



Australian Government

UETDRDS023 Draft and layout distribution substation minor upgrade

Release: 1

UETDRDS023 Draft and layout distribution substation minor upgrade

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 4.0.

Application

This unit includes the skills and knowledge required to draft and layout minor upgrades in a distribution substation, in the electricity supply industry (ESI).

It includes different types of substations, construction types, structures and clearances, and the use of manuals and diagrams.

It also includes the fundamentals of surveying, trenching, computer-aided drafting, and materials, equipment and tools inventory.

The application of the skills and knowledge described in this unit may require a licence/registration to practice in the workplace.

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

Pre-requisite Unit

UEECD0007 Apply work health and safety regulations, codes and practices in the workplace

UEECD0044 Solve problems in multiple path circuits

UEECD0046 Solve problems in single path circuits

UEECD0051 Use drawings, diagrams, schedules, standards, codes and specifications

UEEEL0020 Solve problems in low voltage a.c. circuits

UEEEL0021 Solve problems in magnetic and electromagnetic devices

UETDREL005 Work safely in the vicinity of live electrical apparatus

Competency Field

Design

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 Prepare to draft and layout distribution substation minor upgrade

- 1.1** Project requirements are determined
- 1.2** Draft and layout specifications are determined in accordance with workplace requirements
- 1.3** Tools, equipment and personal protective equipment (PPE) required for site inspections are determined, obtained and confirmed in working order
- 1.4** Requirements for site inspections are determined in accordance with workplace requirements
- 1.5** Work is prioritised and sequenced for completion in accordance with workplace requirements

2 Draft and layout distribution substation minor upgrade

- 2.1** Site inspection is performed
- 2.2** Substation minor upgrade is drafted and laid out in accordance with workplace requirements
- 2.3** Systems modelling is used to evaluate and determine best outcomes in accordance with workplace requirements
- 2.4** Sustainable energy principles are used to evaluate and determine best outcomes in accordance with workplace requirements
- 2.5** Draft and layout are checked for compliance against legislation, regulations, standards and codes of practice
- 2.6** Health and safety risks are identified and minimised or eliminated by using safety and control measures in the draft and layout process
- 2.7** Quality checks of work are undertaken in accordance with workplace requirements

3 Complete work and

- 3.1** Completed work is checked against project and

documentation**workplace requirements**

- 3.2** Work records, reports and documentation are completed, approved and appropriate personnel notified in accordance with workplace requirements

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 not equivalent to UETDRDS008 Draft and layout a power system distribution substation minor upgrade.

Links

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

Assessment Requirements for UETDRDS023 Draft and layout distribution substation minor upgrade

Modification History

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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 (2) separate occasions and include:

- drafting and laying out of distribution substation minor upgrade, including:
 - specifications
 - requirements for site inspection
 - systems modelling to evaluate and determine best outcomes
 - sustainable energy principles and practices
 - compliance against legislation, regulations, standards and codes of practice, project and workplace requirements
 - identifying, minimising or eliminating health and safety risks by using safety and control measures
 - obtaining, inspecting and using relevant personal protective equipment (PPE) for site inspection
 - prioritising and sequencing work for completion in accordance with workplace requirements
- drafting at least one (1) of the following:
 - a multi-phase pole mounted distribution transformer upgrade layout
 - a single-phase pole mounted transformer upgrade
- drafting the layout of at least one (1) of the following:
 - a multi-phase underground distribution substation upgrade
 - a multi-phase distribution substation or associated equipment upgrade
- completing all of the following for each of the completed drafts
 - single line diagram
 - above ground layout diagram
 - below ground layout diagram
 - earthing layout diagram
 - primary plant dimensioning checklist
 - standards compliance checklist
- performing at least one (1) site inspection

- performing ongoing quality checks of work in accordance with workplace requirements
- checking final design against project and workplace requirements
- completing relevant work records, reports and documentation.

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:

- distribution substation minor upgrade, draft and layout, including:
 - project requirements
 - design specifications
 - hazard, risk assessment and risk control requirements, including potential hazards
 - types and application of PPE
 - site inspections
 - use of systems modelling for best outcomes
 - application of sustainable energy principles and practices
 - compliance with legislation, regulations, standards, codes of practice, and project and workplace requirements
 - work records, reports and documentation
- distribution substations, including:
 - pole mounted transformers
 - pad mounted transformers
 - overhead conductors, route length and connections
 - underground cables, joints and terminations
 - high voltage (HV)/low voltage (LV) switchgear
- substation construction types, structures and clearances
- manuals, diagrams and drawings, including:
 - distribution extensions
 - distribution substations
 - street lighting systems
 - switching symbols and operations
 - mechanical drawings
- principles of surveying, including:
 - buried services detection
 - techniques for measuring heights and distances
 - pegging
- principles of cabling and trenching
- principles of computer-aided drafting.

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:

- relevant and appropriate PPE currently used in industry to undertake drafting and laying out a distribution substation upgrade
- applicable documentation, including workplace requirements, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

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