

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

Category	Port Equipment					
TSC	Condition-based Monitoring					
TSC Description	Perform engineering and equipment maintenance with condition-based monitoring techniques and tools					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			STP-PEQ-3001-1.1	STP-PEQ-4001-1.1	STP-PEQ-5001-1.1	
			Monitor components and assets to determine their conditions	Diagnose component and asset faults through analysis condition monitoring data	Review engineering asset to determine the condition monitoring requirements	
Knowledge			<ul style="list-style-type: none"> • Preparation and reinstatement requirements, including: <ul style="list-style-type: none"> ○ Basic principles of condition monitoring, and how it helps prevent equipment failure ○ Hazards associated with carrying out condition monitoring activities ○ Types of monitoring component or sensors ○ Pre-requisites of normal performance, Condition standards of specific assets and abnormal performance and fault types ○ Information required for condition monitoring activities ○ Procedures for checking the equipment calibration • Engineering drawings and specifications 	<ul style="list-style-type: none"> • Preparation and reinstatement requirements, including: <ul style="list-style-type: none"> ○ Basic principles of condition monitoring, and how it helps prevent equipment failure ○ Hazards associated with carrying out condition monitoring activities ○ Types of monitoring component or sensors ○ Pre-requisites of normal performance, condition standards of specific assets and abnormal performance and fault types ○ Information required for condition monitoring activities ○ Procedures for checking the equipment calibration • Analysis methods and techniques 	<ul style="list-style-type: none"> • Legislative, regulatory and local requirements or procedures and safe working practices • Preparation and reinstatement requirements • Possible consequences of incorrect actions • Engineering drawings and specifications • Operational conditions, related sources of variability and how they impact the measurement • Tools, terminology and practices used within condition monitoring • Tools, terminology and practices used when determining condition monitoring requirements • Sample collection or measurement points • Sampling intervals and what influences the periods 	

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			<ul style="list-style-type: none"> • Condition monitoring techniques and activities, monitoring equipment settings, operation and care • Sample collection and measurement points • Sampling intervals and influences on sampling periods • Types of disruptions during conditional monitoring and methods to minimise them • Quality control system and documentation procedures 	<ul style="list-style-type: none"> • Testing methods and procedures • Disassembly techniques 		
Abilities			<ul style="list-style-type: none"> • Set up and calibrate equipment required to carry out monitoring • Check that monitoring instruments are fit for purpose and have suitable monitoring ranges and values • Carry out condition monitoring • Ensure that collected sample or measurement is representative, sufficient and not spurious • Adjust the monitoring instrumentation to assist in diagnosis • Identify indicators of dangerous conditions, and isolate faulty components for further investigation • Record, review and report outcomes from condition monitoring 	<ul style="list-style-type: none"> • Ensure that the sample and/or data is of sufficient quality and integrity before analysis • Analyse the sample and/or data against previous monitoring activities, trends and specifications • Dis-assemble components for problem diagnoses • Identify principal causes of problems in component or asset and recommend corrective and operational actions • Record and store information to maintain the integrity of the sample or data 	<ul style="list-style-type: none"> • Establish the significance of the asset and need for condition monitoring • Determine parameters for conditional monitoring of the asset, including: <ul style="list-style-type: none"> ○ Significant failure modes ○ Extents and limitations of conditional monitoring on the asset ○ Acceptable sample collection, measurement points, monitoring intervals and operational states • Plan condition-based monitoring for component or asset • Establish resources required to ensure 	

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