li> <li>• IVDU Cable Connectors.</li> </ul> <p>Examine Firing Point Lightning Protection Units and earth clamp.</p> <p>Examine and clean Bank Boxes paying particular attention to:</p> <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door seal.</li> </ul> <p>Examine all T-Bar's.</p> <p>Examine cabling running to/from the T-Bars.</p> <p>Examine T-Bar sensors, clean sensors if required and check the T-Bar sensors are correctly positioned (using the Sensor Depth Gauge). <b>Note:</b> This task is critical to ensure system accuracy.</p> <p>Check each T-Bar for correct alignment to the firing point. <b>Note:</b> This task is critical to ensure system accuracy.</p> <p>Spray T-Bar temperature sensor with CRC Silicone or similar.</p> <p>Examine the general condition of all power and signal conduits and condition of Lightning Protection Units and earth clamps on the target banks.</p> <p>Ensure that the terminating connector is fitted to the last T-Bar in each lane.</p>	
Range Operational Test/Checks	10-5.	<p>Check Monitor Log for errors.</p> <p>Carry out extended communication error monitor tests and if necessary, adjust Wallbox Serial Data Interface Serial Link Modem threshold voltages. <b>Note:</b> Ensure Range Supervising Computer is in maintenance mode</p>	
<b>SERVICING SCHEDULE 10</b>		<b>SERVICING CARD 10.3</b>	

**ANTI MATERIEL RIFLE FIELD FIRING TARGET SYSTEM  
SERVICING SCHEDULE 11**

<b>RLFTE Sub-System</b>	Anti Materiel Rifle Field Firing Target System		
<b>Site Name</b>	Eg: Singleton Training Area		
<b>Equip/Activity Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
Carried Forward Maintenance	11-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.  <b>CAUTION</b> <i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i>	
Firing Point	11-2.	Examine IVDU Radio Unit paying particular attention to: <ul style="list-style-type: none"> <li>• damage around area of weather seal, and</li> <li>• security and correct mounting.</li> </ul> Examine IVDU (including Spares); paying particular attention to: <ul style="list-style-type: none"> <li>• re-tensioning of the strain relief screws at IVDU end of the cable,</li> <li>• shade flap open and close latches for security and correct operation,</li> <li>• feet and stand security and latching into all positions,</li> <li>• damage to the housing of the IVDU that will affect the weather seal of the case</li> </ul> Clean IVDU. Operate IVDU and ensure: <ul style="list-style-type: none"> <li>• each switch/button functions correctly, and</li> <li>• brightness /back light is correctly adjusted.</li> </ul> <b>CAUTION</b> <i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i>	
LDTM and T-Bar	11-3.	<b>Mechanism.</b> Ensure equipment cleanliness – report equipment cleanliness if equipment found to not be in a clean condition	
<b>SERVICING SCHEDULE 11</b>		<b>SERVICING CARD 11.1</b>	

Equip/Activity Type	Task No	Task	Initial
<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><i>Any mechanisms with projectile damage or other damage that compromises the integrity of the water sealing of the mechanism is to be returned to Australian Target Systems for repair and water pressure testing</i></p> <p><b>Mechanism.</b> Examine – in particular for:</p> <ul style="list-style-type: none"> <li>• projectile damage</li> <li>• handling damage</li> <li>• water ingress of the control box, and</li> <li>• solar panel damage</li> </ul> <p><b>Target Controller.</b> Examine</p> <p><b>Target Controller Radio Unit.</b> Examine</p> <p><b>Mechanism.</b> Check mechanism for correct operation by conducting an Operational Test and recording test results for mechanism in the Operational Test Record. <b>NOTE:</b> During operation of the mechanism particular notice is to be taken of abnormal noises and erratic movements.</p> <p><b>Mechanism.</b> Grease the lifting shaft bearings using multi-purpose grease.</p> <p><b>Mechanism and Ancillary Equipment – Held</b></p> <p><b>T- Bar.</b> Examine paying particular attention to:</p> <ul style="list-style-type: none"> <li>• cabling running from T-Bar to Radio Unit, battery and antenna,</li> <li>• correct mounting to LDTM, apply anti-seize to threads</li> <li>• spray all connectors with lubricant,</li> <li>• Spray T-Bar temperature sensor with CRC Silicone or similar.</li> </ul> <p><b>T-Bar.</b> Examine T-Bar sensor, clean sensor if required and check the T-Bar sensor is correctly positioned (using the Sensor Depth Gauge). <b>Note:</b> This task is critical to ensure system accuracy.</p> <p><b>T-Bar.</b> Check T-Bar for correct alignment to the firing point. <b>Note:</b> This task is critical to ensure system accuracy.</p> <p><b>T-Bar Radio Unit.</b> Examine</p>			
SERVICING SCHEDULE 11		SERVICING CARD 11.2	

**LDTM OPERATIONAL TEST RECORD**

**Note:** Pass/Fail is to be recorded as a  for pass or a  for fail.

**Controller**                      *Cat No:*                                      *Serial No(s):*  
**Radio Unit**                      *Cat No:*                                      *Serial No(s):*

Ref	Mech Serial No	Test Address	UP	DOWN	Up After Hit	Fall When Hit	Hold	Expose	Score Hit <sup>7</sup>	Sleep, Wake, Shutdown	Retaliate <sup>8</sup>	Illuminate <sup>9</sup>	Radio Distance 1.5Km <sup>10</sup>	Comments
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

<sup>7</sup> Test Address is required to ensure that each mechanism is communicating with the controller

<sup>8</sup> If lights fitted record results, if not fitted mark as N/A

<sup>9</sup> If lights fitted record results, if not fitted mark as N/A

<sup>10</sup> Use attenuator – minimum distance 5 metres

**STATIC MECHANICAL RANGE  
SERVICING SCHEDULE 12**

<b>RLFTE Sub-System</b>	Static Mechanical Range		
<b>Site Name</b>	Eg: Singleton Training Area		
<b>Equip Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
Carried Forward Maintenance	12-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.  <b>CAUTION</b> <i>Keep clear of the unit when in operation.</i>	
Series 5 Mechanism	12-2.	<p><b>Mechanism – Singleton and Majura.</b> Ensure equipment cleanliness – report equipment cleanliness if equipment found to not be in a clean condition</p> <p><b>Mechanism – Singleton and Majura.</b> Examine – in particular for:</p> <ul style="list-style-type: none"> <li>• projectile damage</li> <li>• handling damage,</li> <li>• water ingress,</li> <li>• inertia switch for operation and sensitivity, and</li> <li>• target holders for damage.</li> </ul> <p><b>Target Controller (Polytronic) - Singleton.</b> Examine</p> <p><b>Target Controller Radio Receiver Unit (Polytronic Interface Unit) – Singleton.</b> Examine</p> <p align="center"><b>NOTE</b></p> <p><i>For Operational Test, use all of the Controllers and Radio Units is to be spread over the equipment numbers held. Eg You might choose to use a particular Controller and Radio Unit for every fifteen (15) unit held.</i></p> <p><b>Mechanism - Singleton.</b> Check mechanism(s) for correct operation by conducting an Operational Test and recording test results for each mechanism in the Operational Test Record. In particular:</p> <ul style="list-style-type: none"> <li>• Ensure Target Controller is communicating with all down range devices;</li> <li>• Ensure Target Controller operates each bank individually;</li> <li>• Ensure Target Controller operates all equipment using all commands.</li> </ul> <p><b>NOTE:</b> During operation of the mechanisms particular notice is to be taken of abnormal noises and erratic movements</p>	
<b>SERVICING SCHEDULE 12</b>		<b>SERVICING CARD 12.1</b>	



Equip Type	Task No	Task	Initial
Static Target Positions	12-3.	<p><b>Control Room – Majura. Using the Range Computer, ensure:</b></p> <ul style="list-style-type: none"> <li>• communicating with all down range devices;</li> <li>• operation of each bank individually;</li> <li>• operation of all equipment using all commands.</li> </ul> <p>Examine and clean Bank Boxes paying particular attention to:</p> <ul style="list-style-type: none"> <li>• moisture inside the box, and</li> <li>• clean the door seal.</li> </ul> <p>Examine Interface Boxes for Damage and water ingress. Spray rubber buttons with silicone spray.</p> <p>Examine Mechanism Junction Boxes, in particular the door seal.</p> <p>Examine all cabling running to/from mechanism.</p> <p>Check illuminate and retaliate lights for operation.</p>	
<b>SERVICING SCHEDULE 12</b>		<b>SERVICING CARD 12.2</b>	

**SERIES 5 TARGET MECHANISM - OPERATIONAL TEST RECORD - SINGLETON**

**Note:** Pass/Fail is to be recorded as a  for pass or a  for fail.

**Controller**  
**Radio Unit**

*Cat No:*  
*Cat No:*

*Serial No(s):*  
*Serial No(s):*

Ref	Mech Serial No	UP	DOWN	Up After Hit	Fall When Hit	Hold	Inertia Switch – Operation and Sensitivity	Radio Distance 300m	Comments
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									

**BATTLE SHOOTONG RANGE  
SERVICING SCHEDULE 13**

<b>RLFTE Sub-System</b>	Battle Shooting Range		
<b>Site Name</b>	Puckapunyal Training Area		
<b>Equip Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
Carried Forward Maintenance	13-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.  <b>CAUTION</b> <i>Keep clear of the unit when in operation.</i>	
Control Room	13-2.	Examine radio box at tower front. Examine antenna and battery condition. Check battery voltages for all target positions.	
Target Positions	13-3.	<b>Mechanism.</b> Ensure equipment cleanliness – report equipment cleanliness if equipment found to not be in a clean condition <b>Mechanism.</b> Examine – in particular for: <ul style="list-style-type: none"> <li>• projectile damage</li> <li>• handling damage,</li> <li>• water ingress,</li> <li>• inertia switch for operation and sensitivity,</li> <li>• target holders for damage,</li> <li>• solar panel for damage and cleanliness,</li> <li>• battery condition and connectors, and</li> <li>• cabling running to/from the mechanism.</li> </ul> <b>Mechanism.</b> Check mechanism(s) for correct operation by conducting an Operational Test and recording test results for each mechanism in the Operational Test Record. In particular: <ul style="list-style-type: none"> <li>• Ensure Range Computer is communicating with all down range devices;</li> <li>• Ensure Range Computer operates each target individually;</li> <li>• Ensure Range Computer operates all equipment using all commands.</li> </ul> <b>NOTE:</b> During operation of the mechanisms particular notice is to be taken of abnormal noises and erratic movements	
<b>SERVICING SCHEDULE 13</b>		<b>SERVICING CARD 13.1</b>	

**SERIES 5 TARGET MECHANISM - OPERATIONAL TEST RECORD - PUCKAPUNYAL**

**Note:** Pass/Fail is to be recorded as a  for pass or a  for fail.

Ref	Mech Serial No	UP	DOWN	Up After Hit	Fall When Hit	Hold	Inertia Switch – Operation and Sensitivity	Comments
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

**ARMoured FIGHTING VEHICLE FIELD FIRING TARGET SYSTEM  
SERVICING SCHEDULE 14**

<b>RLFTE Sub-System</b>	Armoured Fighting Vehicle Field Firing Target System		
<b>Site Name</b>	Eg: Mt Bunday Training Area		
<b>Equip/Activity Type</b>	<b>Task No</b>	<b>Task</b>	<b>Initial</b>
Carried Forward Maintenance	14-1.	Record and repair where possible faulty equipment reported/held over by Range Staff.  <b>CAUTION</b> <i>When carrying out device tests ensure that the Range closed off to all other personnel not involved in the maintenance activity. le ensure no personnel are near equipment when operating.</i>	
Control Room – LDTM/HDTM Control	14-2.	<p>Check Control Room Lightning Protection Unit. Check Uninterruptible Power Supply start up procedure under load. Disconnect mains power and check that the Uninterruptable Power Supply has sufficient power to enable correct shutdown procedure of the Range. Reconnect mains power. Using the Range Supervising Computer in maintenance mode, carry out:</p> <ul style="list-style-type: none"> <li>• a down-range equipment device and input/output test,</li> <li>• a check to ensure that each IVDU on each firing point (including spare IVDU's) is communicating with the Range Supervising Computer,</li> <li>• a check to ensure that each IVDU has the correct Plug-In-Modules (PIM's) loaded (including spare IVDU's),</li> <li>• a check of the Weather Station parameters to ensure functions are approximating the current weather ambient conditions,</li> <li>• a check to ensure sensor response from each T-bar,</li> </ul> <p>Check the printer print quality by printing a test page. Ensure that the PC mouse is operating correctly and clean as required. Check the condition of all Remote and Target Controller batteries and the charging operation. Examine and clean the Remote and Target Controller.</p>	
<b>SERVICING SCHEDULE 14</b>		<b>SERVICING CARD 14.1</b>	

Equip/Activity Type	Task No	Task	Initial
		<p>Operate the Remote and Target Controller to ensure correct operation paying particular attention to operation and functionality of each keypad button and backlight button and contrast dial.</p> <p>Examine and clean (if required) Remote and Target Controller radio antenna.</p> <p>Test Remote and Target Controller(s) radio communication at maximum distance (being the Range equipment maximum distance from the Control Room).</p> <p>Examine the Radio Interface Cabinet paying particular attention to addressing and cabling.</p> <p>Copy the Range Supervising Computer monitor log onto an applicable media (USB thumb, CD). <b>Note:</b> The copied monitor log is to be held by the Maintenance Contractor.</p>	
Control Room – Series 5 and Mover Control	14-3.	<p>Examine up range radio unit.</p> <p>Examine antenna and battery condition.</p> <p>Check battery voltages for all target positions.</p> <p>Ensure Range Computer is communicating with all down range devices.</p> <p>Ensure Range Computer operates each target individually and movers function correctly (including speed adjustments) over the complete length of its railing system.</p> <p>Ensure Range Computer operates all equipment using all commands.</p>	
Zeroing Firing Point	14-4.	<p>Examine IVDU Radio Unit paying particular attention to:</p> <ul style="list-style-type: none"> <li>• damage around area of weather seal, and</li> <li>• security and correct mounting.</li> </ul> <p>Examine IVDU (including Spares); paying particular attention to:</p> <ul style="list-style-type: none"> <li>• re-tensioning of the strain relief screws at IVDU end of the cable,</li> <li>• shade flap open and close latches for security and correct operation,</li> <li>• feet and stand security and latching into all positions,</li> <li>• damage to the housing of the IVDU that will affect the weather seal of the case</li> </ul> <p>Clean IVDU.</p>	
<b>SERVICING SCHEDULE 14</b>		<b>SERVICING CARD 14.2</b>	

Equip/Activity Type	Task No	Task	Initial
Zeroing Target Positions	14-5.	<p>Operate IVDU and ensure:</p> <ul style="list-style-type: none"> <li>• each switch/button functions correctly, and</li> <li>• brightness /back light is correctly adjusted.</li> </ul> <p>Examine the T-Bar power support system paying particular attention to:</p> <ul style="list-style-type: none"> <li>• solar panel for damage and cleanliness,</li> <li>• battery condition and connectors, and</li> <li>• cabling.</li> </ul> <p><b>T- Bar.</b> Examine paying particular attention to:</p> <ul style="list-style-type: none"> <li>• cabling running from T-Bar to Radio Unit, battery and antenna,</li> <li>• correct mounting to T-Bar mounting plate, apply anti-seize to threads,</li> <li>• spray all connectors with lubricant,</li> <li>• Spray T-Bar temperature sensor with CRC Silicone or similar.</li> </ul> <p><b>T-Bar.</b> Examine T-Bar sensor, clean sensor if required and check the T-Bar sensor is correctly positioned (using the Sensor Depth Gauge). <b>Note:</b> This task is critical to ensure system accuracy.</p> <p><b>T-Bar.</b> Check T-Bar for correct alignment to the firing point. <b>Note:</b> This task is critical to ensure system accuracy.</p> <p><b>T-Bar Radio Unit.</b> Examine Examine target holder.</p> <p style="text-align: center;"><b>CAUTION</b> <i>Ensure power is isolated to Static Target Positions before conducting any maintenance on Target Mechanisms.</i></p>	
Series 5/LDTM/HDTM Target Positions	14-6.	<p><b>Mechanism.</b> Ensure equipment cleanliness – report equipment cleanliness if equipment found to not be in a clean condition</p>	
<b>SERVICING SCHEDULE 14</b>		<b>SERVICING CARD 14.3</b>	

Equip/Activity Type	Task No	Task	Initial
<p style="text-align: center;"><b>NOTE</b></p> <p><b><i>Any mechanisms with projectile damage or other damage that compromises the integrity of the water sealing of the mechanism is to be returned to Australian Target Systems for repair and water pressure testing</i></b></p> <p style="text-align: center;"><b>Mechanism.</b> Examine – in particular for:</p> <ul style="list-style-type: none"> <li>• projectile damage</li> <li>• handling damage</li> <li>• water ingress of the control box, and</li> <li>• solar panel damage</li> </ul> <p style="text-align: center;"><b>Mechanism.</b> Check mechanism for correct operation by conducting an Operational Test and recording test results for mechanism in the Operational Test Record. <b>NOTE:</b> During operation of the mechanism particular notice is to be taken of abnormal noises and erratic movements.</p> <p style="text-align: center;"><b>LDTM Mechanisms.</b> Grease the lifting shaft bearings using multi-purpose grease.</p>			
<p style="text-align: center;"><b>CAUTION</b></p> <p><b><i>Ensure power is isolated to Mover Target Positions before conducting any maintenance on Target Mechanisms.</i></b></p>			
Mover Targets	14-7.	<p>Examine mover diesel motor and hydraulic equipment, paying particular attention to:</p> <ul style="list-style-type: none"> <li>• oil levels</li> <li>• leaks</li> <li>• hose deterioration</li> <li>• belt tensions</li> <li>• air cleaner</li> </ul> <p>Examine the diesel motor battery.</p> <p>Ensure correct operation of the target hit switch.</p> <p>Ensure correct operation of Night Effect Lights.</p> <p>Check mover operation in Remote Mode.</p> <p><b>Mover Railing - Mount Bundey TA.</b> Examine paying particular attention to:</p> <ul style="list-style-type: none"> <li>• environmental growth and wash over of the railing, and</li> <li>• operation of the fail safe system.</li> </ul>	
<b>SERVICING SCHEDULE 14</b>		<b>SERVICING CARD 14.4</b>	



Equip/Activity Type	Task No	Task	Initial
Range Operational Test/Checks	14-8.	<p><b>Mover Assembly and Railing – Puckapunyal.</b> Examine paying particular attention to:</p> <ul style="list-style-type: none"> <li>• rail condition and sleeper security,</li> <li>• environmental growth and wash over of the railing,</li> <li>• steel cable for fraying and stretching</li> <li>• service trolley compressor oil level, belt condition and operation,</li> <li>• service trolley pneumatic over hydraulic system, drain water from trap and check hydraulic reservoir fluid level,</li> <li>• mover cable sheaves</li> <li>• rail limits</li> <li>• counterweight assembly operation, and</li> <li>• operation of the fail safe system.</li> </ul>	
		<p>Operate the range manually testing the operation of each Static and Moving Target. Check Range Supervising Computer Monitor Log for errors.</p>	
<b>SERVICING SCHEDULE 14</b>		<b>SERVICING CARD 14.5</b>	

**SERIES 5 TARGET MECHANISM - OPERATIONAL TEST RECORD – MT BUNDEY**

**Note:** Pass/Fail is to be recorded as a  for pass or a  for fail.

Ref	Mech Serial No	UP	DOWN	Up After Hit	Fall When Hit	Hold	Inertia Switch – Operation and Sensitivity	Comments
1								
2								
3								
4								
5								
6								
7								
8								
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10								
11								
12								
13								
14								
15								

**MTR – SMR – BSR – AFVFFTS**  
**OPERATOR LEVEL – SERVICING SCHEDULE 15**

Activity Type	Task No	Task
<b>CAUTION</b> <b>When Operating – Keep Clear of Mechanism</b>		
Before Use	15-1	<p>Check all mechanisms and T-Bars for damage, free from foreign obstacles and all interconnecting cables are not frayed/broken or stressed and correctly connected.</p> <p>Clean all mechanisms.</p> <p>Where applicable - Clean solar panels (spray bottle with water and a rag).</p> <p>Replace display targets as required paying particular attention to fitting and aligning targets correctly in the target holders and align to the T-Bar as applicable.</p> <p>Align T-Bars to the firing point as required.</p> <p>Where applicable - Check all IVDUs for function and leads for fraying and damage and correct Plug-In-Module loaded.</p> <p>Where applicable - Check Lane Initiators for damage and correctly placed.</p> <p>Where applicable – Check mover railing systems to ensure free from obstructions.</p> <p>Where applicable – Check mover diesel engines oil and fuel levels and belts.</p> <p>Conduct a full system check (in accordance with Operating Manuals) of all mechanisms using the Range Supervising Computer</p>
After Use	15-2	<p>Check all mechanisms and T-Bars for damage, free from foreign obstacles and all interconnecting cables are not frayed/broken or stressed and correctly connected.</p> <p>Clean all mechanisms.</p> <p>Where applicable - Clean solar panels (spray bottle with water and a rag).</p> <p>Download data from Range Supervising Computer as required by Users.</p>
<b>SERVICING SCHEDULE 15</b>		

**GZR - AMRFFTS****OPERATOR LEVEL – SERVICING SCHEDULE 16**

Activity Type	Task No	Task
Before Use	16-1	<p>Check T-Bars for damage, free from foreign obstacles and all interconnecting cables are not frayed/broken or stressed and correctly connected.</p> <p>Clean all T-Bars.</p> <p>Replace display targets as required paying particular attention to fitting and aligning targets correctly in the target holders and align to the T-Bar as applicable.</p> <p>Align T-Bars to the firing point as required.</p> <p>Check all IVDUs for function and leads for fraying and damage and correct Plug-In-Module loaded.</p> <p>Where applicable - Check Lane Initiators for damage and correctly placed.</p> <p>Check IVDU and T-Bar transceivers for damage.</p>
After Use	16-2	<p>Check T-Bars for damage, free from foreign obstacles and all interconnecting cables are not frayed/broken or stressed and correctly connected.</p> <p>Clean all T-Bars.</p> <p>Where applicable - Download data from Range Supervising Computer as required by Users.</p>
<b>SERVICING SCHEDULE 16</b>		