

**POWER ENGINEERING COMPETENCY FRAMEWORK FOR POWER ENGINEERING PROFESSIONALS IN PUBLIC SERVICE
TECHNICAL SKILLS AND COMPETENCIES (TSC) REFERENCE DOCUMENT**

TSC Category	Maintenance Management					
TSC Title	Reliability Centred Maintenance Management					
TSC Description	Manage reliability modelling and assessments of electrical assets for reliability-centred maintenance					
TSC Proficiency Description	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
			<Insert TSC Code>	<Insert TSC Code>	<Insert TSC Code>	
			Oversee reliability-centred maintenance studies, as well as risk and reliability assessments	Recommend reliability-centred maintenance plans, techniques, methods and standards	Set direction for reliability-centred maintenance to drive high availability, integrity and reliability of plants, equipment and systems	
Knowledge			<ul style="list-style-type: none"> Principles of reliability-centred maintenance management Asset life cycle costing principles Root Cause Failure Analysis (RCFA) incident investigation techniques Reliability assessment methods Principles of electrical equipment and system criticality assessments Principles of electrical equipment and system risk assessments Data acquisition, validation and correlation techniques Maintainability engineering principles Risk-based inspection methods Fault Tree Analysis (FTA) modelling strategies 	<ul style="list-style-type: none"> Decision analysis techniques and fundamental statistical principles Electrical equipment and system criticality analysis techniques Data validation and correlation techniques Techniques in engineering risk assessment and maintainability engineering Electrical equipment reliability benchmarking techniques Predictive technology methods and techniques Asset remnant life assessment techniques Reliability Block Diagrams (RBD) modelling techniques Principles of electrical and power systems, and their calibration Requirements of proactive maintenance strategies and their implementation Vendors' equipment maintenance and inspection requirements 	<ul style="list-style-type: none"> Principles and techniques of reliability-centred maintenance management Maintenance strategy review; failure patterns and maintenance types Decision analysis techniques and fundamental statistical principles Electrical asset remnant life study strategies and tools Equipment reliability benchmarking strategies Predictive technology methods and techniques Reliability growth modelling strategies Electrical equipment maintenance optimisation techniques Business value, costs and implications of preventive and predictive maintenance activities Methods of calculating returns on investment Automated and/or robotic inspection and condition monitoring methods 	

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				<ul style="list-style-type: none"> Automated and/or robotic inspection and condition monitoring methods 		
Abilities			<ul style="list-style-type: none"> Apply RCFA investigation techniques to plant, equipment or system failure incidents Conduct reliability-centred maintenance studies Conduct reliability assessments Apply equipment criticality assessments on plants, equipment and systems taking various mitigation options into account Conduct plant, equipment and system risk assessments and recommend mitigations 	<ul style="list-style-type: none"> Verify Root Cause Failure Analyses (RCFA) to ensure correct selection of techniques and identify appropriate case classifications Manage decision analyses, based on fundamental statistical principles and identify improvement options Manage reliability assessment process to ensure procedures have been followed and identify gaps in reliability and recommend mitigations and/or solutions Manage asset criticality assessments to ensure correct procedures have been followed, using external sources of information, if applicable Manage plant equipment and/or risk assessments and ensure recommended mitigations are appropriately selected Conduct remnant life assessments for plants, equipment or systems and recommend follow-up actions Work cross-functionally with key business stakeholders to maximise equipment uptime and availability Recommend changes and continuous improvement measures to enhance preventive and predictive maintenance processes and effectiveness Evaluate maintenance programmes, workflows 	<ul style="list-style-type: none"> Develop maintenance strategies to improve life cycle costing processes so that they can be completed at lower cost and in shorter time Develop strategies to improve Root Cause Failure Analysis (RCFA) processes so that they can be completed at lower cost, in shorter time and speedier mitigation and/or solution formulation Audit the maintenance strategy review process to ensure correct procedures have been followed and develop strategies to improve the maintenance strategy, if necessary Audit reliability-centred maintenance studies to ensure correct procedures have been followed and develop strategies to improve the maintenance strategy Develop strategies to improve reliability assessment processes so that they can be completed at a lower cost and in a shorter time Review findings of asset risk assessments and endorse recommended mitigations Review remnant life studies and endorse the results and follow-up actions Review effectiveness and returns on investment for preventive and predictive maintenance activities 	

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				<p>and practices based on equipment condition</p> <ul style="list-style-type: none">• Provide expert technical guidance on engineering and maintenance• Develop plans for root cause analyses and reliability studies• Liaise with equipment vendors to address plant, equipment or system failures or deterioration issues	<ul style="list-style-type: none">• Drive the application of new and emerging technologies in asset integrity management, and reliability-centred maintenance and automation	
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