

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

<b>TSC Category</b>	Cargo Operations					
<b>TSC</b>	Rigging and Signalling					
<b>TSC Description</b>	Execute load-lifting operations on cargo with proper adherence to Workplace Safety and Health (WSH) requirements, signalling and communication protocol and diligent care for lifting equipment					
<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-CGO-1008-1.1</b>		<b>STP-CGO-3008-1.1</b>			
	Prepare and tie the load for safe lifting by any form of lifting equipment using correct and clear signals to guide the crane operator in the manoeuvring of a load safely to its destination		Supervise safe lifting operations involving a mobile crane or tower crane or any other crane in the workplace			
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>• Types of cranes, components and lifting gear</li> <li>• Safety considerations in lifting operations, including:               <ul style="list-style-type: none"> <li>○ Legislations relating to rigger and signalman tasks</li> <li>○ Risks related to rigger and signalman tasks</li> <li>○ Roles and responsibilities of the rigger and signalman in lifting operations</li> <li>○ Attire and use of PPE and tag line for rigger and signalman in lifting operations</li> <li>○ Safe Working Loads (SWL) and weight estimation of load</li> <li>○ Pre-lift and post-lift inspection checklists</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• Safety considerations in supervising lifting operations, including:               <ul style="list-style-type: none"> <li>○ Risk assessment methodology</li> <li>○ Risks related to personnel involved in lifting operations</li> <li>○ Ground assessment to ensure that conditions are safe for any lifting operations to be performed by any mobile crane</li> <li>○ Legislation relating to lifting operations (Including Permit-to-work &amp; Lifting Plan)</li> <li>○ Roles and responsibilities of personnel in lifting operations and lifting supervisors</li> <li>○ Safe work procedures for lifting operations</li> </ul> </li> </ul>			

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	<ul style="list-style-type: none"> <li>for crane, lifting gear and accessories</li> <li>○ Hazard control measures in rigger and signalman work site and lifting operations</li> <li>○ Common crane accidents</li> <li>○ Emergency response procedures for lifting incidents and emergencies</li> <li>○ Permit-to-work system</li> <li>○ Precautions during slinging</li> <li>● Set-ups for lifting operations, including:             <ul style="list-style-type: none"> <li>○ Guidelines to rigging</li> <li>○ Method to determine centre of gravity for regular and irregular loads</li> <li>○ Types of wire rope construction, slings, end fittings and connections and wire rope clips</li> <li>○ Rigging techniques</li> <li>○ Method to prepare timber wedges or slippers</li> </ul> </li> <li>● Slinging methods and sling angle effects</li> <li>● Lifting plan requirements</li> <li>● 3-step lifting, 3-step lowering method and safe work procedures</li> <li>● Standard hand and voice signals</li> <li>● Voice procedures</li> </ul>		<ul style="list-style-type: none"> <li>○ Use of appropriate attire, personal protective equipment (PPE) and tag line for personnel in lifting operations</li> <li>○ Steps and measures to exclude unauthorised entry into lifting zone</li> <li>○ Preventive measures and hazard control of lifting accidents</li> <li>○ Codes of practice for the safe use of cranes and lifting machines</li> <li>○ Types of safety devices</li> <li>○ Hazards and causes of lifting accidents involving cranes</li> <li>○ Organisational Emergency Response Procedures (ERP) for lifting accidents and emergencies</li> <li>● Considerations in supervising set-ups for lifting operations, including:             <ul style="list-style-type: none"> <li>○ Types of loads, load charts and related terminologies</li> <li>○ Types, functions, configuration and operating principles of cranes, components, rigging equipment, lifting gears and accessories</li> </ul> </li> </ul>			
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	<ul style="list-style-type: none"> <li>• Good housekeeping practices</li> <li>• Reporting procedures for damage and defects on lifting equipment</li> </ul>		<ul style="list-style-type: none"> <li>○ Types and functions of communication equipment</li> <li>○ Methods and guidelines of slinging and rigging techniques</li> <li>• Procedures in reporting abnormalities and defects of crane and associated equipment</li> <li>• Tandem lifting techniques and the requirements based on the approved code of practices</li> <li>• Housekeeping procedures</li> <li>• Routine post-operations checks</li> <li>• Reporting procedures for damage and defects for lifting supervisors</li> <li>• Accident investigation and analysis procedures and documentation</li> </ul>			
<p><b>Abilities</b></p>	<ul style="list-style-type: none"> <li>• Participate in risk assessment and lifting plan briefing for lifting operations</li> <li>• Determine load weights and centre of gravity of regular and irregular loads</li> <li>• Perform pre-operations preparations:             <ul style="list-style-type: none"> <li>○ Conduct pre-lift inspection of crane, lifting gear and accessories</li> <li>○ Select appropriate rigging equipment, lifting gears and</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>• Interpret load charts to verify the intended lift is within the Safe Working Load (SWL) of the crane</li> <li>• Ensure adherence to legislations and organisational safe work procedures</li> <li>• Participate in lifting plan, risk assessment and Safe Work Procedure (SWP) briefing for lifting operations as a supervisor</li> <li>• Implement safety practices and hazard control measures in</li> </ul>			

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	<p>accessories for lifting loads</p> <ul style="list-style-type: none"> <li>○ Set up communications equipment and radio channels for safe lifting operations</li> <li>● Observe and apply safety practices and hazard control measures in work site when carrying out rigger and signalman tasks:             <ul style="list-style-type: none"> <li>○ Use PPE and tag line</li> <li>○ Use appropriate slinging method, rigging equipment, lifting gears and accessories on loads</li> <li>○ Ensure sufficient lifting gears to lift loads and loads are properly rigged</li> <li>○ Check for blind spots and estimate clearance of swing path</li> <li>○ Assist the lifting supervisor to cordon off lifting and lowering area using barricades</li> </ul> </li> <li>● Apply 3-step lifting and lowering method</li> <li>● Direct load to destination using safe lifting techniques</li> <li>● Communicate lifting instructions using standard hand and voice signals</li> <li>● Perform post-operational procedures:             <ul style="list-style-type: none"> <li>○ Dismantle rigging equipment, lifting</li> </ul> </li> </ul>		<p>workplace when carrying out lifting supervisor tasks:</p> <ul style="list-style-type: none"> <li>○ Ensure proper use of appropriate PPE and tag line by personnel in lifting operations</li> <li>○ Verify pre-lift inspection of crane, lifting gear and accessories</li> <li>○ Ensure proper selection of rigging equipment, lifting gears and accessories for lifting load</li> <li>○ Ensure proper rigging of load</li> <li>○ Supervise cordoning off of lifting and lowering area using effective barricades with prominent warning signage</li> <li>○ Apply preventive measures and hazard control of lifting accidents according to organisational procedures</li> <li>● Supervise safe lifting operations involving cranes in a safe and proper manner according to lifting plan, including:             <ul style="list-style-type: none"> <li>○ Proper set-up of communication equipment, serviceability of communications equipment and functionality of radio</li> </ul> </li> </ul>			
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	<p>gears and accessories</p> <ul style="list-style-type: none"> <li>○ Carry out housekeeping of equipment and work area</li> <li>○ Carry out post-operational checks on communication equipment, crane, lifting gear and accessories</li> <li>● Report any damage and defects on communication equipment, crane, lifting gear and accessories</li> </ul>		<p>channels for safe lifting operations</p> <ul style="list-style-type: none"> <li>○ Reporting and rectifying any abnormalities and/or defects in the crane, lifting gear, accessories and communications equipment according to organisational procedures</li> <li>● Respond to lifting accidents and emergencies according to organisational Emergency Response Procedures (ERP)</li> <li>● Supervise post-operational procedures:</li> <li>● Dismantling and restoring of rigging equipment, lifting gears and accessories: <ul style="list-style-type: none"> <li>○ Housekeeping of equipment and work area</li> <li>○ Post-operational checks on communication equipment, crane, lifting gear and accessories</li> <li>○ Ensuring reporting of any damage and defects on communication equipment, crane, lifting gear and accessories</li> </ul> </li> <li>● Conduct accident investigation and analysis process of lifting accidents</li> </ul>			
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