Australian Government

UETDRTS009 Design testing and commissioning procedures for field devices and substations

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the UET Transmission, Distribution and Rail Sector Training Package Release 2.0.

Application

This unit covers the testing and commissioning procedures for new substation and field devices in accordance with design. This will involve analysis of settings, and a thorough understanding of the circuit design, which will involve covering areas such as metering, communication circuits and supervisory control and data acquisition (SCADA).

It also includes the procedures needed to enable proof of correct operation of all circuits to design specifications. It also encompasses the need for supplying accurate communication in the format that is acceptable to the operating or testing authority.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace subject to regulations for undertaking of electrical work.

Other conditions may apply under state and territory legislative and regulatory licensing requirements which must be confirmed prior to commencing this unit.

Pre-requisite Unit

All competencies in the Common Unit Group must have been completed, plus all competencies in one (1) of the identified Pathway Unit Group(s).

Common Unit Group

UEENEED104A Use engineering applications software on personal computers

UEENEEE101A Apply Occupational Health and Safety regulations, codes and practices in the workplace

UEENEEE102A Fabricate, assemble and dismantle utilities industry components

UEENEEE104A Solve problems in d.c. circuits

UEENEEE107A Use drawings, diagrams, schedules, standards, codes and specifications

UEENEEE124A Compile and produce an energy sector detailed report

UEENEEE125A Provide engineering solutions for problems in complex multiple path circuits

UEENEEE126A Provide solutions to basic engineering computational problems

UEENEEG101A Solve problems in electromagnetic devices and related circuits

UEENEEG102A Solve problems in low voltage a.c. circuits

UEENEEG149A Provide engineering solutions to problems in complex polyphase power circuits

UETDREL001 Apply environmental requirements

UETDREL005 Work safely in the vicinity of live electrical apparatus

UETDRIS005 Implement & monitor power system environmental & sustainable energy management policies & procedures

UETDRIS006 Implement and monitor the power system organisational WHS/OHS policies, procedures and programs

Protection Relays and Meters Pathway Unit Group

UETDRTS023 Repair, test and calibrate protection relays and meters

Metering Pathway Unit Group

UETDRTS005 Commission power systems metering schemes

UETDRTS010 Develop power systems secondary isolation instructional documents

UETDRTS014 Maintain and test and metering schemes

Primary Plant Pathway Unit Group

UETDRTS007 Conduct evaluation of power systems primary plant

UETDRTS010 Develop power systems secondary isolation instructional documents

Protection Systems Pathway Unit Group

UETDRTS010 Develop power systems secondary isolation instructional documents

UETDRTS015 Maintain complex network protection and control systems

UETDRTS017 Maintain interdependent network protection and control systems

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

1 Plan for the design of testing and commissioning procedures for substation and field devices	**1.1**	Work health and safety (WHS)/occupational health and safety (OHS) practices/procedures and environmental and sustainable energy procedures, which may influence the undertaking of design of testing and commissioning procedures for substation and field devices, are reviewed and determined
	1.2	Purpose for designing of testing and commissioning procedures for substation and field devices is established after data is analysed and expected outcomes of the work are confirmed with appropriate personnel
	1.3	Organisational established procedures on policies and specifications for the design of testing and commissioning procedures for substation and field devices are obtained or established with appropriate personnel
	1.4	Testing procedures are discussed with appropriate personnel in order to ascertain the project brief
	1.5	Testing parameters are established from organisational established procedures on policies and specifications
	1.6	Equipment/tools and personal protective equipment (PPE) are selected based on specified performance criteria and established procedures
	1.7	Work roles and tasks are allocated according to requirements and individual competencies
	1.8	Work is prioritised and sequenced for the most efficient/effective outcome, completed within an acceptable timeframe, to a quality standard and in accordance with established procedures
	1.9	Liaison and communication issues with others/authorised personnel, authorities, clients and landowners are resolved and activities coordinated to carry out work
	1.10	Risk control measures are identified, prioritised and evaluated against the work schedule
	1.11	Relevant work permits are secured to coordinate the performance of work according to requirements and/or established procedures
2 Carry out the design of	**2.1**	Circuit/systems modelling is used to evaluate alternative

testing and commissioning procedures for substation and field devices

proposals in accordance with established procedures

2.2 WHS/OHS and sustainable energy principles, functionality and practices to reduce the incidents of accidents and minimise waste are incorporated into the project in accordance with requirements and/or established procedures

2.3 Design of testing and commissioning procedures for substation and field devices decisions are made on the basis of safety and effective outcomes according to requirements and/or established procedures

2.4 Mathematical and/or engineering models of design testing and commissioning procedures for substation and field devices are used to analyse the effectiveness of the finished project in accordance with requirements and established procedures

2.5 Technical advice is given regarding potential hazards, safety risks and control measures so that monitoring and preventative action can be undertaken and/or appropriate authorities consulted, where necessary, in accordance with requirements and established procedures

2.6 Essential knowledge and associated skills are applied to analyse specific data and compare it with compliance specifications to ensure completion of the project within an agreed timeframe according to requirements

2.7 Testing and commissioning procedures for substation and field devices are developed according to requirements and established procedures

2.8 Work teams/groups are arranged/coordinated/evaluated to ensure planned goals are met according to established procedures

2.9 Solutions to non-routine problems are identified and actioned, using acquired essential knowledge and associated skills, according to requirements

2.10 Quality of work is monitored against personal performance agreement and/or established organisational and professional standards

2.11 Strategic plans are developed incorporating organisation

		initiatives in accordance with established procedures
3 Complete the design of testing and commissioning procedures for substation and field devices	**3.1**	Final review of testing and commissioning procedures for substation and field devices is undertaken to ensure they comply with all requirements and include all specifications and documentations needed to complete the project
	3.2	Appropriate personnel are notified of completion and reports and/or completion documents are finalised/commissioned
	3.3	Reports and/or completion documents are submitted to relevant personnel/organisations for approval and, where applicable, statutory or regulatory approval
	3.4	Approved copies of design testing and commissioning procedures for substation and field devices documents are issued and records are updated in accordance with established procedures

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UET Transmission, Distribution and Rail Sector Training Package Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTS24 Design testing and commissioning procedures for field devices and substations.

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7