



Australian Government

UETTDRTS33 Undertake power systems project management of substation augmentation and maintenance

Release: 1

UETTDRTS33 Undertake power systems project management of substation augmentation and maintenance

Modification History

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

Application

This unit covers the coordination, planning and supervision of projects, including but not limited to, commissioning of new plant and equipment, maintenance projects and retrofit works. It includes coordinating and facilitating the work of others and the collation of the relevant outcomes and results and involves an overview of both primary and secondary works to ensure completion of all aspects of the project, and must encompass at least 20 identifiable tasks.

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 licencing 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

UETTDREL11 Apply sustainable energy and environmental procedures

UETTDREL16 Working safely near live electrical apparatus

UETTDRI62 Implement and monitor the power system organisational WHS/OHS policies, procedures and programs

UETTDRI63 Implement & monitor power system environmental & sustainable energy management policies & procedures

Protection Relays and Meters Pathway Unit Group

UETTDRTS28 Repair, test and calibrate protection relays and meters

Metering Pathway Unit Group

UETTDRTS25 Maintain and test and metering schemes

UETTDRTS26 Commission power systems metering schemes

UETTDRTS29 Develop power systems secondary isolation instructional documents

Primary Plant Pathway Unit Group

UETTDRTS29 Develop power systems secondary isolation instructional documents

UETTDRTS32 Conduct evaluation of power systems primary plant

Protection Systems Pathway Unit Group

UETTDRTS21 Maintain interdependent network protection and control systems

UETTDRTS29 Develop power systems secondary isolation instructional documents

UETTDRTS35 Maintain complex network protection and control systems

Competency Field

Testing

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Plan for the project management of substation augmentation and

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 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 project management of substation

maintenance	augmentation and maintenance, are reviewed and determined
	1.2 Purpose of the undertaking of project management of substation augmentation and maintenance 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 undertaking of project management of substation augmentation and maintenance are obtained or established with appropriate personnel
	1.4 Testing procedures are discussed with/directed to appropriate personnel in order to ascertain the project brief
	1.5 Testing parameters are established from organisational established procedures and 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 land owners 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 project management of substation augmentation and maintenance	2.1 Circuit/systems modelling is used to evaluate alternative 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 Undertaking of project management of substation augmentation and maintenance decisions are made on the basis of safety and effective outcomes according to requirements and/or established procedures
 - 2.4 Mathematical/engineering models of the undertaking of project management of substation augmentation and maintenance 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 of substation augmentation and maintenance is undertaken 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 project management of substation**
- 3.1 Final inspections of substation augmentation and maintenance are undertaken to ensure they comply with

**augmentation and
maintenance**

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 the project management of substation augmentation and maintenance 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 Companion Volume Implementation Guide.

Unit Mapping Information

This unit replaces and is equivalent to UETTDRTS33A Undertake power systems project management of substation augmentation and maintenance.

Links

UET Training Package Companion Volume Implementation Guide is found in VETNet - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

Assessment Requirements for UETTDRTS33 Undertake power systems project management of substation augmentation and maintenance

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including the use of risk control measures
- applying sustainable energy principles and practices
- managing three (3) projects (encompassing at least twenty (20) identifiable tasks) including installation, testing and commissioning stages
- applying project management skills including all of the following:
 - work planning
 - coordination of labour resources
 - on-site supervision
 - controlling quality
 - use of quality systems
 - planned versus actual comparisons
 - communication with designers
 - control of materials
 - substation primary plant
 - substation secondary equipment
 - substations civil projects
- dealing with unplanned events on at least one (1) occasion.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- system components and layouts encompassing:
 - distribution system layouts - overhead/underground, urban/rural, high voltage (HV) customers, high rise building systems, three phase lines, single phase lines, single wire

- earth return (SWER) systems, spur, parallel and ring systems, and typical substation types
- transmission system layouts - lines, buses, transformers and cables; line/bus layouts, including single, double, ring and breaker and half systems; and HV crossing methods
- alternating current (a.c.) transmission system components encompassing:
 - support structures and reasons for selection
 - insulators and reasons for selection
 - conductors and reasons for selection
 - vibration management systems and principles
 - line ratings based on voltage, span, tension and temperature
- procedure to undertake a visual inspection of a scheme encompassing:
 - standards, codes, Commonwealth/state/territory legislation, supply authority regulations and/or enterprise requirements associated with visual inspection procedures of a scheme
 - requirements for the use of manuals, system diagrams/plans and drawings
 - identify obvious deficiencies in operating to the standard functionality
 - techniques in determining device malfunction
 - techniques in determining wiring defects
- commissioning procedures associated with relevant equipment encompassing:
 - standards, codes, Commonwealth/state/territory legislation, supply authority regulations and/or enterprise requirements associated with the commissioning procedures
 - requirements for the use of commissioning manuals, system diagrams/plans and drawings
 - techniques in commissioning procedures – planning, policy, testing techniques and close out requirements.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in simulated conditions involving realistic and authentic activities that replicate operational workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or other simulations
- relevant and appropriate materials, tools, facilities, equipment and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

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