



Australian Government

**Assessment Requirements for
UETTDRIS44 Perform HV field switching
operation to a given schedule**

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.

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
- performing high voltage (HV) field switching operation to a given schedule using the following:
 - approvals/clearances
 - access permits
- using all of the following:
 - HV operating sticks
 - HV operating earths
 - HV detectors
- using at least one (1) of the following specialist tools:
 - HV phasing sticks
 - HV ground mounted equipment isolating handles and earths
- operating switchgear with at least two (2) of the following:
 - HV links
 - air break switches
 - fuses
- using at least three (3) of the following:
 - reclosers
 - ring main units
 - circuit breakers
 - isolators
 - earth switches
 - sectionalisers
- 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:

- standards, codes, legislation, supply authority regulations and/or enterprise requirements applicable to switching of HV to a given schedule
- requirements for the use of manuals, system diagrams/plans and drawings, including:
 - types, characteristics and capabilities of electrical apparatus
 - use, characteristics and capabilities of specialised tools and testing equipment
 - network interconnectors source of possible backfeed
- role of the HV switching operator
- procedures for obtaining correct HV switching authorisation, including:
 - identification of WHS/OHS hazards, assessing and controlling risks
 - safety procedures and precautions
 - safe approach distances (SAD)
 - responsibilities and protocols
 - identifying switching resources
 - procedures for obtaining electrical access permits/authorities
 - requirements for team switching
 - procedures for coordination of operations
- use and operation of equipment associated with HV overhead and substation equipment, including:
 - test instruments
 - sticks
 - interrupters
 - arc stragglers
- operation of protection systems and substation equipment, such as:
 - fault levels and settings; types and applications; protection systems and substation equipment fault levels and settings; types and applications
- types and categories of HV switchgear
- application, function and operating capabilities of switchgear
- restrictions pertaining to HV switching equipment
- procedures for the isolation of HV transmission main and working earths
- earthing HV electrical apparatus practices and procedures for access, including:
 - purposes of operational and additional work part - on-site earths
 - factors determining the location and effectiveness of operational earthing
 - acceptable industry procedures
 - personal protective equipment (PPE)
- HV switching techniques, including
 - pre-switching checks
 - switching operational procedures

- isolation procedures and proving dead/de-energised
- earthing procedures
- emergency fault procedures
- energisation procedures
- application and function of the single wire earth return (SWER) system components, including:
 - circuit arrangement
 - principle of operation
 - hazards and procedures associated with faulty SWER earth systems
 - procedure to isolate, energise and commission SWER substations
- operation of HV overhead switching or indicating devices, including:
 - identifying hazards, assessing and controlling risks associated with HV switchgear operation
 - systematic and defensive techniques
 - mobile radio procedures
 - double isolation procedures
 - fuses, disconnect fuses, load switching, live line indicators, capacitors, reclosers, sectionalisers, underslung links, airbreaks, switches, disconnects, live line clamps, phasing sticks and phasing tester
- primary causes, effects and types of HV electrical faults
- HV protection devices, including:
 - main components
 - types
 - categories
 - applications
 - functions
- basic principle of operation of HV system protection devices
- protection coordination and protection - zoning
- HV feeder auto-reclosing suppression, including:
 - function
 - application
- circuit condition requirements and switching considerations when paralleling and separating HV feeders
- operation of HV distribution transformers, including:
 - principle governing factors for transformer ratings
 - protection and alarms
 - operating limitations and the relationship between transformer and HV fuse rating
 - purpose and principle operation of HV distribution transformer tap changers
 - HV distribution transformer and transformer-cable combination switching practices
 - paralleling requirements
 - isolation and earthing procedures for access

- common distribution transformer and associated electrical apparatus faults
- HV underground switching equipment, such as:
 - arc strangles, switch operation, load break elbows, switching cubicles, canister fuses, bayonet fuses, F and G switching cubicles, voltage indicators and phasing testers
- function of feeder automation system and the main components
- operation procedure for a remote field device from a local control station
- functions of supervisory control and data acquisition (SCADA) (or any other relevant data acquisition and control) systems and its main components
- SCADA system security interlocks and access restrictions
- SCADA system operation when switching apparatus or retrieving data via a remote access device, such as remote access terminal (RAT), dial up voice annunciated system and local control station
- function of the main components of a local/remote control system
- operation of a field devices using SCADA systems via a remote access terminal (RAT), dial up voice annunciated system and local control station.

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 for perform HV field switching operations to a given schedule
- 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>