



Australian Government

Assessment Requirements for UETDRSO010 Respond to complex power system protection operations

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
- developing and evaluating, on at least three (3) occasions, all of the following:
 - identifying complex relay operations by interpreting available alarms and event data
 - analysing and diagnosing system failures
 - evaluating response to complex relay operations
- describing control and alarms associated with complex protection 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:

- protection system types encompassing:
 - requirements of a protection scheme - relationship to primary system design, purpose of protection, safety of persons, protection of plant, system instability, system break up, loss of customers, loss of revenue, protection zones, restricted schemes, unrestricted schemes, duplicate protection, local backup protection, remote backup protection, selectivity, discrimination, stability, sensitivity and reliability
 - components of a protection scheme - current transformers, potential transformers, summation current transformers, interposing transformers, multi-tapped transformers, all-or-nothing relays, induction relays, balanced beam relays, directional relays, biased relays, solid state relays, microprocessor-based relays, gas relays, thermal sensors, hardwired communication, powerline carriers systems, microwave systems, fibre optic systems, need for isolation and need for interfacing
 - protection applied to buses - overload, differential, earth leakage, structure leakage, combined schemes and protection overlap

- protection applied to transformers - biased differential, gas, winding temperature and oil temperature
- protection applied to single/radial lines - overcurrent, earth leakage, slow earth leakage, distance, auto-reclose, sectionalising and over voltage
- protection applied to interconnected lines - overcurrent, pilot wire, directional, directional overcurrent, current differential, phase comparison, current comparison, distance, impedance, admittance and offset
- use of fault information to analyse and develop optimal network restoration strategies encompassing:
 - Commonwealth/state/territory and local government legislation, supply authority regulations, standards, codes and/or enterprise requirements applicable to the analysis of protection targeting
 - requirements for the use of operational manuals, system diagrams/plans and drawings
 - techniques in the collation of protection data
 - techniques in the analyse and assessment of fault information – public, employee and protection equipment
 - application methods of fault information to analyse and develop optimal network restoration strategies - public and employee safety, and enterprise reliability guidelines
 - resource availability.

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, relevant modelling tools, computerised electrical plant control and monitoring facilities, and personal protective equipment (PPE) currently used in industry
- applicable documentation, including workplace procedures, relevant industry standards, equipment specifications, regulations, codes of practice, drawings 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>