



Australian Government

**Assessment Requirements for
UETDRTS015 Maintain complex network
protection and control systems**

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.

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 all of the following
 - isolating protection, control and alarms associated with complex protection and control schemes
 - calibrating complex protection and control relays
 - carrying out function tests (trips and alarms) on complex protection and control schemes
 - writing reports on performance of complex protection and control schemes
 - isolating ‘in service’ current transformers
- completing all of the following:
 - activities that address the correction of errors in network protection and control systems
- 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:

- principles of power transformer construction and operations encompassing:
 - applications of static reactive plant in high voltage (HV) networks, including voltage control, volt-ampere reactive (VAR) control and transient response capacity
 - types of static reactive plant, including HV capacitors, HV reactors, static VAR compensators and combinations of these
 - operating characteristics and operational constraints, including point on wave switching issues
 - ratings, cooling systems and control systems and ancillary equipment used
 - configurations and system layout, including single star, double star and bridge type

- typical protection systems used, including neutral unbalance current and neutral unbalance voltage
- techniques used when balancing elements within static reactive plant
- safety precautions when testing and maintaining HV static reactive plant - safe working practices and procedures; identification of hazards; assessment and control of WHS/OHS risks; types, selection, maintenance and use of personal protective equipment (PPE)
- detailed operation of complex protection systems encompassing:
 - distance - characteristics, electromechanical, electronic, impedance, mho, offset mho, switched schemes, non-switched schemes, blocking schemes and bus zone
 - differential, transformer differential and bus overcurrent - principles, feeder protection, transformer protection, bias systems, harmonic restraint, current transformer connections, bus protection, low impedance schemes, high impedance schemes, bus overcurrent schemes, generator protection, special considerations and digital systems
 - types of revenue metering
 - applications of supervisory control and data acquisition (SCADA)
 - complex protection systems for communications
 - harmonic control
 - point on wave switching.

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 PPE currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice and operation manuals.

Links

Companion Volume Implementation Guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=229bace1-b7bc-4653-9300-dffb13ecfad7>

