

**SKILLS FRAMEWORK FOR SEA TRANSPORT  
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

<b>TSC Category</b>	Marine Engineering					
<b>TSC</b>	Maintenance and Repair					
<b>TSC Description</b>	Manage and oversee shipboard maintenance and repairs					
<b>TSC Proficiency Description</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>	<b>Level 6</b>
	<b>STP-MEG-1003-1.1</b>	<b>STP-MEG-2003-1.1</b>	<b>STP-MEG-3003-1.1</b>	<b>STP-MEG-4003-1.1</b>		
	Contribute to shipboard maintenance and repair	Maintain and repair electrical and electronic equipment, automation control systems of main propulsion, auxiliary machinery, bridge navigation equipment and communication systems	Maintain and repair shipboard machinery and equipment and use hand tools, machine tools and measuring instruments for fabrication and repair	Manage safe and effective maintenance and repair procedures and identify causes of machinery malfunctions		
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>Painting, lubrication, cleaning materials and equipment</li> <li>Routine maintenance and repair procedures</li> <li>Surface preparation techniques</li> <li>Disposal of waste materials</li> <li>Manufacturer's safety guidelines and shipboard instructions</li> <li>Application, maintenance and use of hand and power tools, measuring instruments and machine tools</li> </ul>	<ul style="list-style-type: none"> <li>Safety requirements for working on shipboard electrical systems</li> <li>Maintenance and repair of electrical system equipment, switchboards, electric motors, generators and Direct Current (DC) electrical systems and equipment</li> <li>Electrical and mechanical knowledge and skills</li> <li>Safety isolation procedures for equipment</li> <li>Electrical and electronic systems operating in flammable areas</li> <li>Principles and maintenance procedures of navigation equipment, internal and external communication systems</li> </ul>	<ul style="list-style-type: none"> <li>Characteristics and limitations of materials used in construction and repair of ships and equipment</li> <li>Characteristics and limitations of processes used for fabrication and repair</li> <li>Properties and parameters considered in the fabrication and repair of systems and components</li> <li>Safety measures to be taken for repair and maintenance</li> <li>Use of hand tools, machine tools and measuring instruments, various types of sealants and packing</li> <li>Design characteristics and selection of materials in construction of equipment</li> </ul>	<ul style="list-style-type: none"> <li>Marine engineering practice</li> <li>Planning maintenance, including statutory and class verifications</li> <li>Planning repairs</li> <li>Types of machinery malfunctions, location of faults and methods to detect them</li> <li>Non-destructive examination</li> <li>Inspection and adjustment of equipment</li> <li>Safe working practices</li> </ul>		

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			<ul style="list-style-type: none"> <li>• Interpretation of machinery drawings and handbooks, hydraulic and pneumatic diagrams</li> </ul>			
<b>Abilities</b>	<ul style="list-style-type: none"> <li>• Carry out maintenance activities in accordance with technical, safety and procedural specifications</li> <li>• Use appropriate equipment and tools when carrying out maintenance activities</li> </ul>	<ul style="list-style-type: none"> <li>• Dismantle, inspect, repair and re-assemble equipment</li> <li>• Detect malfunctions, locate faults and take measures to prevent damage</li> <li>• Carry out safe maintenance and repair procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Identify important parameters for fabrication of typical ship-related components</li> <li>• Ensure materials selected are appropriate</li> <li>• Ensure fabrication is to designated tolerances</li> <li>• Comply with safety procedures</li> <li>• Dismantle, inspect, repair and re-assemble equipment in accordance with manuals and good practices</li> <li>• Re-commission and test performance in accordance with manuals and good practices</li> </ul>	<ul style="list-style-type: none"> <li>• Plan and carry out maintenance activities in accordance with technical, legislative, safety and procedural specifications</li> <li>• Ensure appropriate plans, specifications, materials and equipment are available for maintenance and repair</li> <li>• Take action to restore plants using the most suitable method</li> <li>• Detect machinery malfunctions and faults</li> <li>• Locate machinery faults and take action to prevent damage</li> <li>• Comply with safe working practices in accordance with legislative requirements, codes of practice, permits to work and environmental concerns</li> </ul>		