



Australian Government

**Assessment Requirements for
UETTDRDS55 Design power system
transmission and sub-transmission
substation earthing**

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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.

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
- completing two (2) compliant technical designs, including each of the following:
 - coordination and analysis of earth resistivity tests
 - design and drafting of earth grid, including electrodes, grid connections, equipment connections and remote earthing connections to conduct maximum earth fault currents without exceeding the maximum allowable earth potential rise (EPR)
 - confirmation of acceptable step and touch potentials, including attenuation or hazard control measures
 - confirmation of control of transfer of EPR
- completing designs, including all the following:
 - activities that address the correction of errors in the process
 - application of a design control checklist which lists all of the required design activities to be carried out in this process
- 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:

- distribution earthing system encompassing:
 - standards, codes, legislation, supply authority regulations and/or enterprise requirements applicable to the distribution earthing system
 - reason and types of distribution earthing systems
 - terminologies used in the earth systems, including touch and step potential
 - conditions associated when an active high voltage (HV) conductor fails to earth

- selection of earthing electrodes and grids
- determination of the earthing resistance of copper clad rods using earthing monograms
- principles of transmission, sub-transmission and zone substation earthing designs encompassing:
 - Commonwealth/state/territory and local government legislation, standards, codes, supply authority regulations and/or enterprise requirements applicable to the substation design management principles
 - requirements for the use of the substation system construction manuals, system diagrams/plans and drawings and for plans such as work method statements for the control of WHS/OHS risks
 - types of activities to be carried out - earth resistivity tests coordination, design of the earth grid and confirmation of control of transfer of EPR
 - types of earthing design parameters - coordination and analysis of earth resistivity tests, design and drafting of earth grid, including electrodes, grid connections, equipment connections and remote earthing connections to conduct maximum earth fault currents without exceeding the maximum allowable EPR, confirmation of acceptable step and touch potentials, including attenuation or hazard control measures, water, telephone service and low voltage (LV) neutral supplies isolation to isolate local EPR.

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.

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>